Quantifying Financial Repression in Emerging Markets*

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Abstract

Financial repression, defined as policies that generate inelastic domestic demand for government debt, has historically accompanied periods of high fiscal needs. Yet no high-frequency, market-based measure of financial repression exists for emerging markets (EMs), where weaker institutions and lower debt tolerance make repression especially prevalent. To that end, I examine the Domestic Bond Premium (DBP): the yield spread between EM local currency (LC) government bonds and AAA-rated supranational bonds in the same currency and maturity. Using data from over 4,000 supranational bonds across 11 EM currencies, I document that the DBP is frequently negative and remains relatively stable during periods of financial stress when government LC yield spreads over US Treasuries widen dramatically. I develop an asset pricing framework that decomposes the DBP into default, liquidity, and financial repression components. The empirical evidence supports the theoretical prediction that default risk and liquidity alone cannot account for the low DBPs, pointing to financial repression as a key force suppressing government borrowing costs below default-free supranational benchmarks.

1 Introduction

When conventional fiscal tools prove insufficient, governments have historically turned to financial repression, compelling domestic financial institutions to absorb sovereign debt at below-market interest rates through regulatory requirements, moral suasion, and capital controls. Reinhart and Sbrancia (2015) estimate that such policies reduced advanced economy government real debt burdens by 1 to 5% of GDP annually between 1945–1980.

Today, the conditions that historically gave rise to financial repression are especially acute in EMs. Developing country public debt stands at its highest level in half a century (Kose et al., 2022) and emerging economies faced an \$8.2 trillion refinancing need in 2025 alone (Institute of International Finance, 2025). Domestic banks are already bearing much of this burden, with government securities on their balance sheets reaching a record 17% of total assets in the aftermath of the pandemic (International Monetary Fund, 2022). Yet no high-frequency, market-based measure of financial repression exists, in part because EM local currency government bond yields bundle currency risk, default risk, and any repression-induced distortions that are hard to disentangle.

This paper proposes such a measure. Because AAA-rated supranational financial institutions[1] also borrow in EM local currencies, their bonds provide a default-free benchmark denom-

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[1] Supranational financial institutions are multilateral development banks owned and funded by several governments to finance development projects globally. This paper considers bonds from eight major institutions: Inter-

inated in the same currency as government debt.[2] The yield spread between the two, which I term the Domestic Bond Premium (DBP), strips out currency risk by construction. Since supranational issuers are not subject to domestic financial regulation, the DBP serves as a market-based proxy for financial repression once sovereign default risk and liquidity differences are accounted for. To implement this approach, I construct a novel dataset of supranational zero-coupon yield curves for 11 EM currencies using data from over 4,000 EM-currency supranational bonds issued between 1997 and 2025. I find that the DBP is persistently low and frequently negative, meaning EM governments can borrow at or even below default-free benchmarks in their own currencies.

To formalise the financial repression interpretation, I present a simple asset pricing framework in Section 2. The model delivers three results. First, when regulations force domestic investors to hold government bonds beyond what they would choose voluntarily, the resulting captive demand pushes government bond prices up and hence yields down. Second, this effect is stronger when foreign investors who are not subject to domestic regulations leave the LC government bond market, linking the intensity of repression to domestic ownership share of government bonds. Third, one cannot identify the repression premium from government bond yields alone, because financial repression simultaneously raises the shadow risk-free rate in the economy by reducing domestic investors' freely allocable savings; this makes the net effect on government yields ambiguous. I show that the DBP resolves this problem: since both government and supranational bonds are denominated in the same currency, the shadow risk-free rate components cancel. Consequently, the model predicts that after controlling for default risk and liquidity components, the residual variation in the DBP should correlate strongly with financial repression.

The empirical patterns are consistent with these theoretical predictions. The cross-country average of the DBP is persistently low and frequently negative. Moreover, the DBP exhibits remarkable stability during stress episodes such as the GFC or the Covid-19 recession, when EM LC yield spreads over US Treasuries widen dramatically. This insensitivity to deteriorating financial conditions is particularly pronounced at shorter maturities, where the DBP declines or turns negative during crises. Such patterns are difficult to reconcile with standard credit risk models, but they are consistent with financial repression: captive domestic demand sustains government bond prices even as fundamentals deteriorate.

Three key results support this interpretation. First, DBP variation is predominantly country-specific. A simple variance decomposition of the panel dataset shows that approximately 85% of the DBP variation stems from persistent and time-varying local factors, contrasting with the strong commonality found in foreign-currency yield spreads (González-Rozada and Yeyati, 2008) or credit default swap (CDS) spreads (Longstaff et al., 2011). This idiosyncratic nature of the variation in DBP points to local financial conditions and domestic policies rather than

national Bank for Reconstruction and Development, International Finance Corporation, European Investment Bank, European Bank for Reconstruction and Development, African Development Bank, Asian Development Bank, Kreditanstalt für Wiederaufbau, and the Inter-American Development Bank. For details on supranational issuance in EM currencies, see Dao and Gourinchas (2025).

[2]Throughout this paper, the term 'default-free' refers specifically to the absence of outright default (i.e., nominal repayment) risk, reflecting supranational issuers' high creditworthiness. These bonds remain subject to currency and liquidity risk.

global risk sentiment as the primary drivers.

Second, in panel regressions, proxies for financial repression, the domestic ownership share of LC government bonds and the real policy rate, are statistically and economically significant in explaining DBP movements across all specifications. Sovereign default risk, by contrast, is significant only at longer maturities, consistent with the low probability of outright nominal default over short horizons. Interacting default risk with domestic ownership reveals that the positive effect of rising CDS spreads on the DBP is substantially attenuated when the domestic investor base is large, consistent with the model's prediction that captive demand insulates government borrowing costs from deteriorating creditworthiness. These results are robust to currency–tenor–year fixed effects that absorb slow-moving unobservables, and to replacing the domestic holdings proxy with the reserve requirement ratio, a direct policy instrument.

Third, case studies of Turkey and Russia provide illustrative examples of how discrete policy events can serve as quasi-natural experiments for identifying the impact of financial repression on asset prices in future work, complementing the correlational panel evidence. In Turkey, foreign ownership of LC government bonds declined sharply before the 2022 introduction of a macro-prudential measure that required banks to hold larger amounts of LC government bonds. During this period, five-year LC government yields fell 20 percentage points below supranational benchmarks despite a severe economic crisis and sovereign credit rating downgrades. Russia exhibited similar patterns following the war in 2022: international sanctions drove out foreign investors while capital controls trapped domestic institutions in LC government bonds. As a result, government yields remained well below supranational rates despite substantial government default risk.

Together, these results support the use of DBP as a high-frequency, market-based measure for tracking financial repression intensity. The relative stability of the DBP during crises also implies that the bulk of the EM risk premium compensates investors for currency depreciation rather than nominal repayment risk. Perhaps most strikingly, the prevalence of negative DBPs demonstrates that financial repression can compress government borrowing costs below those of AAA-rated supranational institutions. While these negative spreads superficially resemble the convenience yields documented for US Treasuries and other safe assets, they potentially arise from regulatory coercion rather than voluntary investor preference. This distinction matters for debt sustainability analysis: unlike genuine convenience premiums, captive demand can unwind rapidly when regulations change or the domestic banking sector comes under stress.[3]

Relation to literature. This paper relates to several strands of literature. First, I build on the work of Du and Schreger (2016) who quantify the non-currency risk premium in EM LC sovereign yield spreads; these authors examine the yield spread between EM LC sovereign bonds and 'synthetic risk-free rates', defined as the US Treasury yield plus the relevant cross-currency swap rate. However, their approach also incorporates the US Treasury premium and CIP deviations.[4] Importantly, while Du and Schreger (2016) were the first to measure the

[3]For a discussion of how rapidly unwinding financial repression can trigger crises, see Diaz-Alejandro (1985) on Latin America. For the sovereign-bank nexus, see Acharya et al. (2014), Gennaioli et al. (2014), and Farhi and Tirole (2018).

[4]Covered Interest Parity (CIP) is a no-arbitrage condition requiring that interest rate differentials between two currencies equal the forward premium. In other words, borrowing in one currency, converting to another,

government-supranational spread for two countries using limited supranational bond data, a systematic EM-wide analysis of this spread has been absent from the literature.

From a methodological perspective, this paper relates to studies that use supranational bonds to isolate specific yield spread components. Dao and Gourinchas (2025) use supranational bonds to estimate 'purified' CIP deviations that partial out EM credit risk. Schwarz (2019) uses the difference between German Bund and KfW euro yields to estimate a model-free measure of market liquidity for the euro area during the Global Financial Crisis (GFC) and the European debt crisis. Du et al. (2018) use the differential between US Treasury-KfW dollar and German Bund-KfW euro yield spreads to measure the relative long-term US Treasury premium.

My findings also connect to the safe-asset demand and convenience yield literature. Convenience yields arise when investors accept lower financial returns on certain assets in exchange for non-pecuniary benefits such as exceptional liquidity, universal acceptance as collateral, and safe-haven status. Krishnamurthy and Vissing-Jorgensen (2012), Greenwood et al. (2015), Nagel (2016), Du et al. (2018), and Jiang et al. (2021) document how US Treasury securities command such premiums over comparable assets or over what standard asset-pricing models would predict. I show that EM LC government bonds can also trade at a premium to default-free assets, as evidenced by negative DBPs. However, rather than reflecting genuine investor preference for safety and liquidity, EM convenience premiums potentially arise from macro-prudential pressure on domestic financial institutions and market segmentation between onshore and offshore debt instruments in the same currency.

In this respect, this paper is strongly grounded in the financial repression literature. The term originates with McKinnon (1973) and Shaw (1973), who characterised how policies such as interest rate ceilings and reserve requirements channel domestic savings toward the government at below-market rates, with adverse consequences for capital accumulation. Giovannini and de Melo (1993) quantified this channel, estimating the implicit tax that governments impose on domestic bondholders by keeping local interest rates below world rates. Reinhart and Sbrancia (2015) document how advanced economy governments historically extracted resources from domestic financial systems through negative real interest rates alongside financially repressive policies, estimating that after World War II these policies reduced government debt burdens by 1 to 5% of GDP annually.

In the modern era, Becker and Ivashina (2018) and Ongena et al. (2019) provide evidence of similar mechanisms during the European debt crisis, where regulatory pressure and moral suasion led banks to increase domestic government bond holdings despite deteriorating sovereign creditworthiness. According to Calice et al. (2020), interest rate controls have become a common policy tool following the GFC, with 63 countries (representing 66% of global GDP) out of 108 in their sample having such restrictions in place as of 2019.

Broner et al. (2014) offer a complementary perspective, documenting that sovereign bond markets in turbulent times are characterised by creditor discrimination: domestic investors that are subject to local regulations absorb an increasing share of government debt as foreign investors withdraw amid rising credit risk. This mechanism is central to the theoretical frame-

and hedging exchange rate risk via forward contracts should yield the same return as borrowing directly in the second currency. Deviations from CIP may reflect excess demand for dollar hedging or limited supply of dollar forwards (Du and Schreger, 2022a). Also see Appendix B.1.

work developed in Section 2.2, where the financial repression premium increases as the domestic ownership share rises.

On the theory side, Reis (2021) shows that financial repression can expand fiscal capacity through a wedge between the return on private capital and the interest rate on government debt, but that this comes at the cost of misallocating resources away from productive investment. Chari et al. (2020) show that financial repression, though not optimal under commitment, can serve as a costly credibility mechanism: by forcing banks to hold government debt, governments make default more damaging to the domestic financial system and can thereby sustain higher debt levels. More recently, Itskhoki and Mukhin (2025) study financial repression in the currency market under sanctions, comparing it with conventional policies such as FX interventions. They show that although repression can be used to reallocate resources and extract fiscal surplus under financial isolation, it is generally welfare-reducing as a stabilisation tool.

As Kose et al. (2022) note, EMs face increasingly limited options to manage their rapidly rising public debt levels and interest burdens, especially since the pandemic. This constrained fiscal environment makes understanding unorthodox debt management strategies such as financial repression increasingly relevant. A natural starting point is to test whether financial repression is systematically reflected in the pricing of EM local-currency sovereign bonds across countries and over time. The DBP provides a high-frequency, market-based measure for that purpose.

The rest of the paper proceeds as follows. Section 2 develops the theoretical framework and decomposes the DBP into default risk, relative liquidity, and financial repression premia. Section 3 describes the data and construction of supranational yield curves. Section 4 presents stylised facts on the DBP. Section 5 presents the empirical evidence. Section 6 concludes.

2 Framework

2.1 Baseline model

This section introduces an asset pricing model that rationalises the decomposition of bond yields and the DBP into distinct risk premium components. In this framework, a representative domestic investor chooses the quantity of two one-period LC zero-coupon bonds:[5] (i) a government bond with outright-default risk, and (ii) a supranational bond that is effectively default-free. Bond purchases are subject to transaction costs, interpreted as liquidity frictions.[6] Moreover, holding either bond may provide *private* convenience services (e.g., use as collateral in interbank markets). Crucially, the domestic investor faces a minimum-holdings constraint on government bonds, capturing policies that generate inelastic domestic demand for sovereign debt (e.g., eligibility criteria for central-bank liquidity facilities or government guarantee schemes, treatment of government bonds in capital requirements, and other macro-prudential regulations that increase

[5] The one-period setup is for clarity of exposition. Extending the model to include multi-period zero-coupon bonds yields an analogous decomposition for each tenor, leaving the qualitative predictions unchanged. The empirical analysis uses zero-coupon yields at 1, 3, 5, and 10-year tenors.

[6] The baseline model abstracts from additional traded assets such as equities or USD-denominated bonds including U.S. Treasuries. Allowing for such assets would result in additional Euler equations but would not change the DBP decomposition, which is the main object of interest.

domestic demand for sovereign debt).[7]

Domestic investor problem. The domestic investor chooses consumption c_t and bond holdings B_{t+1}^{Gov} and B_{t+1}^{Sup} to maximise the expected discounted utility

$$U_0 = \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \Big[u(c_t) + v(B_{t+1}^{\text{Gov}}) + \tilde{v}(B_{t+1}^{\text{Sup}}) \Big], \tag{1}$$

where $\beta \in (0,1)$, $u'(c) > 0$, $u''(c) < 0$, and $v, \tilde{v}$ capture private convenience services from holding government and supranational bonds, respectively. Assume $v', \tilde{v}' > 0$ and $v'', \tilde{v}'' < 0$. At time t, a government bond with face value one trades at price P_t^{Gov} and pays $1 - \delta_{t+1}$ units of LC at $t+1$, where $\delta_{t+1} \in [0,1]$ is the (random) sovereign haircut. The supranational bond trades at P_t^{Sup} and pays one unit of LC at $t+1$ almost surely. Asset purchases are subject to per-unit transaction costs $\varphi_t^{\text{Gov}} \geq 0$ and $\varphi_t^{\text{Sup}} \geq 0$. Each period, the investor receives a deterministic endowment $\omega > 0$. As such, the per-period budget constraint of the investor is

$$c_t + \big(P_t^{\text{Gov}} + \varphi_t^{\text{Gov}}\big) B_{t+1}^{\text{Gov}} + \big(P_t^{\text{Sup}} + \varphi_t^{\text{Sup}}\big) B_{t+1}^{\text{Sup}} = \omega + (1 - \delta_t) B_t^{\text{Gov}} + B_t^{\text{Sup}}, \tag{2}$$

where the left-hand side shows expenditures and the right-hand side available resources, or total wealth, at time t. Due to sovereign default risk, an investor receives the face value of their government bond holdings carried over from time $t-1$ only if $\delta_t = 0$. The sovereign haircut δ_{t+1} is unobserved at time t. The financial repression parameter κ_t and the transaction costs $\varphi_t^{\text{Gov}}, \varphi_t^{\text{Sup}}$ are observed at time t but their future values are uncertain.

Financial repression. The domestic investor faces a minimum-holdings constraint on government bonds, which is a reduced-form way to capture policies that generate inelastic domestic demand for sovereign debt:

$$P_t^{\text{Gov}} B_{t+1}^{\text{Gov}} \geq \kappa_t W_t, \qquad W_t \equiv \omega + (1 - \delta_t) B_t^{\text{Gov}} + B_t^{\text{Sup}}, \tag{3}$$

where $\kappa_t \in [0,1]$ determines the intensity of financial repression. A higher κ_t requires domestic investors to hold a larger fraction of their total wealth in government bonds, which is interpreted as intensification of financial repression.

Asset prices. Let $\mu_t = u'(c_t) > 0$ denote the Lagrange multiplier on the budget constraint and let $\lambda_t \geq 0$ denote the multiplier on the minimum-holdings constraint (shadow cost of financial repression). Define the *constrained* pricing kernel[8] and financial repression wedge

$$\tilde{M}_{t+1} \equiv \beta \, \frac{u'(c_{t+1}) - \lambda_{t+1} \kappa_{t+1}}{u'(c_t)}, \qquad \rho_t \equiv \frac{\lambda_t}{u'(c_t)} \geq 0, \tag{4}$$

[7] I interpret the minimum-holdings rule as applying to the domestic investor's consolidated balance sheet. Therefore, if we allowed for additional assets such as US Treasuries, this would only affect equilibrium allocations but not the government or supranational bond yield decompositions themselves.

[8] I assume $u'(c_{t+1}) - \lambda_{t+1}\kappa_{t+1} > 0$ almost surely, which ensures the positivity of the constrained pricing kernel.

and private convenience services in marginal utility terms

$$\chi_t \equiv \frac{v'(B_{t+1}^{\mathrm{Gov}})}{u'(c_t)}, \qquad \tilde{\chi}_t \equiv \frac{\tilde{v}'(B_{t+1}^{\mathrm{Sup}})}{u'(c_t)}. \tag{5}$$

Then, the investor's optimality conditions imply the following Euler (i.e., pricing) equations[9]

$$P_t^{\mathrm{Sup}} + \varphi_t^{\mathrm{Sup}} = \mathbb{E}_t[\tilde{M}_{t+1}] + \tilde{\chi}_t, \tag{6}$$

$$P_t^{\mathrm{Gov}} + \varphi_t^{\mathrm{Gov}} = \mathbb{E}_t[\tilde{M}_{t+1}(1-\delta_{t+1})] + \chi_t + \rho_t P_t^{\mathrm{Gov}}. \tag{7}$$

Pricing equation (7) highlights the role of financial repression. Keeping other components fixed, when the minimum-holdings constraint binds ($\rho_t > 0$), forced demand mechanically raises the price of government bonds.[10]

Interest rates. Define the shadow risk-free rate as

$$\tilde{r}_t \equiv -\log(\tilde{q}_t), \quad \text{where} \quad \tilde{q}_t \equiv \mathbb{E}_t[\tilde{M}_{t+1}]. \tag{8}$$

Using (6)–(7) and a log-linear approximation around a frictionless, default-free benchmark, the continuously-compounded one-period zero-coupon bond yields satisfy[11]

$$y_t^{\mathrm{Sup}} \approx \tilde{r}_t + \underbrace{\frac{\varphi_t^{\mathrm{Sup}}}{\tilde{q}_t}}_{L_t^{\mathrm{Sup}}} + \underbrace{\left(-\frac{\tilde{\chi}_t}{\tilde{q}_t}\right)}_{R_t^{\mathrm{Sup}}}, \tag{9}$$

$$y_t^{\mathrm{Gov}} \approx \tilde{r}_t + \underbrace{\frac{\mathbb{E}_t[\tilde{M}_{t+1}\delta_{t+1}]}{\tilde{q}_t}}_{I_t^{\mathrm{Gov}}} + \underbrace{\frac{\varphi_t^{\mathrm{Gov}}}{\tilde{q}_t}}_{L_t^{\mathrm{Gov}}} + \underbrace{\left(-\frac{\chi_t}{\tilde{q}_t} - \rho_t\right)}_{R_t^{\mathrm{Gov}}}. \tag{10}$$

Let $b \in \{Gov, Sup\}$ index the bond type and j index the currency. The continuously compounded yield on bond b issued in currency j at time t can thus be written as

$$y_{j,t}^b \approx \underbrace{\tilde{r}_{j,t}}_{\substack{\text{shadow}\\ \text{risk-free rate}}} + \underbrace{I_{j,t}^b}_{\substack{\text{default risk}\\ \text{premium}}} + \underbrace{L_{j,t}^b}_{\substack{\text{liquidity}\\ \text{premium}}} + \underbrace{R_{j,t}^b}_{\substack{\text{private convenience}\\ \text{and repression}\\ \text{premium}}}. \tag{11}$$

The shadow risk-free rate $\tilde{r}_{j,t}$ represents the theoretical return on a default-free and frictionless asset. The remaining components are premiums above this baseline. The default risk premium $I_{j,t}^b$ compensates investors for expected losses from default; it increases when issuer creditworthiness deteriorates.[12] The liquidity premium $L_{j,t}^b$ reflects compensation for trading costs; it rises when bid-ask spreads widen or trading volume declines. $R_{j,t}^{Sup}$ reflects private convenience ser-

[9] Derivations of the first-order conditions and bond prices are provided in Appendix A.

[10] Conceptually, a subset of policies could be represented as shifting the effective convenience of government bonds in the utility function; the model separates ρ as a constraint-based wedge to emphasise captive demand and to connect financial repression with domestic ownership rates in Section 2.2.

[11] See Appendix A for the log-linear approximation steps.

[12] Note that supranational bonds carry negligible default risk premium: $I_t^{\mathrm{Sup}} \approx 0$.

vices from holding supranational bonds. $R_{j,t}^{Gov}$ reflects private convenience services from holding government bonds and an active policy wedge: the shadow value of financial repression. Therefore, when the financial repression constraint binds ($\rho_{j,t} > 0$), government bonds can trade at a premium relative to default-free but otherwise similar assets denominated in the same currency.

2.2 Effectiveness of financial repression

A key question is: under what conditions can the minimum-holdings constraint bind? In other words, when is financial repression more effective at reducing government borrowing costs? To answer this question, I extend the model to include balance sheet-constrained foreign investors who can participate in the domestic government bond market. I argue that financial repression is more effective when the government bond market is dominated by domestic investors who cannot easily 'escape'. I call this the captive demand effect. On the other hand, the repression premium is harder to sustain when a large share of government debt is held by flighty foreign investors who can discipline the market price P_t^{Gov}.

Foreign investor problem. Let B_{t+1}^F denote the quantity of LC government bonds held by foreign investors at time t to be carried into $t+1$.[13] Foreign investors do not receive private convenience services from LC government bond holdings, and they are not subject to the financial repression constraint. In addition to the baseline liquidity frictions φ_t^{Gov}, foreign investors also incur a quadratic portfolio management cost, $(\psi_t/2)(B_{t+1}^F)^2$ where $\psi_t > 0$. This reduced-form cost can represent, for example, restrictive investment mandates or funding frictions that make it less attractive to take large positions in the domestic government bond market. Let M_{t+1}^F be the foreign investors' stochastic discount factor in LC units.[14] Foreign investors choose B_{t+1}^F to maximise the net payoff function

$$\max_{B_{t+1}^F} \; \underbrace{\mathbb{E}_t\big[M_{t+1}^F(1-\delta_{t+1})\big]B_{t+1}^F}_{\text{Next-period payoff}} - \underbrace{\left(P_t^{Gov} + \varphi_t^{Gov}\right)B_{t+1}^F}_{\text{Purchase cost}} - \underbrace{(\psi_t/2)(B_{t+1}^F)^2}_{\text{Portfolio adjustment cost}} . \tag{12}$$

The first-order condition is

$$P_t^{Gov} + \varphi_t^{Gov} + \psi_t B_{t+1}^F = \mathbb{E}_t\big[M_{t+1}^F(1-\delta_{t+1})\big]. \tag{13}$$

Define foreign investors' fundamental valuation net of transaction costs as

$$V_t^F \;\equiv\; \mathbb{E}_t\big[M_{t+1}^F(1-\delta_{t+1})\big] - \varphi_t^{Gov}. \tag{14}$$

Then we obtain a foreign demand that is linear in the market price of government bonds

$$B_{t+1}^F = \frac{V_t^F - P_t^{Gov}}{\psi_t} \iff P_t^{Gov} = V_t^F - \psi_t B_{t+1}^F. \tag{15}$$

[13] LC from the perspective of domestic investors. For example, Mexican government bonds denominated in pesos held by investors resident in Mexico. In this case, an example of B_{t+1}^F would be Mexican government bonds denominated in pesos held by investors that are non-residents of Mexico.

[14] One can interpret M_{t+1}^F as the foreign discount factor after any currency hedging strategy has been applied. The model only requires that foreign demand is downward sloping in the market price of the government bond.

Hence, a positive ψ_t makes foreign demand finite and downward sloping.

Government bond market clearing. Let $\bar{B}_t$ be the exogenously given total outstanding supply of government bonds at time t. Market clearing requires

$$B_{t+1}^{Gov} + B_{t+1}^{F} = \bar{B}_t, \tag{16}$$

where B_{t+1}^{Gov} is the domestic investor's holdings in equilibrium. Define the foreign ownership share in the government bond market

$$s_t^F \equiv \frac{B_{t+1}^F}{\bar{B}_t}, \quad \text{so that} \quad B_{t+1}^F = s_t^F \bar{B}_t. \tag{17}$$

Using (15)–(17), the equilibrium government bond price (market price) can be expressed as

$$P_t^{Gov} = V_t^F - \psi_t \, s_t^F \, \bar{B}_t. \tag{18}$$

From the domestic Euler equation (7), define the domestic investor's fundamental valuation of the government bond net of transaction costs

$$V_t^D \equiv \mathbb{E}_t[\tilde{M}_{t+1}(1-\delta_{t+1})] + \chi_t - \varphi_t^{Gov}. \tag{19}$$

Then (7) implies $P_t^{Gov} = V_t^D/(1-\rho_t)$, or equivalently

$$\rho_t = 1 - \frac{V_t^D}{P_t^{Gov}}. \tag{20}$$

Imposing the Kuhn-Tucker condition $\rho_t \geq 0$ and combining (18) and (20) yields a mapping from the foreign ownership share to the financial repression premium:

$$\rho_t = \max\left\{0,\ 1 - \frac{V_t^D}{P_t^{Gov}}\right\} = \max\left\{0,\ 1 - \frac{V_t^D}{V_t^F - \psi_t s_t^F \bar{B}_t}\right\}. \tag{21}$$

Hence,

$$\rho_t > 0 \quad \Longleftrightarrow \quad s_t^F < \frac{V_t^F - V_t^D}{\psi_t \, \bar{B}_t}, \tag{22}$$

and

$$\frac{\partial \rho_t}{\partial s_t^F} = -\frac{V_t^D \, \psi_t \, \bar{B}_t}{\left(V_t^F - \psi_t s_t^F \bar{B}_t\right)^2} < 0. \tag{23}$$

As such, there is a threshold foreign ownership rate below which the policy wedge is positive, and within this region a declining foreign ownership share implies a larger financial repression premium on domestic debt. Equations (22) and (23) formalise the idea that financial repression is more effective at reducing government borrowing costs when foreign participation in the LC sovereign debt market is limited.[15] Substituting (22) into the government yield formula (10)

[15] Assuming $V_t^F > V_t^D$ and $B_{t+1}^F > 0$. If $B_{t+1}^F = 0$ because foreigners are absent (or constrained from shorting), then $s_t^F = 0$ and the price is pinned down by domestic demand and supply; in that corner s_t^F alone is not sufficient to infer the exact magnitude of ρ_t without additional structure.

gives the following expression for government yields that explicitly incorporates the foreign ownership share:

$$y_t^{\text{Gov}} \approx \tilde{r}_t + \underbrace{\frac{\mathbb{E}_t[\tilde{M}_{t+1}\delta_{t+1}]}{\tilde{q}_t}}_{I_t^{\text{Gov}}} + \underbrace{\frac{\varphi_t^{\text{Gov}}}{\tilde{q}_t}}_{L_t^{\text{Gov}}} + \underbrace{\Big(- \frac{\chi_t}{\tilde{q}_t} - \rho_t(s_t^F)\Big)}_{R_t^{\text{Gov}}}. \tag{24}$$

Holding other components fixed, a decrease in foreign ownership share (i.e., an increase in domestic ownership share) of government bonds goes hand-in-hand with a rise in ρ_t and thereby lower yields.

2.3 Separating currency and non-currency components

Now that ρ is linked to an observable proxy s_t^F, a natural question is whether the decomposition in (24) is sufficient to empirically test the existence of a financial repression premium in EM LC government bonds. The answer is no: one cannot separately identify the financial repression premium ρ_t from government yields alone, because even under the restrictions of the model, financial repression does not only impact ρ but the shadow risk-free rate $\tilde{r}_t$ in the economy as well. Note that

$$\tilde{r}_t \equiv -\log(\mathbb{E}_t[\tilde{M}_{t+1}]) = -\log\Big(\beta\mathbb{E}_t\Big[\frac{u'(c_{t+1}) - \lambda_{t+1}\kappa_{t+1}}{u'(c_t)}\Big]\Big), \tag{25}$$

hence if the government increases the minimum-holdings requirement at time t, and the policy is expected to persist into the next period, the shadow risk-free rate at time t can increase. In that case, the overall direction of government bond prices will be ambiguous. Therefore, to test the sensitivity of government borrowing costs to financial repression, $\tilde{r}_t$ in (24) must be accounted for. However, since $\tilde{r}_t$ is unobserved, it is not possible to control for it in a regression. The rest of Section 2 argues that the DBP is an effective way to tackle this issue.

2.3.1 Domestic bond premium

Let $y_{j,t,\tau}^{\text{Gov}}$ and $y_{j,t,\tau}^{\text{Sup}}$ denote the zero-coupon yields at time t on a government bond and an AAA-rated supranational bond in currency j and tenor τ. The *Domestic Bond Premium* (DBP) is defined as

$$DBP_{j,t,\tau} \equiv y_{j,t,\tau}^{\text{Gov}} - y_{j,t,\tau}^{\text{Sup}}. \tag{26}$$

Using the decomposition (11), DBP can be written as

$$DBP_{j,t,\tau} \equiv \underbrace{(\tilde{r}_{j,t,\tau} - \tilde{r}_{j,t,\tau})}_{=0} + \underbrace{(I_{j,t,\tau}^{\text{Gov}} - I_{j,t,\tau}^{\text{Sup}})}_{\approx I_{j,t,\tau}^{\text{Gov}}} + \underbrace{(L_{j,t,\tau}^{\text{Gov}} - L_{j,t,\tau}^{\text{Sup}})}_{\widehat{L}_{j,t,\tau}^{GS}} + \underbrace{(R_{j,t,\tau}^{\text{Gov}} - R_{j,t,\tau}^{\text{Sup}})}_{\widehat{R}_{j,t,\tau}^{GS}}, \tag{27}$$

Note that since both bonds are in identical currency and tenor, the risk-free rates cancel out and we are left with the non-currency risk premia only. Dropping the tenor subscripts for ease of notation, one obtains

$$\begin{aligned} DBP_{j,t} &\approx I_{j,t}^{\text{Gov}} + \widehat{L}_{j,t}^{GS} + \widehat{R}_{j,t}^{GS} \\ &= \underbrace{\frac{\mathbb{E}_t[\tilde{M}_{t+1}\delta_{j,t+1}]}{\tilde{q}_{j,t}}}_{I^{\text{Gov}}} + \underbrace{\frac{\varphi_{j,t}^{\text{Gov}} - \varphi_{j,t}^{\text{Sup}}}{\tilde{q}_{j,t}}}_{\widehat{L}^{\text{GS}}} + \underbrace{\frac{\tilde{\chi}_{j,t} - \chi_{j,t}}{\tilde{q}_{j,t}} - \rho_{j,t}}_{\widehat{R}^{\text{GS}}} . \end{aligned} \tag{28}$$

Empirically, the default-risk and liquidity terms in (28) admit natural proxies (e.g., sovereign CDS spreads and bid–ask spreads), so the data can be used to estimate the DBP's sensitivity to these components. The residual term $\widehat{R}_{j,t}^{GS}$ is less directly observable: in the model it bundles a preference-based private convenience differential between government and supranational bonds $(\tilde{\chi}_{j,t} - \chi_{j,t})/\tilde{q}_{j,t}$, together with the captive demand effect $\rho_{j,t}$. Because both of these terms enter (28) with the same sign, we cannot separately identify the sensitivity of relative borrowing costs to private convenience services versus financial repression. To proceed, I impose the following identifying restriction.

Assumption 1. For each currency–tenor pair (j, τ), the *preference-based* private convenience differential between government and supranational bonds is time-invariant:

$$\frac{\tilde{\chi}_{j,t,\tau} - \chi_{j,t,\tau}}{\tilde{q}_{j,t,\tau}} = \bar{\xi}_{j,\tau} \qquad \text{for all } t. \tag{29}$$

Under *Assumption 1*, (28) becomes

$$DBP_{j,t,\tau} \approx I_{j,t,\tau}^{\text{Gov}} + \widehat{L}_{j,t,\tau}^{GS} + \bar{\xi}_{j,\tau} - \rho_{j,t}. \tag{30}$$

This means that the time-variation in DBP within a currency–tenor pair is driven by the financial repression wedge $\rho_{j,t}$ once we control for default risk and liquidity premia.

Assumption 1 is a restriction on *preference-based* private convenience services. Importantly, $\bar{\xi}_{j,\tau}$ and $\rho_{j,t}$ are not unrelated concepts. Governments shape the institutional environment in which bond markets operate, and sustained financial repression can gradually become embedded in market structure and investor behaviour: banks that are required to hold government bonds may develop internal infrastructure around them, repo markets deepen for government securities, and regulatory mandates can become organisational norms. Over time, what originated as active policy intervention can become a persistent feature of the institutional landscape.

The distinction between $\bar{\xi}_{j,\tau}$ and $\rho_{j,t}$ is therefore best understood as temporal: $\bar{\xi}_{j,\tau}$ captures the accumulated, persistent component of non-pecuniary benefits, whether these reflect private institutional features such as pledgability in interbank markets or the long-run effects of past regulatory policies. This accumulated component is slow-moving by nature. In contrast, the policy wedge $\rho_{j,t}$ captures active interventions such as regulatory capital treatment, eligibility criteria for central-bank facilities, or capital controls that can shift captive demand discretely over time. *Assumption 1* requires only that this preference-based non-pecuniary component is sufficiently stable to be absorbed by currency–tenor fixed effects. Section 5.3 relaxes this further by replacing currency–tenor fixed effects with currency–tenor–year fixed effects, allowing $\bar{\xi}_{j,\tau}$ to drift over time.

Equation (30) motivates an empirical approach that (i) controls for I^{Gov} and $\widehat{L}^{GS}$ using observable proxies, (ii) absorbs $\bar{\xi}_{j,\tau}$ with currency–tenor fixed effects, and (iii) evaluates the financial repression interpretation by relating the resulting residual wedge to domestic investor concentration in government bond markets, which was shown to be related to the equilibrium level of ρ in Section 2.2.

In summary, the theoretical framework delivers clear sign predictions that can be tested empirically. Holding other components fixed: (i) increases in sovereign default risk raise $I^{\text{Gov}}_{j,t,\tau}$ and should increase the DBP; (ii) deteriorating supranational liquidity raises L^{Sup} and reduces $\widehat{L}^{GS}$, lowering the DBP; and (iii) more intense financial repression would raise $\rho_{j,t}$ and compress the DBP.

Is the DBP the only measure that captures financial repression? To answer this question, I next connect DBP to the local currency credit spread (LCCS) of Du and Schreger (2016) and argue the latter might confound domestic policy-induced distortions in government bond markets as it also incorporates CIP deviations and the US Treasury premium.

2.3.2 Currency-hedged US Treasuries as a benchmark

Fix currency j and tenor τ. Let $f_{j,t,\tau}$ denote the forward premium for converting dollars into currency j at maturity τ (i.e., the cost of hedging the dollar payoff into currency j). The LCCS is defined as

$$LCCS_{j,\$,t,\tau} \;\equiv\; y^{Gov}_{j,t,\tau} - \left(y^{Gov}_{\$,t,\tau} + f_{j,t,\tau}\right), \tag{31}$$

where $y^{Gov}_{\$,t,\tau}$ is the U.S. Treasury zero-coupon yield. Then, $y^{Gov}_{\$,t,\tau} + f_{j,t,\tau}$ is the yield on a currency-hedged US Treasury, expressed in currency j units. Using the yield decomposition (11),

$$LCCS_{j,\$,t,\tau} \;\equiv\; \left(I^{Gov}_{j,t,\tau} - I^{Gov}_{\$,t,\tau}\right) + \left(L^{Gov}_{j,t,\tau} - L^{Gov}_{\$,t,\tau}\right) + \left(R^{Gov}_{j,t,\tau} - R^{Gov}_{\$,t,\tau}\right) - \; CIP_{j,t,\tau}, \tag{32}$$

where the CIP basis is

$$CIP_{j,t,\tau} \;\equiv\; \left(\tilde{r}_{\$,t,\tau} + f_{j,t,\tau}\right) - \tilde{r}_{j,t,\tau}. \tag{33}$$

When $CIP_{j,t,\tau} \approx 0$, LCCS indeed isolates the non-currency risk premia on EM LC government bonds.[16] However, Dao and Gourinchas (2025) document persistent CIP deviations in EMs since the early 2000s. Moreover, even if currency hedging markets are frictionless, the potentially large premium on US Treasuries due to their 'specialness' (e.g., Krishnamurthy and Vissing-Jorgensen, 2012; Du et al., 2018) may confound EM issuer-specific non-currency risk premia. For these reasons, I focus on DBP as the primary high-frequency measure to track financial repression. Nonetheless, I present a comparison of DBP and LCCS in Appendix B.2 for completeness.

3 Data

Supranational bond data. To estimate the DBP and assess its sensitivity to risk premium components derived in Section 2, I construct a novel dataset of supranational zero-coupon yield

[16] See Appendix B.1 for a simple extension of the model that demonstrates when the CIP condition can fail.

curves for 11 EM currencies. These yield curves are built from security-level data covering secondary market prices and characteristics of bonds issued by eight major supranational institutions sourced from Bloomberg.

The choice of currencies was dictated by data availability, as the time-series estimation of smooth and reliable yield curves requires overcoming a major challenge: having a sufficient number of secondary market quotes on each trading day. To address this challenge, I pool bonds across the following supranational institutions: the International Bank for Reconstruction and Development (IBRD), International Finance Corporation (IFC), European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), Asian Development Bank (ADB), Kreditanstalt für Wiederaufbau (KfW), Inter-American Development Bank (IADB), and the African Development Bank (AfDB). All eight maintain AAA long-term credit ratings throughout the sample period, ensuring that the resulting benchmark is homogeneous from a credit risk perspective. While no single issuer provides sufficient coverage across all currencies and maturities, pooling the eight institutions yields near-complete coverage of the supranational bond market in EM currencies.

The final dataset comprises over 4,000 supranational bonds across 11 EM currencies, covering issuance between 1997 and 2025.[17] Table 1 details the issuance patterns by currency and institution. No single issuer dominates across all currencies, confirming that pooling the eight institutions is necessary to construct a sufficiently deep default-free benchmark curve in each currency.

Table 1: Supranational bond issuance by currency and issuer (in USD million)

	EIB	IBRD	EBRD	IFC	ADB	KfW	IADB	AfDB	**Total**
TRY	23,725	6,931	19,044	7,455	7,216	6,263	1,538	1,826	**73,998**
ZAR	13,785	18,211	10,953	2,663	6,171	5,097	1,269	6,846	**64,997**
BRL	8,342	11,339	7,769	8,414	3,704	5,501	2,765	1,542	**49,374**
CNY	1,081	5,006	1,907	3,198	5,504	7,480	0	1,424	**25,601**
MXN	3,442	6,712	722	5,624	975	886	2,053	988	**21,402**
INR	737	5,829	5,364	3,056	1,462	32	3,882	326	**20,687**
PLN	14,625	1,129	697	7	940	802	0	0	**18,199**
RUB	2,262	3,236	3,577	2,737	468	691	48	455	**13,476**
IDR	2,234	1,415	5,040	131	158	133	3,051	229	**12,391**
HUF	2,059	97	241	292	263	386	0	0	**3,338**
COP	0	1,149	118	591	995	0	74	0	**2,927**
Tot.	**72,293**	**61,055**	**55,432**	**34,168**	**27,856**	**27,271**	**14,679**	**13,637**	**306,392**

Notes: Entries report the aggregate amount issued in each currency–issuer pair. The final sample contains 4,017 unique supranational bonds issued between 1997 and 2025 across 11 EM currencies. BRL = Brazilian real; CNY = Chinese renminbi; COP = Colombian peso; HUF = Hungarian forint; IDR = Indonesian rupiah; INR = Indian rupee; MXN = Mexican peso; PLN = Polish zloty; RUB = Russian rouble; TRY = Turkish lira; ZAR = South African rand.

Supranational yield curves. Since most supranational bonds are coupon-bearing instruments with varying maturities, computing the DBP requires extracting zero-coupon yields that are comparable to government benchmark rates at fixed tenors. I construct these supranational

[17] However, the analysis focuses on the period 2007–2025.

zero-coupon yield curves via a Dynamic Nelson-Siegel term-structure model (see Diebold and Li, 2006; Diebold et al., 2006). The original Nelson and Siegel (1987) model parsimoniously represents the term structure of interest rates through three latent factors interpreted as *level*, *slope*, *curvature*; this parsimony is crucial when only a limited number of supranational bonds trade on any given day. The Dynamic Nelson-Siegel model is well-suited to handle sparse, unbalanced bond price panels and maps naturally into a non-linear state-space system, which I estimate by an extended Kalman filter. The technical details of the estimation procedure are presented in Appendix D.

Government yield curves. Unlike supranational bonds in EM currencies, government bond yield curves are readily available from commercial data providers. For each currency, I obtain the government zero-coupon yields at 1, 3, 5, and 10-year tenors directly from Bloomberg. To ensure a complete time-series for the entire sample period, I impute missing observations using equivalent series from Refinitiv. Further details on data sources are presented in Appendix C.

4 Stylised facts

Table 2 presents summary statistics for government and supranational yields as well as the DBP for 11 EM currencies in my sample. Across currencies, supranational and government zero-coupon yields are broadly similar in level, but the DBP widens as maturity lengthens. Governments typically yield below supranationals at shorter maturities (median DBP of -28 bp at the one-year tenor), but above them at longer maturities (median $+32$ bp at the 10-year tenor). Standard deviations range from 1.7 to 3.3 percentage points, and at the short-end of the yield curve the DBP can vary from $+5$ to -41 percentage points. Such extreme variation occurs primarily due to episodes of severe market stress in Russia and Turkey, where increases in captive domestic demand contributed to highly negative DBPs.[18]

Figure 1 plots the cross-currency averages of the EM LC government–US Treasury spread and the DBP over time. Overall, three patterns emerge. First, currency risk, reflected by the gap between the two lines, accounts for most of the variation in EM LC government–US Treasury spread throughout the sample period. The persistence of this pattern underscores the fact that investors primarily demand compensation for currency depreciation risk rather than nominal repayment risk when holding EM LC government debt.

Second, the DBP exhibits a secular decline. At five-year tenor, it falls from around 150 bp in 2012 to near zero as of 2025. This compression coincided with several positive developments in emerging markets: improvements in monetary and fiscal policy conduct, the inclusion of EM LC bonds in global fixed-income indices such as the J.P. Morgan GBI-EM, and the rapid growth of domestic institutional investor bases. The declining trend suggests that investors may increasingly be viewing EM LC sovereign debt as a legitimate asset class with improving fundamentals (e.g., see Arslanalp and Tsuda, 2014; Du and Schreger, 2022b).

Third, the DBP exhibits stability during stress episodes such as the GFC, Covid-19 crisis, and the post-pandemic surge in inflation. While EM LC yield spreads over US Treasuries widen

[18] Section 5.4 examines these episodes in detail.

Table 2: Summary statistics on EM LC zero-coupon yields and the DBP

		Tenor			
		1-year	3-year	5-year	10-year
Median	Supranational	6.853	6.888	7.014	7.250
	Government	6.590	6.947	7.263	7.644
	DBP	−0.284	−0.003	0.123	0.321
Std. dev.	Supranational	6.700	5.326	4.500	3.662
	Government	5.348	4.538	4.021	3.354
	DBP	3.260	2.555	2.118	1.723
Minimum	Supranational	0.101	0.110	0.433	−0.103
	Government	−0.024	0.107	0.429	1.178
	DBP	−40.500	−33.006	−26.127	−19.630
Maximum	Supranational	57.261	49.070	41.297	32.168
	Government	50.621	43.018	34.753	25.784
	DBP	4.911	5.529	6.133	7.836

Notes: Yields in percent, DBP in percentage points. Medians are reported to mitigate the influence of extreme observations in Russia and Turkey. At weekly frequency. Sample includes data between 2007-2025.

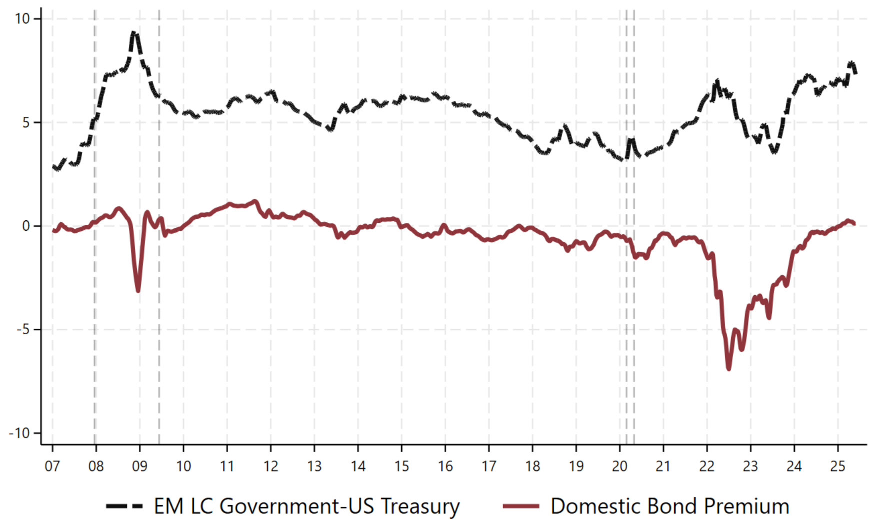
dramatically during these periods, the DBP remains below two percentage points or even turns negative. These patterns are particularly pronounced at shorter maturities and are robust to excluding the outliers Russia and Turkey. Why would the DBP not rise when the EM LC government–US Treasury spread widens? Several explanations merit consideration.

One explanation is that much of the default risk on LC government bonds manifests through inflation and the resulting currency depreciation rather than outright default (e.g., see Reinhart and Rogoff, 2011). Since both government and supranational bonds face identical FX exposure, the DBP does not capture this important channel of sovereign risk by construction. This could explain the relative stability of DBPs.

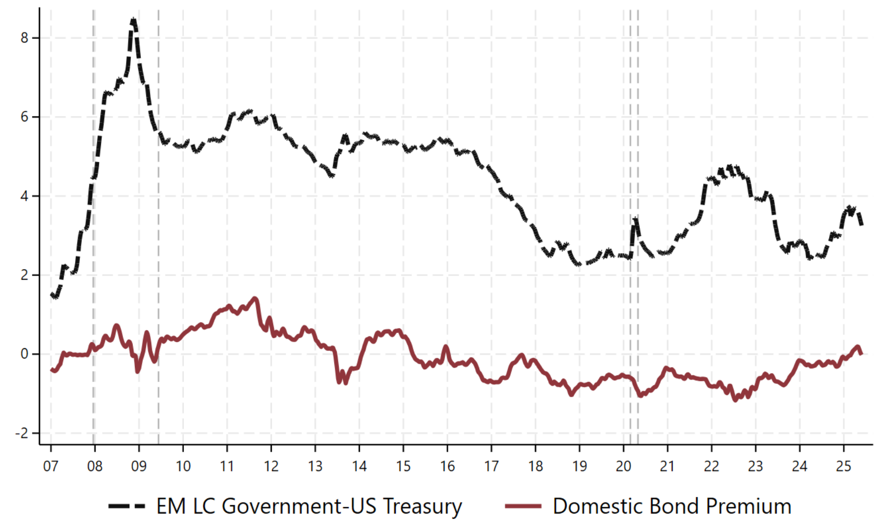
Alternatively, central banks typically adopt a counter-cyclical monetary policy stance, lowering rates to stimulate economic activity and reduce borrowing costs during crises (De Leo et al., 2022). However, this is unlikely to explain the DBP compression because both government and supranational bonds are denominated in local currency. Rate cuts should therefore affect both bonds equally, leaving the DBP unchanged.

A third possibility is that secondary market liquidity for supranational bonds could deteriorate during crises, compressing the DBP through higher supranational yields. This channel likely plays some role: supranational liquidity deteriorates when sovereign credit risk rises, and this illiquidity is associated with lower DBPs. However, two considerations suggest this is only a partial explanation. First, as I show in Section 5, supranational illiquidity accounts for a modest amount of DBP variation once other factors are controlled for. Second, government bond liquidity is likely to deteriorate during crises, limiting any differential effect on the spread.

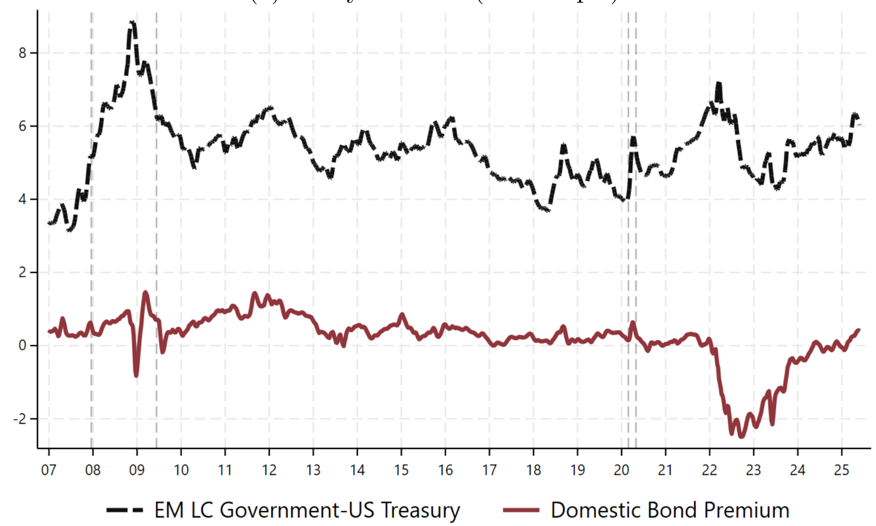
Crucially, government and supranational bonds may exhibit different price dynamics, especially during stress episodes, due to differences in their investor bases. While supranational bond yields spike during stress periods, government bonds maintain stable or even declining yields due to strong domestic demand. This pattern may reflect financial repression, which compels



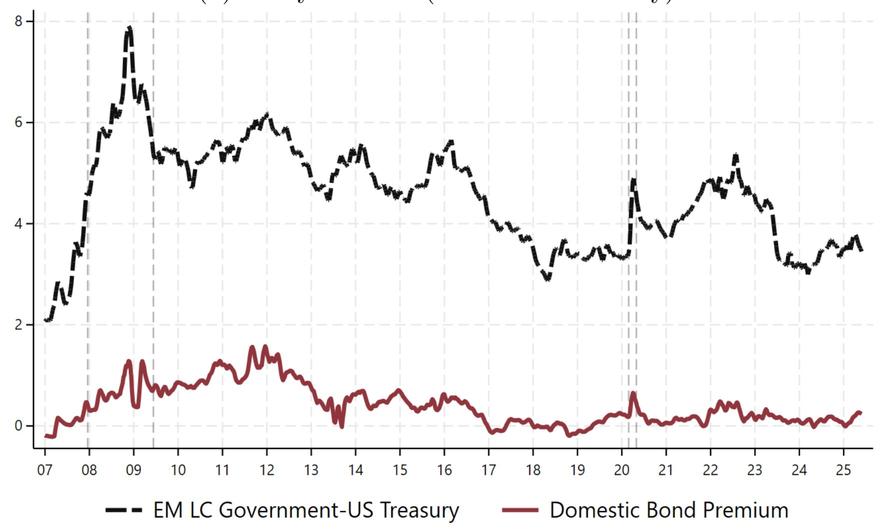
(a) One-year tenor (full sample)



(b) One-year tenor (ex-Russia & Turkey)



(c) Five-year tenor (full sample)



(d) Five-year tenor (ex-Russia & Turkey)

Figure 1: EM LC government–US Treasury spread and the DBP: cross-country averages at one and five-year tenors
Notes: In percentage points. At weekly frequency. Plots show four-week rolling averages. Full sample: BRL, CNY, COP, HUF, IDR, INR, MXN, PLN, RUB, TRY, ZAR.

domestic institutions to hold LC government debt regardless of risk-return considerations. As I show in Section 5, after controlling for supranational illiquidity and sovereign default risk, lower DBPs are associated with increases in domestic ownership concentration of LC government bonds, consistent with the predictions of my model in Section 2.2.

The ability of EM governments to borrow near or below default-free rates raises a critical question for debt sustainability analysis: does this reflect genuine improvements in creditworthiness, or captive demand created through regulatory pressure on domestic institutions? The next section disentangles these explanations by estimating the sensitivity of DBP to sovereign default risk and financial repression, controlling for supranational illiquidity.

5 What explains the domestic bond premium?

5.1 Global versus local factors

If financial repression is an important factor in EM LC government bond pricing, one would expect the DBP variation to be predominantly country-specific, as repressive policies respond to domestic fiscal pressures. To test this prediction, I decompose the overall DBP variance into components attributable to persistent country characteristics, common global shocks, and idiosyncratic local factors. The decomposition serves an additional purpose; by revealing the importance of global factors, it indicates whether time fixed effects should be included in panel regressions.[19]

Table 3: Variance decomposition of the domestic bond premium

Tenor	**Between-variance**	**Within-variance**	
		Local factors	Global factors
1-year	11.73%	69.32%	18.95%
3-year	11.59%	72.22%	16.19%
5-year	14.17%	72.84%	12.99%
10-year	20.61%	68.68%	10.71%

Notes: Data aggregated to monthly frequency. Sample period between 2007-2025.

The decompositions in Table 3 show that, at each maturity length, around 70% of the overall variance in DBP can be explained by idiosyncratic and time-varying (i.e., local) factors. Meanwhile, common shocks that hit all markets simultaneously (global factors) account for only 10-19% of the variance. The dominance of idiosyncratic factors contrasts with Longstaff et al. (2011) who document a large common component in sovereign CDS spreads across countries.

The stark difference reflects DBP's ability to exclude currency risk premiums, which are highly correlated across EMs. Indeed, a principal component (PC) analysis on EM exchange rates in my sample vis-à-vis the US dollar reveals that the first PC explains 81% of the total variance in exchange rate movements. This large common component suggests limited risk-sharing across EM currencies.

Furthermore, persistent cross-country differences (between variance) explain at most 21% of the DBP variance, suggesting that time-varying factors rather than fixed country characteristics

[19] For details on the variance decomposition methodology, see Appendix E.

account for most of the variation in government borrowing costs relative to default-free benchmarks. Overall, these patterns are consistent with local macro-financial conditions or domestic policies, including financial repression, driving the yield differentials.[20]

The percentages in Table 3 also provide upper bounds on what different sets of covariates can achieve: global time-varying factors *alone* cannot explain more than 18% of the DBP variation, and fixed cross-sectional controls are capped at around 20%. As such, my empirical strategy relies on currency-tenor fixed effects and time-varying controls, with an emphasis on understanding the contribution of time-varying variables that proxy for the DBP components.

5.2 Testing the equilibrium predictions of the framework

This section tests the predictions of the asset pricing framework presented in Section 2 by assessing the sensitivity of DBP to each risk premium component. I map the model-implied decomposition (30) to a panel regression that controls for sovereign default risk with CDS spreads[21], the relative liquidity premium $\widehat{L}^{GS}_{j,t,\tau}$ with government and supranational bond bid-ask spreads, and absorbs the time-invariant private convenience differential $\bar{\xi}_{j,\tau}$ with currency–tenor fixed effects.

The theoretical framework predicts that the financial repression wedge $\rho_{j,t}$ increases with the domestic ownership share of government bonds, as a higher concentration of captive domestic investors allows the government to sustain below-market borrowing costs. I therefore use the domestic ownership share as a proxy for the intensity of financial repression.

However, financial repression need not operate solely through captive domestic demand. Inflationary monetary policy accompanied by regulatory policies that trap domestic savers can also compress borrowing costs, so low real policy rates may themselves signal repression (Reinhart and Sbrancia, 2015; Kose et al., 2022). I therefore include the real policy rate as an additional control in the baseline regression. I measure it using central bank policy rates rather than government bond yields for two reasons: first, government bond yields are an input to the DBP, so using them would introduce mechanical correlation; second, central bank rates better reflect the intended monetary policy stance, whereas government bond yields may also incorporate factors such as domestic financial intermediaries' external funding costs (e.g., De Leo et al., 2022). The resulting specification is:

$$\begin{aligned} DBP_{j,t,\tau} = \alpha + \beta_1 CDS_{j,t} + \beta_2 BidAsk^{Gov}_{j,t,\tau} + \beta_3 BidAsk^{Sup}_{j,t,\tau} + \beta_4 Dom.\ Holdings_{j,t-1} \\ + \beta_5 Real\ Policy\ Rate_{j,t-1} + \gamma' X_{j,t} + \phi_{j,\tau} + \nu_{j,t,\tau}, \end{aligned} \tag{34}$$

where $Dom.\ Holdings_{j,t-1}$ is the lagged level of the domestic ownership share of LC government bonds.[22] $Real\ Policy\ Rate_{j,t-1}$ captures the lagged real policy rate.[23] Based on the decomposi-

[20]However, the decomposition should be interpreted conservatively, as global shocks may interact with local economic conditions and time-varying factors can eventually influence persistent country characteristics.

[21]I use the five-year sovereign CDS spread, the most liquid contract with the broadest cross-country coverage. Section 5.3 checks robustness to using tenor-matched CDS-implied default probabilities.

[22]The model in Section 2.2 predicts that the level of domestic ownership determines the equilibrium repression wedge $\rho_{j,t}$, which motivates the use of levels rather than first differences. Because the specification includes currency–tenor fixed effects $\phi_{j,\tau}$, the coefficient β_4 is identified from within-country variation in the domestic ownership share over time.

[23]While these regressions are descriptive, I use one-period lags to mitigate simultaneity concerns. Central

tion (30), I expect $\beta_4 < 0$ and $\beta_5 > 0$: higher domestic ownership of LC government bonds and lower real policy rates should coincide with a lower DBP. Moreover, higher sovereign default risk should raise the DBP ($\beta_1 > 0$) while deteriorating supranational liquidity should lower it ($\beta_3 < 0$).

The estimation sample includes all 11 EM currencies but excludes Russian rouble observations from February 2022 and Turkish lira observations from May 2022 onward, to ensure that the baseline estimates are not driven by extreme market segmentation episodes in which the DBP reached −30 percentage points or below. These episodes are examined separately as case studies in Section 5.4. All regressors are standardised at the currency–tenor level to facilitate comparison across variables with different units; the resulting coefficients measure the change in DBP (in percentage points) associated with a one-standard-deviation increase in each regressor. Following Du and Schreger (2016) and Dao and Gourinchas (2025), I estimate the regression equation using an OLS fixed-effects estimator with Driscoll and Kraay (1998) heteroskedasticity and autocorrelation-adjusted standard errors.[24]

Table 4 reports the results. The financial repression proxies are statistically significant and stable across all specifications. The domestic holdings coefficient is negative and significant at all maturities: it ranges from −0.15 to −0.23 at the one-year tenor and from −0.19 to −0.26 at longer maturities, indicating that a one-standard-deviation increase in the domestic ownership share is associated with a 15–26 basis point decline in the DBP. The real policy rate coefficient is positive and significant throughout, ranging from 0.30 to 0.32 at the one-year tenor and from 0.17 to 0.19 at longer maturities. The stability of the domestic holdings coefficient when the real policy rate is added suggests that these two proxies capture distinct but related channels of government policy: generating inelastic domestic demand supplemented with accommodative monetary policy.

Sovereign default risk exhibits a sharp maturity divide. At longer maturities, the CDS coefficient is positive, large, and significant across all specifications (0.22–0.24), indicating that a one-standard-deviation increase in sovereign default risk is associated with a 22–24 basis point rise in DBP. At the one-year tenor, by contrast, the CDS coefficient is statistically insignificant throughout, consistent with the low probability of outright nominal default over a one-year horizon for most EMs in the sample.

Supranational illiquidity retains its expected negative sign and is significant across all specifications at both maturities, with a stronger effect at the one-year tenor (−0.23 to −0.39) than at longer maturities (−0.13 to −0.18). Government bond illiquidity is insignificant at short maturities; at longer maturities it is weakly positive in some specifications but attenuates in the full specification, suggesting it partly captures omitted global factors.

The coefficients also reveal a term structure of financial repression, though the pattern differs across channels. The real policy rate sensitivity is roughly twice as large at the one-year tenor as at longer maturities, consistent with central bank policy rates anchoring the short end of the yield curve more strongly than long-term rates, which average over expected future

banks may adjust policy rates in response to widening yield spreads, and portfolio rebalancing between domestic and foreign investors occurs gradually. Results are robust to using current values or alternative lag structures.

[24] These standard errors are more appropriate than currency-level clustering when there are relatively few currencies (small N) and a long sample period (large T).

Table 4: Domestic bond premium, sovereign default risk, and financial repression

	$DBP_{j,t,\tau}$							
	1−year				> 1−year			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$CDS_{j,t}$	−0.016	−0.039	−0.040	−0.047	0.239***	0.234***	0.233***	0.220***
	(0.127)	(0.129)	(0.140)	(0.127)	(0.037)	(0.038)	(0.039)	(0.049)
$BidAsk^{Gov}_{j,t,\tau}$	−0.054	−0.016	−0.053	−0.065	0.025	0.053**	0.073**	0.027
	(0.054)	(0.054)	(0.050)	(0.043)	(0.027)	(0.026)	(0.031)	(0.030)
$BidAsk^{Sup}_{j,t,\tau}$	−0.393***	−0.380***	−0.336***	−0.234***	−0.138***	−0.127***	−0.178***	−0.158***
	(0.085)	(0.081)	(0.081)	(0.069)	(0.046)	(0.044)	(0.049)	(0.051)
$Dom.\ Holdings_{j,t-1}$	−0.234***	−0.190***	−0.148**	−0.175**	−0.250***	−0.224***	−0.262***	−0.192***
	(0.085)	(0.070)	(0.062)	(0.070)	(0.058)	(0.052)	(0.059)	(0.055)
$Real\ Policy\ Rate_{j,t-1}$		0.314***	0.301***	0.320***		0.168***	0.172***	0.186***
		(0.078)	(0.073)	(0.077)		(0.034)	(0.036)	(0.047)
Constant	−0.355***	−0.338***	−0.304***	−0.231***	0.258***	0.273***	0.236***	0.236***
	(0.101)	(0.087)	(0.076)	(0.058)	(0.040)	(0.040)	(0.050)	(0.048)
Domestic controls	No	No	Yes	Yes	No	No	Yes	Yes
Global controls	No	No	No	Yes	No	No	No	Yes
Observations	1,503	1,490	1,483	1,483	4,664	4,636	4,613	4,613
Within-R^2	0.112	0.169	0.194	0.304	0.100	0.123	0.150	0.184

Notes: Sample excludes Russian rouble observations from February 2022 and Turkish lira observations from May 2022 onward. All regressors are standardised at the currency–tenor level. $Dom.\ Holdings_{j,t-1}$ is the lagged level of the domestic ownership share of LC government bonds. $BidAsk^{Gov}_{j,t,\tau}$ and $BidAsk^{Sup}_{j,t,\tau}$ are bid–ask spreads for government and supranational bonds. Domestic controls: Debt/GDP, FX volatility, equity index returns. Global controls: VIX, broad dollar index (EM), US Treasury yield. All specifications include currency–tenor fixed effects. Driscoll and Kraay (1998) heteroskedasticity and autocorrelation robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

policy stances. The domestic holdings coefficient, by contrast, does not exhibit a clear maturity gradient and is, if anything, slightly larger at longer maturities. The remainder of this section examines the robustness of these findings.

5.3 Robustness and alternative specifications

A potential concern with the baseline specification is that the preference-based private convenience differential $\bar{\xi}_{j,\tau}$ may not remain constant over time, as sustained policy interventions gradually reshape market structure and investor behaviour. If $\bar{\xi}_{j,\tau}$ drifts, currency–tenor fixed effects may be insufficient and the independent variables could spuriously capture this slow-moving variation.

To address this concern, I replace currency–tenor fixed effects with currency-tenor-year fixed effects, which allow the convenience differential to shift each year. This absorbs all common annual variation within each currency–tenor pair, including any slow-moving drift in the convenience differential, so that the financial repression proxies can only be significant if they explain within-year, within-currency-tenor movements in the DBP due to discrete changes in government policy.

Table 5 reports the results. Columns (1) and (3) use the five-year CDS spread as the default risk proxy, while columns (2) and (4) replace it with tenor-matched CDS-implied default probabilities as a robustness check. Both specifications augment the baseline with an interaction between the default risk measure and the lagged domestic ownership share, which tests whether the sensitivity of the DBP to default risk depends on the composition of the sovereign investor base.

The domestic holdings coefficient remains negative and significant: -0.35 at the one-year tenor and -0.22 at longer maturities in the CDS specification, with comparable magnitudes when tenor-matched default probabilities are used instead. The real policy rate retains its expected positive sign, though it attenuates at longer maturities once year-level variation is absorbed.

The interaction between default risk and lagged domestic holdings is negative and significant across specifications, consistent with the model's prediction that captive domestic demand insulates government borrowing costs from deteriorating creditworthiness. At mean domestic ownership, a one-standard-deviation increase in CDS spreads is associated with an increase in the long-end DBP by 32 basis points; at one standard deviation above the mean, this effect falls to approximately 19 basis points. Taken together, the survival of the financial repression proxies under this demanding specification and the significant interaction between default risk and domestic ownership reinforce the interpretation that the DBP helps track policy-driven distortions in government borrowing costs.

Another concern is that the domestic ownership share may partly reflect voluntary home bias or investor portfolio choices that move endogenously with yields, rather than regulatory coercion. To mitigate this concern, Table 6 replaces it with the lagged average reserve requirement ratio from Federico et al. (2014). Higher reserve requirements reduce banks' freely allocable funds, effectively increasing captive demand for safe LC assets, primarily government bonds. Because reserve requirements are a regulatory instrument rather than a market outcome, and are lagged one period, they are less susceptible to both reverse causality and the home bias interpretation.[25]

Table 5: Robustness: currency–tenor–year fixed effects and default risk interactions

	$DBP_{j,t,\tau}$			
	1-year		> 1-year	
	(1)	(2)	(3)	(4)
$CDS_{j,t}$	−0.075		0.322***	
	(0.099)		(0.105)	
$CDS_{j,t} \times Dom.\ Holdings_{j,t-1}$	−0.133*		−0.129***	
	(0.078)		(0.026)	
$Default\ Prob._{j,t,\tau}$		−0.060		0.148***
		(0.064)		(0.051)
$Default\ Prob._{j,t,\tau} \times Dom.\ Holdings_{j,t-1}$		−0.136**		−0.111***
		(0.059)		(0.034)
$BidAsk^{Gov}_{j,t,\tau}$	−0.044	−0.035	0.034	0.009
	(0.028)	(0.026)	(0.025)	(0.023)
$BidAsk^{Sup}_{j,t,\tau}$	−0.077*	−0.061	−0.028	−0.024
	(0.046)	(0.047)	(0.024)	(0.025)
$Dom.\ Holdings_{j,t-1}$	−0.348***	−0.299*	−0.224***	−0.198***
	(0.129)	(0.171)	(0.074)	(0.071)
$Real\ Policy\ Rate_{j,t-1}$	0.120**	0.135**	0.055	0.062*
	(0.057)	(0.052)	(0.034)	(0.032)
Constant	−0.942***	−0.485***	0.147***	−0.007
	(0.201)	(0.136)	(0.036)	(0.049)
Domestic controls	Yes	Yes	Yes	Yes
Global controls	Yes	Yes	Yes	Yes
Currency×tenor×year FE	Yes	Yes	Yes	Yes
Observations	1,483	1,240	4,613	4,159
Within-R^2	0.801	0.796	0.746	0.798

Notes: Sample excludes RUB observations from February 2022 and TRY observations from May 2022 onward. All regressors are standardised at the currency–tenor level. $Default\ Prob._{j,t,\tau}$ is the tenor-matched default probability implied by the sovereign CDS. Domestic controls: Debt/GDP, FX volatility, equity index returns. Global controls: VIX, broad dollar index (EM), US Treasury yield. Driscoll and Kraay (1998) heteroskedasticity and autocorrelation robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Nevertheless, these panel regressions establish correlations rather than causal effects. The cases of Russia and Turkey, examined next, illustrate how discrete policy events can, in future work, serve as quasi-natural experiments for pushing toward causal identification.

[25]Naturally, the decision to change reserve requirements is itself endogenous to macroeconomic conditions. To the extent that reserve requirements respond to the same economic conditions that affect the DBP, the empirical results should still be interpreted as correlational.

Table 6: Reserve requirements and the domestic bond premium

	$DBP_{j,t,\tau}$			
	1−year		> 1−year	
	(1)	(2)	(3)	(4)
$Default\ Prob._{j,t,\tau}$	0.053	0.089	0.170**	0.216**
	(0.106)	(0.165)	(0.065)	(0.106)
$Reserve\ Requirement_{j,t-1}$	−0.229**	−0.297***	−0.240***	−0.291***
	(0.088)	(0.092)	(0.055)	(0.066)
$Real\ Policy\ Rate_{j,t-1}$	0.260**	0.227**	0.311***	0.328***
	(0.108)	(0.113)	(0.071)	(0.076)
Constant	−0.118	1.341***	0.402***	0.832**
	(0.117)	(0.138)	(0.066)	(0.395)
Liquidity controls	Yes	Yes	Yes	Yes
Domestic controls	Yes	Yes	Yes	Yes
Global controls	Yes	No	Yes	No
Time FE	No	Yes	No	Yes
Observations	275	275	774	774
Within-R^2	0.447	0.575	0.301	0.389

Notes: All regressors are standardised at the currency–tenor level. $Reserve\ Requirement_{j,t-1}$ is the lag of average reserve requirement ratio from Federico et al. (2014). $Default\ Prob._{j,t,\tau}$ is the tenor-matched CDS-implied default probability. Liquidity controls: gov and supra bid-ask spreads. Domestic controls: Debt/GDP, FX volatility, equity index returns. Global controls: VIX, broad dollar index (EM), US Treasury yield. Data at quarterly frequency. All specifications include currency–tenor fixed effects. Driscoll and Kraay (1998) heteroskedasticity and autocorrelation robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

5.4 Case studies

5.4.1 Turkey

Figure 2 shows the evolution of Turkish lira-denominated five-year government and supranational yields from 2007 to 2025. After the Global Financial Crisis and before the 2018 Turkish lira crisis (red vertical line), the five-year sovereign zero-coupon bond yield (solid line) tracked the supranational one (dotted line) closely, reflecting a near-zero DBP.

Between 2019 and 2022, government yields gradually diverged below supranational yields, with the DBP turning negative and reaching approximately −5 percentage points by early 2022. This period was characterised by a sequence of policies designed to reduce dollarisation and raise domestic demand for LC government bonds: raising required reserve ratios for foreign currency deposits, imposing limits on banks' swap transactions with foreign counterparties, and applying moral suasion to reduce foreign currency lending – all measures that pushed domestic institutions toward lira assets, with government bonds being the primary option. In 2021, authorities introduced exchange rate-protected lira deposit accounts, which put significant strain on government finances.[26] Meanwhile, the central bank faced increasing political pressure; between

[26]These foreign currency-linked accounts were guaranteed by the state and promised to pay the losses incurred on interest income due to exchange rate depreciations.

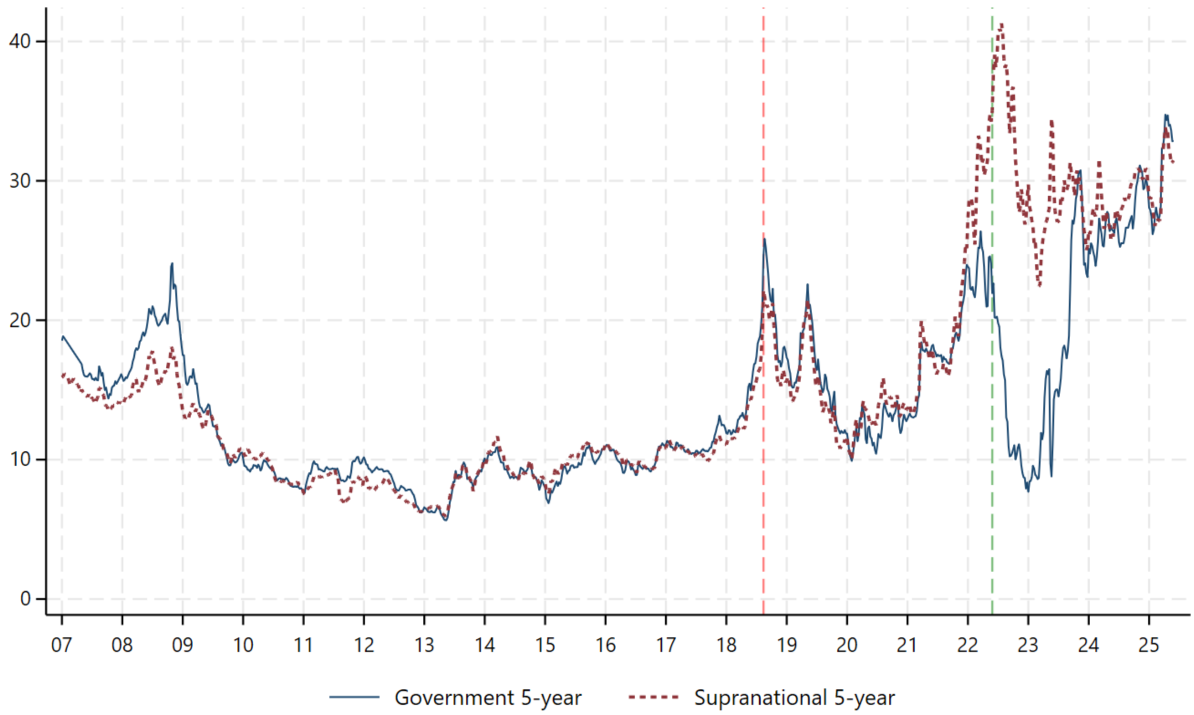


Figure 2: Turkish lira: government and supranational five-year yields (percent)

2019 and 2023, the governor was replaced four times and policy rates were kept artificially low despite rising inflation (e.g., see Gürkaynak et al., 2023). During the same period, foreign participation in the LC government bond market declined by 15 percentage points, increasing the concentration of domestic holders.

These measures were followed by the most aggressive intervention: the June 2022 announcement (green vertical line) of the Securities Maintenance Practice (SMP).[27] This regulatory measure mandated banks to hold long-term LC government bonds in blocked accounts at the central bank, with requirements that linked their operational flexibility, including loan growth and interest rates, to their holdings of these securities (Celebi et al., 2025). Between mid-2022 and mid-2023, five-year government yields declined by 20 percentage points despite 80% annual inflation and multiple credit rating downgrades. Following the gradual easing of the SMP requirements and monetary tightening after June 2023, yields reversed sharply, with government and supranational yields once again converging by late 2024.[28]

Figure 3 plots the government and supranational yields around the official SMP announcement. Prior to June 2022, both yields rose, though supranational yields increased more steeply (from 17% to 34%) than government yields (from 18% to 24%), likely reflecting the asymmetric impact of policy interventions described above. The June 2022 announcement marks a significant divergence: government yields plummeted from approximately 24% to below 10% over the following months, while supranational yields spiked above 40% before gradually declining

[27] The SMP was informally announced at the May 26, 2022 Monetary Policy Committee meeting, with detailed requirements published in the official gazette on June 10, 2022. The first maintenance period took effect in July 2022.

[28] Beginning June 22, 2023, authorities initiated a gradual simplification of the SMP, reducing maintenance ratios over several months before fully terminating the policy on May 9, 2024 (Celebi et al., 2025).

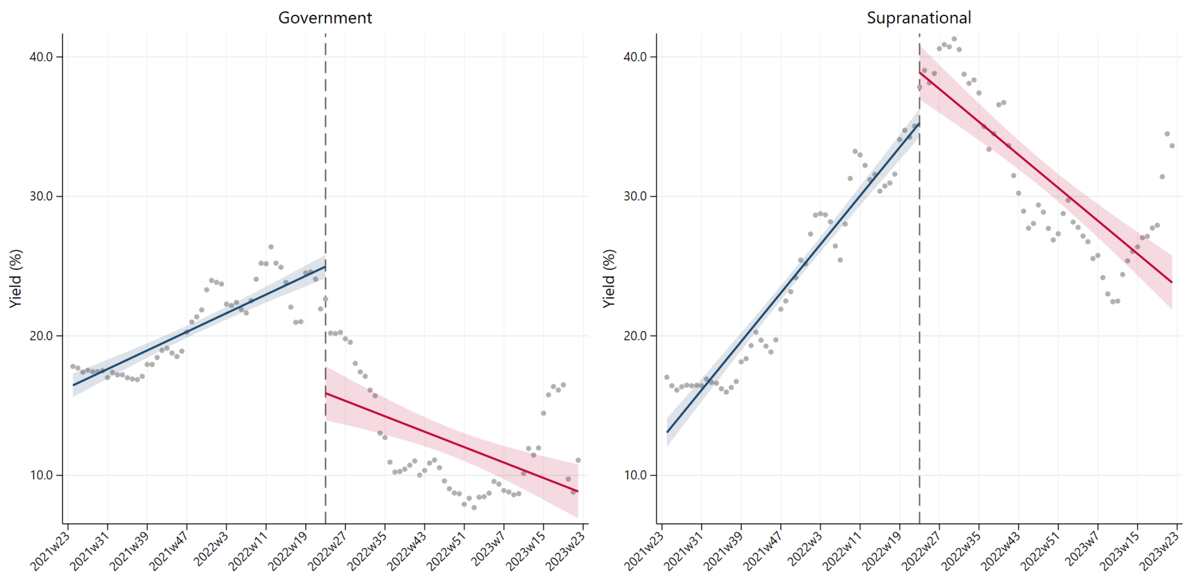


Figure 3: Five-year Turkish lira zero-coupon yields around the SMP announcement
Notes: The vertical dashed line indicates the week of June 10th, 2022.

to around 30%.

While both yields co-move after the initial shock, they remain separated by approximately 20 percentage points through late 2023. This persistent gap coincides with the period when the SMP was in effect, suggesting the policy created additional captive domestic demand that helped decouple government yields from macroeconomic fundamentals. While concurrent monetary easing and deteriorating supranational liquidity prevent attributing the entire divergence to the SMP, these patterns are consistent with financial repression suppressing government borrowing costs below default-free benchmarks.

5.4.2 Russia

Figure 4 plots the Russian rouble-denominated five-year government and supranational yields around the beginning of the Russia-Ukraine war in February 2022. Prior to February 2022, both yields moved in tandem with government bonds trading slightly above supranational bonds (around 8-9% versus 7-8%, respectively). Following the war, government yields spiked to 20% before rapidly stabilising around 10%, while supranational yields surged to 30% and remained highly volatile around 15%, reversing the DBP from positive to deeply negative.

The initial government yield spike coincided with foreign investors exiting Russian LC government bonds (OFZs) – the nominal value of foreign holdings fell by 53% between January 2022 and June 2023. However, prices quickly stabilised as domestic financial institutions absorbed the excess supply in the secondary market. During this period, domestic ownership share of OFZs reached 93%.[29] With international sanctions blocking access to global financial markets and capital controls imposed by the government restricting currency conversion, Russian financial institutions were pushed towards rouble-denominated assets, government bonds

[29]Based on external debt statistics published by the Central Bank of Russia.

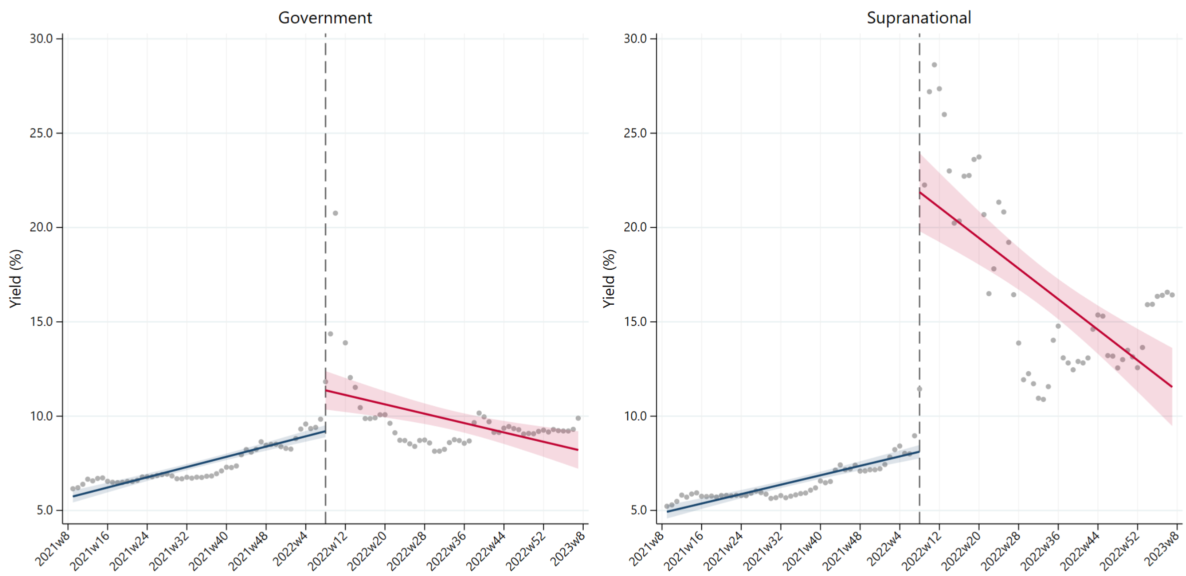


Figure 4: Five-year Russian rouble zero-coupon yields around the Russia-Ukraine war
Notes: The vertical dashed line indicates February 22nd, 2022.

being the primary option.[30] Meanwhile, foreign investors largely withdrew from unsanctioned rouble-denominated supranational bonds amid broader sanctions on Russian assets. Russian investors could not trade these bonds either: sanctions severed their access to international clearing networks many of these bonds settled.[31]

The Russian case shows how an exogenous geopolitical shock can create captive demand for LC government debt. While supranational bonds languished without buyers, OFZs benefited from domestic institutions having fewer alternative investment options. The resulting negative DBP quantifies how this shock transformed domestic financial institutions into forced buyers of government debt.[32] Together, the Turkey and Russia examples illustrate how powerful financial repression can be in decoupling government borrowing costs from creditworthiness.

6 Concluding remarks

This paper uses the Domestic Bond Premium to examine whether financial repression is systematically reflected in EM sovereign borrowing costs. Because government and supranational bonds share identical currency exposure, the DBP differences out the risk-free rate and isolates sovereign default risk, relative liquidity, and financial repression components. Empirically, the DBP is persistently low and frequently negative, remains stable during crises when EM LC yield spreads over US Treasuries widen dramatically, and is driven primarily by local rather than global factors. Financial repression proxies are statistically and economically significant in explaining DBP movements, and case studies of Turkey and Russia illustrate how discrete

[30]For information about international sanctions on Russian government debt, see Cleary Gottlieb Steen & Hamilton LLP (2023). For Russian capital controls, see Demertzis et al. (2022).

[31]See Kaniecki et al. (2024) on sanctions against Russian securities infrastructure including the National Settlement Depository.

[32]This pattern is consistent with Itskhoki and Mukhin (2025), who discuss that greater international financial isolation makes financial repression more potent in extracting fiscal surplus from the private sector.

policy events can decouple government borrowing costs from creditworthiness. These results are robust across alternative specifications.

These findings have four broader implications. First, financial repression can be tracked through asset prices. Because the DBP controls for currency risk by construction and observable proxies can account for default risk and liquidity differentials, the residual variation provides a continuous signal of repression intensity. This complements institutional classifications and retrospective analyses, which are typically available only at low frequency and with significant lags.

Second, because the DBP is net of currency risk by construction, its stability during crises implies that the widening in EM LC government–US Treasury spreads reflects mainly currency depreciation and currency risk premia rather than nominal repayment risk. This has implications for portfolio allocation, hedging strategies, and debt sustainability analysis: LC borrowing may carry less non-currency risk than headline spreads suggest.

Third, negative DBPs show that financial repression can push government borrowing costs below default-free benchmarks across the maturity spectrum. Unlike convenience yields on safe assets, which reflect voluntary demand, these negative spreads rest on captive demand that can reverse abruptly, and any resulting fiscal relief may come at the cost of crowding out private investment.

Fourth, expanded supranational issuance could erode the repression premium by providing domestic investors an alternative LC asset. Governments can, however, restrict access through unfavourable regulatory treatment, so whether international institutional design can effectively constrain repression remains an open question.

Several limitations and directions for future research merit discussion. Supranational yield curves are estimated from bonds that trade at irregular maturities with varying liquidity, which may introduce measurement error in DBP estimation, and financial repression proxies remain imperfect. The regression estimates capture correlations rather than causal effects; a more systematic event-study analysis around discrete policy interventions such as those documented for Turkey and Russia could help push toward causal identification. Finally, understanding the determinants of financial repression, in particular how institutional quality and external financing constraints shape governments' willingness to create captive demand, could help predict when repression emerges and when it becomes unsustainable.

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Appendix

A Model derivations

This appendix derives the domestic investor's Euler equations and the log-linear yield decompositions underlying the framework in Section 2.

A.1 Domestic investor problem and first-order conditions

The representative domestic investor chooses $\{c_t, B_{t+1}^{Gov}, B_{t+1}^{Sup}\}_{t\geq 0}$ to maximise

$$U_0 \;=\; \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \Big[u(c_t) + v(B_{t+1}^{Gov}) + \tilde{v}(B_{t+1}^{Sup})\Big], \tag{35}$$

subject to the period budget constraint

$$c_t + (P_t^{Gov} + \varphi_t^{Gov})B_{t+1}^{Gov} + (P_t^{Sup} + \varphi_t^{Sup})B_{t+1}^{Sup} = \omega + (1-\delta_t)B_t^{Gov} + B_t^{Sup} \;\equiv\; W_t, \tag{36}$$

and the minimum-holdings (financial repression) constraint

$$P_t^{Gov} B_{t+1}^{Gov} \;\geq\; \kappa_t W_t, \qquad \kappa_t \in [0,1], \tag{37}$$

where $\delta_{t+1} \in [0,1]$ denotes the (random) haircut on government debt realised at $t+1$.
Let $\mu_t > 0$ be the multiplier on (36) and $\lambda_t \geq 0$ the multiplier on (37). The Lagrangian is

$$\begin{aligned}\mathcal{L}_0 = \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \Big[& u(c_t) + v(B_{t+1}^{Gov}) + \tilde{v}(B_{t+1}^{Sup}) \\ & + \mu_t\big(W_t - c_t - (P_t^{Gov} + \varphi_t^{Gov})B_{t+1}^{Gov} - (P_t^{Sup} + \varphi_t^{Sup})B_{t+1}^{Sup}\big) \\ & + \lambda_t\big(P_t^{Gov} B_{t+1}^{Gov} - \kappa_t W_t\big)\Big],\end{aligned} \tag{38}$$

with complementary slackness

$$\lambda_t \geq 0, \quad P_t^{Gov} B_{t+1}^{Gov} - \kappa_t W_t \geq 0, \quad \lambda_t\big(P_t^{Gov} B_{t+1}^{Gov} - \kappa_t W_t\big) = 0. \tag{39}$$

FOC for consumption.

$$u'(c_t) - \mu_t = 0 \quad \Rightarrow \quad \mu_t = u'(c_t). \tag{40}$$

FOC for supranational bonds. The choice B_{t+1}^{Sup} affects: (i) utility at t, (ii) the period-t budget, (iii) next-period wealth W_{t+1} (hence the $t+1$ repression constraint), and (iv) the $t+1$ budget. The FOC is

$$\tilde{v}'(B_{t+1}^{Sup}) - \mu_t(P_t^{Sup} + \varphi_t^{Sup}) + \beta\, \mathbb{E}_t[\mu_{t+1} - \lambda_{t+1}\kappa_{t+1}] = 0. \tag{41}$$

FOC for government bonds. The choice B_{t+1}^{Gov} affects: (i) utility at t, (ii) the period-t budget, (iii) the period-t repression constraint directly, (iv) next-period wealth via the payoff

$(1-\delta_{t+1})B^{Gov}_{t+1}$ (hence the t+1 repression constraint), and (v) the t+1 budget. The FOC is

$$v'(B^{Gov}_{t+1}) - \mu_t(P^{Gov}_t + \varphi^{Gov}_t) + \lambda_t P^{Gov}_t + \beta\,\mathbb{E}_t\big[\big(\mu_{t+1} - \lambda_{t+1}\kappa_{t+1}\big)(1-\delta_{t+1})\big] = 0. \tag{42}$$

A.2 Constrained pricing kernel and Euler (pricing) equations

Define the shadow marginal value of wealth

$$\tilde{\mu}_{t+1} \;\equiv\; \mu_{t+1} - \lambda_{t+1}\kappa_{t+1}, \tag{43}$$

and the constrained pricing kernel

$$\tilde{M}_{t+1} \;\equiv\; \beta\frac{\tilde{\mu}_{t+1}}{\mu_t} = \beta\frac{u'(c_{t+1}) - \lambda_{t+1}\kappa_{t+1}}{u'(c_t)}. \tag{44}$$

Also define the (scaled) shadow value of the repression constraint

$$\rho_t \;\equiv\; \frac{\lambda_t}{u'(c_t)} \;\geq 0, \tag{45}$$

and convenience terms in marginal utility units

$$\chi_t \;\equiv\; \frac{v'(B^{Gov}_{t+1})}{u'(c_t)}, \qquad \tilde{\chi}_t \;\equiv\; \frac{\tilde{v}'(B^{Sup}_{t+1})}{u'(c_t)}. \tag{46}$$

Dividing (41)–(42) by $\mu_t = u'(c_t)$ yields the Euler (pricing) equations:

$$P^{Sup}_t + \varphi^{Sup}_t = \mathbb{E}_t\Big[\tilde{M}_{t+1}\Big] + \tilde{\chi}_t, \tag{47}$$

$$P^{Gov}_t + \varphi^{Gov}_t = \mathbb{E}_t\Big[\tilde{M}_{t+1}(1-\delta_{t+1})\Big] + \chi_t + \rho_t P^{Gov}_t. \tag{48}$$

A.3 Bond prices

From (47),

$$P^{Sup}_t = \underbrace{\mathbb{E}_t[\tilde{M}_{t+1}]}_{\tilde{q}_t} + \tilde{\chi}_t - \varphi^{Sup}_t. \tag{49}$$

From (48), collecting terms in P^{Gov}_t gives

$$P^{Gov}_t = \frac{\mathbb{E}_t[\tilde{M}_{t+1}(1-\delta_{t+1})] + \chi_t - \varphi^{Gov}_t}{1-\rho_t}. \tag{50}$$

A.4 Log-linear yield decompositions

Define continuously-compounded one-period yields

$$y^b_t \equiv -\log P^b_t, \qquad b \in \{Gov, Sup\}. \tag{51}$$

Let

$$\tilde{q}_t \equiv \mathbb{E}_t[\tilde{M}_{t+1}], \qquad \tilde{r}_t \equiv -\log(\tilde{q}_t), \tag{52}$$

denote the shadow risk-free asset price and rate for the constrained domestic investor.

Supranational yield. Using (49), $P_t^{Sup} = \tilde{q}_t + (\tilde{\chi}_t - \varphi_t^{Sup})$. A first-order expansion of $-\log(\tilde{q}_t + x)$ around $x = 0$ gives

$$y_t^{Sup} \approx \tilde{r}_t + \underbrace{\frac{\varphi_t^{Sup}}{\tilde{q}_t}}_{\text{liquidity}} + \underbrace{\left(-\frac{\tilde{\chi}_t}{\tilde{q}_t}\right)}_{\text{private convenience}}. \tag{53}$$

Government yield. Let

$$D_t \equiv \mathbb{E}_t[\tilde{M}_{t+1}\delta_{t+1}], \quad \Rightarrow \quad \mathbb{E}_t[\tilde{M}_{t+1}(1-\delta_{t+1})] = \tilde{q}_t - D_t. \tag{54}$$

Then (50) implies

$$P_t^{Gov} = \frac{\tilde{q}_t + (-D_t + \chi_t - \varphi_t^{Gov})}{1-\rho_t}. \tag{55}$$

Taking logs,

$$\log P_t^{Gov} = \log\big(\tilde{q}_t + x_t\big) - \log(1-\rho_t), \qquad x_t \equiv -D_t + \chi_t - \varphi_t^{Gov}. \tag{56}$$

Using first-order approximations $\log(\tilde{q}_t + x_t) \approx \log \tilde{q}_t + x_t/\tilde{q}_t$ and $-\log(1-\rho_t) \approx \rho_t$ yields

$$y_t^{Gov} \approx \tilde{r}_t + \underbrace{\frac{D_t}{\tilde{q}_t}}_{\text{default}} + \underbrace{\frac{\varphi_t^{Gov}}{\tilde{q}_t}}_{\text{liquidity}} + \underbrace{\left(-\frac{\chi_t}{\tilde{q}_t} - \rho_t\right)}_{\text{private convenience \& repression}}. \tag{57}$$

It is convenient to define the (model-implied) default-loss premium

$$I_t^{Gov} \equiv \frac{\mathbb{E}_t[\tilde{M}_{t+1}\delta_{t+1}]}{\mathbb{E}_t[\tilde{M}_{t+1}]} = \frac{D_t}{\tilde{q}_t}, \tag{58}$$

so that (57) can be written as $y_t^{Gov} \approx \tilde{r}_t + I_t^{Gov} + \varphi_t^{Gov}/\tilde{q}_t - \chi_t/\tilde{q}_t - \rho_t$.

A.5 Domestic bond premium

The Domestic Bond Premium is the same-currency spread

$$DBP_t \equiv y_t^{Gov} - y_t^{Sup}. \tag{59}$$

Using (53) and (57), the shadow risk-free rate $\tilde{r}_t$ cancels, giving

$$DBP_t \approx \underbrace{I_t^{Gov}}_{\text{default}} + \underbrace{\frac{\varphi_t^{Gov} - \varphi_t^{Sup}}{\tilde{q}_t}}_{\text{relative liquidity}} + \underbrace{\frac{\tilde{\chi}_t - \chi_t}{\tilde{q}_t}}_{\text{relative private convenience}} - \underbrace{\rho_t}_{\text{repression wedge}}. \tag{60}$$

B DBP vs LCCS: conceptual and empirical differences

B.1 Dollar funding frictions

To see why the CIP condition might fail, consider a competitive financial intermediary that clears the FX forward market at tenor τ for the (j, USD) currency pair via swap contracts. Let $H_{j,t,\tau}$ denote the time-t net notional demand to buy USD forward against currency j (i.e., to receive USD at time $t+\tau$ by delivering currency j at time $t+\tau$). Thus, $H_{j,t,\tau} > 0$ means investors want to buy USD forwards (so the intermediary must sell USD forwards) and $H_{j,t,\tau} < 0$ the opposite.

Although at time t the forward position is off-balance-sheet for the financial intermediary (it realises only at time $t + \tau$), taking net notional exposure $|H_{j,t,\tau}|$ requires posting an initial margin: a fraction $\delta_{t,j,\tau} \in (0, 1)$ of the notional must be earmarked on the balance sheet. Let ϑ_t denote the shadow value of balance sheet capacity (the Lagrange multiplier on the intermediary's balance sheet constraint). Then supplying one additional unit of forward notional uses $\delta_{t,j,\tau}$ units of balance sheet capacity and thus has marginal cost

$$MC^{FX}_{t,j,\tau} = \vartheta_t \, \delta_{t,j,\tau}. \tag{61}$$

In this stylised illustration, only the initial margin on FX forward positions consumes balance sheet capacity; the spot borrowing and lending legs of the hedging strategy described below are assumed to be unconstrained.[33]

Note that the intermediary can eliminate exchange-rate risk on its net forward position by applying a simple trading strategy at time t: (i) sell one unit of USD notional forward, (ii) borrow in currency j at rate $\tilde{r}_{j,t,\tau}$, (iii) lend in USD at rate $\tilde{r}_{\$,t,\tau}$. By doing so, it fixes the period $t + \tau$ FX-rate and receives a currency-hedged payoff:

$$MR^{FX}_{j,t,\tau} = \tilde{r}_{\$,t,\tau} + f_{j,t,\tau} - \tilde{r}_{j,t,\tau},$$

which is identical to the CIP deviation formula. Since the intermediary prices swap contracts fairly, we have the following identity

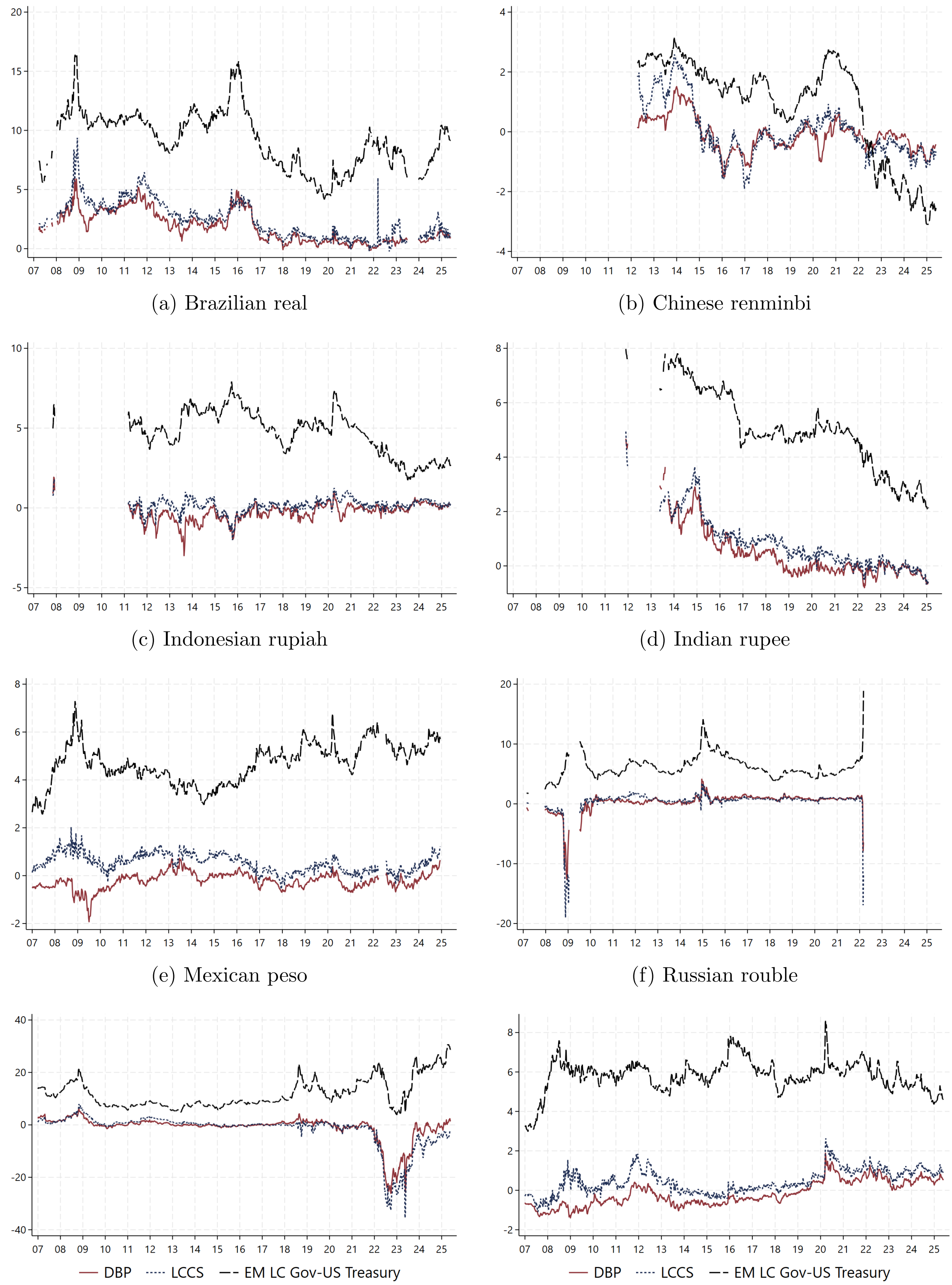
$$MC^{FX}_{t,j,\tau} = MR^{FX}_{j,t,\tau} \iff \vartheta_t \delta_{t,j,\tau} = CIP_{j,t,\tau}. \tag{62}$$

Therefore, if the intermediary's balance sheet constraint becomes binding ($\vartheta_t > 0$) and initial margin requirements rise (higher $\delta_{t,j,\tau}$) or net dollar-hedging demand rises (higher $|H_{j,t,\tau}|$), the CIP basis can be non-zero.

This simple framework demonstrates why the LCCS is a confounded measure of EM-specific non-currency risk premia. First, because it subtracts a currency-hedged U.S. Treasury benchmark, the LCCS loads on $CIP_{j,t,\tau}$, which is driven by global financial intermediary constraints and dollar-hedging demand. Second, even if the FX swap market is frictionless and $CIP_{t,j,\tau} \approx 0$, the LCCS still inherits the time variation in the U.S. Treasury pricing component $R^{Gov}_{\$,t,\tau}$. This component may reflect flight-to-safety dynamics that intensify during global risk-off periods.

[33] A richer model in which spot positions also consume balance sheet resources would replace $\delta_{t,j,\tau}$ with $1+\delta_{t,j,\tau}$ in equation (61); none of the qualitative conclusions change.

B.2 Empirical comparison



(a) Brazilian real

(b) Chinese renminbi

(c) Indonesian rupiah

(d) Indian rupee

(e) Mexican peso

(f) Russian rouble

(g) Turkish lira

(h) South African rand

Figure 5: Five-year yield spreads (DBP, LCCS, and EM LC government–US Treasury)

Notes: In percentage points. Plots only include data points that are non-missing across all three measures.

Figure 5 compares the five-year DBP with the LCCS discussed in Section 2.3.2.[34] During the sample period when they are both available, the DBP and LCCS track each other closely (*correlation* $\approx$ 0.93) and both lie well below the EM LC government–US Treasury spread, except in China after 2022, where policy rates were cut while other major economies tightened aggressively. This suggests that DBP and LCCS capture similar risk components.

However, the DBP tends to lie below the LCCS in most countries and time periods, and the two measures occasionally diverge during stress episodes (most notably in Brazil, South Africa, and Mexico during the GFC).

As explained in Section 2 and Appendix B.1, LCCS embeds CIP deviations and the US Treasury convenience yield, both of which are persistent and can account for the LCCS lying modestly above the DBP even in normal times. These components widen during stress episodes: CIP deviations increase as financial intermediary balance sheets become more constrained (Du and Schreger, 2022a), and Treasury yields decline relative to other developed market sovereigns as investors seek safe havens (Du et al., 2018), mechanically inflating the LCCS even if EM yields remain unchanged. Additionally, forward contracts for EM currencies vary in structure across countries and time (e.g., deliverable versus non-deliverable) and can become highly illiquid during financial stress, contributing further noise to the LCCS.

Naturally, the DBP could also be affected by the liquidity differentials between government and supranational bonds, but this is relatively straightforward to control in regressions using proxies for secondary-market liquidity. Therefore, the nature of measurement challenges in both spreads differs significantly: the LCCS may be influenced by global phenomena such as CIP deviations and US Treasury premium that affect all EMs simultaneously, while frictions embedded in the DBP tend to be idiosyncratic and amenable to direct measurement through secondary-market liquidity proxies.

C Data sources

Table 7: Variables and data sources

Variable	**Source**
Supranational bond prices and characteristics	Bloomberg
Government zero-coupon yields	Bloomberg; Refinitiv
Sovereign CDS; VIX; CPI; Equity indices	Datastream
Spot exchange rates	Bank for International Settlements
Policy interest rates	Bank for International Settlements
EM currency forward premiums	Du and Schreger (2016) (updated, 2025)
Sovereign debt holdings; Debt-to-GDP	Arslanalp and Tsuda (2014) (updated, 2025)

Notes: Daily spot exchange rates and policy interest rates aggregated to monthly frequency by averaging over each month. Sovereign debt holding shares are available at quarterly frequency and are linearly interpolated to monthly to match the panel regression frequency.

[34] Data on LCCS from Du and Schreger (2016), updated through 2025 in their online data appendix.

D Dynamic Nelson-Siegel term-structure model

Bond-level price panel and preprocessing. I estimate the supranational benchmark curve separately for each currency using the underlying panel of individual bond prices. The estimation sample includes only fixed-rate and zero-coupon bonds. For each bond-date observation, I reconstruct the full schedule of remaining cash flows from the issue date, maturity date, coupon rate, payment frequency, day-count convention, and end-of-month rule, and convert the quoted clean-mid-price into a dirty price by adding accrued interest.

Before estimation, I apply several screens designed to remove observations that are unlikely to be informative about the cross-section of discount rates. First, I exclude January 1, December 25, and December 26, when trading activity is often exceptionally thin. Second, I drop observations with remaining maturity below 30 days, as well as rows with missing or non-positive clean prices. Third, when Bloomberg reports a yield-to-maturity for the bond, I trim observations outside the 0.5th and 99.5th percentiles of the within-currency yield distribution. Fourth, I remove "partial-market" dates on which the number of surviving bond quotes collapses relative to nearby dates within the same currency. Finally, I apply a bond-level erratic-quote screen that flags prices whose time-series behaviour is inconsistent with both nearby observations for the same bond and same-date peers in yield space; flagged prices are repaired by log-price interpolation when feasible and otherwise dropped. The resulting cleaned panel is then used to estimate a daily zero-coupon curve for each currency.

Price-based Nelson-Siegel representation. Let $\boldsymbol{\beta}_{j,t} \equiv [\beta^L_{j,t} \ \beta^S_{j,t} \ \beta^C_{j,t}]'$ denote the level, slope, and curvature factors for currency j on date t. I model the continuously-compounded supranational zero rate at maturity τ using the standard Nelson-Siegel basis:

$$r^{Sup}_{j,t}(\tau) = \beta^L_{j,t} + \beta^S_{j,t}\left(\frac{1-e^{-\lambda\tau}}{\lambda\tau}\right) + \beta^C_{j,t}\left[\left(\frac{1-e^{-\lambda\tau}}{\lambda\tau}\right) - e^{-\lambda\tau}\right]. \tag{63}$$

I fix the decay parameter at $\lambda = 0.7308$, which corresponds to the Diebold and Li (2006) benchmark and places the curvature hump at roughly 30 months.[35] Fixing λ is useful in this application because the daily supranational bond cross-section is often too thin to identify factor loadings and latent factors jointly with precision.

Because the underlying data are bond prices rather than zero-coupon yields at fixed maturities, the measurement equation is written directly in price space. Let bond i in currency j have remaining cash flows $\{CF_{j,i,t,k}\}_{k=1}^{K_{j,i,t}}$ at times $\{s_{j,i,t,k}\}_{k=1}^{K_{j,i,t}}$, measured in years from the settlement date. The model-implied dirty price is

$$P^{dirty}_{j,i,t} = h_{j,i}(\boldsymbol{\beta}_{j,t}) + \varepsilon_{j,i,t} \equiv \sum_{k=1}^{K_{j,i,t}} CF_{j,i,t,k} \exp\big(-s_{j,i,t,k}\, r^{Sup}_{j,t}(s_{j,i,t,k})\big) + \varepsilon_{j,i,t}. \tag{64}$$

This formulation uses the full cash-flow structure of each coupon bond and avoids the need to first compress the raw data into synthetic yields at representative maturities.

[35] The median remaining maturity in the sample is around 2-2.5 years for most currencies, which justifies the choice of λ.

State dynamics and observation noise. The latent factors evolve according to a mean-reverting diagonal AR(1) process,

$$\boldsymbol{\beta}_{j,t} = \boldsymbol{\mu}_j + A_j\big(\boldsymbol{\beta}_{j,t-1} - \boldsymbol{\mu}_j\big) + \boldsymbol{\eta}_{j,t}, \qquad A_j = \operatorname{diag}(\phi_j^L, \phi_j^S, \phi_j^C), \qquad \boldsymbol{\eta}_{j,t} \sim \mathcal{N}(\mathbf{0}, Q_j), \tag{65}$$

where Q_j is a full 3×3 covariance matrix. Relative to an unrestricted VAR, the diagonal transition matrix is a stabilising restriction that is helpful when the daily cross-section of supranational bonds is sparse, while the full innovation covariance still allows the three factors to co-move. The measurement errors are assumed conditionally Gaussian and diagonal in price space:

$$\varepsilon_{j,t} \sim \mathcal{N}(\mathbf{0}, R_{j,t}), \qquad R_{j,t} = \operatorname{diag}\big(\sigma_{j,1,t}^2, \ldots, \sigma_{j,N_{j,t},t}^2\big), \tag{66}$$

with

$$\sigma_{j,i,t} = \max\left\{\sigma_{p,j},\ \frac{1}{2}BAS_{j,i,t}\right\}, \tag{67}$$

where $\sigma_{p,j}$ is a currency-specific baseline price-noise parameter and $BAS_{j,i,t}$ is the observed bid–ask spread when available. Intuitively, this treats illiquid bonds as noisier measurements of the underlying zero curve. Because the pricing equation in (64) is nonlinear in the factors, the filter uses the Jacobian of the bond-price function with respect to $\boldsymbol{\beta}_{j,t}$ and therefore takes the form of an extended Kalman filter.

Initialization, filtering, and smoothing. I initialise the dynamic model with a sequence of static cross-sectional Nelson-Siegel fits in price space. Specifically, on each usable date, I solve

$$\widehat{\boldsymbol{\beta}}_{j,t}^{seed} = \arg\min_{\boldsymbol{\beta}} \sum_{i=1}^{N_{j,t}} \left[P_{j,i,t}^{dirty} - h_{j,i}(\boldsymbol{\beta})\right]^2. \tag{68}$$

These seed estimates are then placed on a business-day state grid running from the first to the last observed quote date, excluding January 1, December 25, and December 26. Missing weekdays are filled by time interpolation for initialization. I then estimate the long-run mean $\boldsymbol{\mu}_j$ and the persistence parameters $(\phi_j^L, \phi_j^S, \phi_j^C)$ from factor-by-factor AR(1) regressions on the seed series, set Q_j equal to the covariance matrix of the resulting transition residuals, and estimate the baseline price-noise parameter $\sigma_{p,j}$ from the static price residuals.

Given these starting values, I run an extended Kalman filter on the full business-day state grid and then apply a Rauch-Tung-Striebel smoother to obtain the final latent factor estimates.

Reported zero-coupon yields. After smoothing, I evaluate the Nelson-Siegel curve on a fixed maturity grid. The empirical analysis in the paper uses the 1, 3, 5, and 10-year points. Let $\widehat{r}_{j,t,\tau}^{Sup}$ denote the smoothed continuously-compounded zero rate implied by (63). The reported annualised zero-coupon yield is

$$\widehat{y}_{j,t,\tau}^{Sup} = \exp\big(\widehat{r}_{j,t,\tau}^{Sup}\big) - 1. \tag{69}$$

These supranational zero-coupon yields are then matched to the corresponding government zero-coupon yields to construct

$$DBP_{j,t,\tau} = y^{Gov}_{j,t,\tau} - \widehat{y}^{Sup}_{j,t,\tau}.$$

E Variance decomposition methodology

The decomposition presented in Section 5.1 proceeds in two steps. First, I quantify how much of the spread variance reflects persistent cross-country differences attributable to slow-moving variables (e.g., institutional quality). These variables determine the average DBP in each currency. Consider a fixed tenor length τ and regress $DBP_{j,t,\tau}$ on currency fixed-effects (α_j) only:

$$DBP_{j,t,\tau} \;=\; \alpha_j \;+\; \varepsilon_{j,t,\tau}. \tag{70}$$

In this panel regression, the overall R^2 captures the between-variance R^2_B – the share of variation explained by static currency/country characteristics. The complement $R^2_W \equiv 1 - R^2_B$ represents the within-variance: the share of DBP variation explained by transitory variables such as fiscal and monetary shocks, regulatory interventions, or evolving economic conditions.

Next, I distinguish between global factors that affect all currencies simultaneously and country-specific factors. To isolate time-varying components, I first demean the data at the currency-tenor level. Let $T_{j,\tau}$ denote the number of time-series observations in a currency-tenor pair. I compute currency-tenor means $\overline{DBP}_{j,\tau} = \frac{1}{T_{j,\tau}} \sum_t DBP_{j,t,\tau}$ and define the centred values as $\widetilde{DBP}_{j,t,\tau} = DBP_{j,t,\tau} - \overline{DBP}_{j,\tau}$. Regressing these centred values on time fixed effects (ω_t) captures (average) shocks common to all currencies:

$$\widetilde{DBP}_{j,t,\tau} \;=\; \omega_t \;+\; \xi_{j,t,\tau}. \tag{71}$$

Let R^2_{WG} be the overall R^2 from (71). Since the centred values in (71) contain only within-variation, the within-variance share can be decomposed as:

$$\text{Global factors: } R^2_G = R^2_W \times R^2_{WG} \quad \text{and} \quad \text{Local factors: } R^2_L = R^2_W \times \left(1 - R^2_{WG}\right),$$

so that $R^2_B + R^2_G + R^2_L = 100\%$ of the variance by construction.