Flights to Safety in Local Currency Corporate Bonds:
The Role of Local Investors in Emerging Markets

John Zijian Ma*

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Abstract

This paper studies the transmission of global financial shocks to local currency corporate bond markets in emerging market economies. I find that local currency corporate bonds are the most insulated emerging market asset class from global risk factors: local currency credit spreads compress relative to local risk-free rates when global risks rise. Using detailed security-level holding composition data from Indonesia, I document strong inflows from local mutual funds and banks into local currency corporate bonds during periods of elevated global risk. Following a tightening of global financial conditions, local currency corporate bonds with stronger safe-haven demand from these price-sensitive local investors experience a larger compression of their yield spreads. These findings highlight the importance of understanding the growing role of local institutional investors in shaping emerging market financial conditions and fluctuations in borrowing costs.

*Department of Economics, Columbia University. Email: zm2414@columbia.edu.

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1 Introduction

Local currency corporate bond markets in emerging market economies have grown substantially over the past decade as a source of funding for firms and as an investable asset class for institutional investors. According to BIS debt securities statistics, total local currency corporate bonds outstanding reached approximately $10.4 trillion in 2025 for the 15 largest emerging market economies, up from $6.7 trillion in 2018.[1] Relative to the size of domestic economies, local currency corporate bond markets averaged 25 percent of GDP in 2024, compared to 43 percent of GDP for local currency government bond markets in these emerging market economies. The fact that local currency corporate issuance amounts to roughly three-fifths of sovereign issuance highlights the significant size of the local currency corporate bond markets in emerging markets.[2] This combination of scale, breadth, and sustained growth makes local currency corporate bond markets an important yet underexplored arena in international finance for understanding how global financial conditions transmit to emerging market borrowers.

This paper studies the transmission of global financial shocks to local currency corporate credit spreads in emerging markets. I document a robust empirical pattern observed across emerging market economies: local currency corporate bonds are the most insulated asset class in emerging markets, with credit spreads that tighten — rather than widen — in response to elevated global risk. During risk-off episodes, local currency corporate bond yields are more stable than the local risk-free benchmark. To understand the economic mechanism behind this pattern, I exploit granular security-level holding composition data and show that price-sensitive local investors such as mutual funds and banks seek haven in local currency corporate bonds by rotating out of local equities during periods of global stress. These inflows exert significant upward price pressure at the bond level, compressing credit spreads precisely during periods of heightened global uncertainty. My empirical results suggest that local safe-haven demand offsets the deterioration in credit conditions that one might otherwise expect in the local currency corporate bond markets.

I begin by documenting the key empirical properties of local currency corporate bonds in emerging markets at the aggregate level. I first perform a principal component analysis on the monthly returns of local currency corporate bonds for the 13 emerging market economies in my sample. Compared to other emerging market asset classes, local currency corporate bonds exhibit the weakest factor structure: their cross-country return correlations and sensitivities to global risk factors are sig-

[1] These emerging market economies include Brazil, Chile, China, Czech Republic, Hungary, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, South Africa, Thailand, and Turkey.

[2] The scale of local currency corporate bond markets nonetheless varies considerably across countries: at one end of the spectrum, Korea, Czech Republic, and Brazil have corporate bond markets equivalent to over 50 percent of GDP; at the other end, Peru, Indonesia, and Turkey report local currency corporate bond markets of less than 10 percent of GDP.

nificantly lower than those of local equities, foreign currency corporate bonds issued by emerging market firms, and both local and foreign currency government bonds issued by emerging market sovereigns. I then estimate the sensitivity of local currency corporate bond excess returns to global risk factors at the country level. A striking dichotomy emerges between emerging and developed markets: higher global risk reduces local currency corporate bond excess returns in developed markets, but increases them in nearly all emerging market economies in my sample. I also find that emerging market corporate bonds are segmented by currency. While local currency credit excess returns react positively to global risk shocks, measures of foreign currency credit risk of emerging market firms react negatively. This currency segmentation holds whether foreign currency credit risk is measured by US dollar-denominated bond excess returns — defined as the return on dollar bonds issued by local firms minus the risk-free US Treasury return — or by synthetic local currency excess returns constructed by swapping dollar bond returns back into local currency using a currency hedge.

The safe-haven properties of local currency corporate bonds — absent from foreign currency corporate bonds with similar credit risk — point to currency segmentation as a underlying source of their countercyclical credit spread dynamics. Because of limited participation of foreign investors, local currency corporate bond markets are largely shielded from the capital outflow pressures that amplify volatility in other emerging market asset classes during risk-off episodes. Instead, local currency corporate bond markets are dominated by local institutional investors — mutual funds, banks, insurance companies, and pension funds — whose mandates and risk preferences differ substantially from those of foreign investors. I find that this distinct investor base composition leads to the unique price dynamics in response to global shocks observed in local currency corporate bond markets. Across the emerging markets economies in my sample, countries whose local currency corporate bonds are predominantly held by price-sensitive investors such as funds and banks exhibit more positive response of local currency corporate excess return to global risk factors. In other words, a greater presence of price-sensitive local investors tends to compress local currency corporate credit spreads in periods of tight global financial condition.

Using a novel security-level public dataset with comprehensive holding composition data for the universe of securities traded in Indonesia, I analyze how investor base dynamics shape the response of local currency credit spreads to global financial shocks. I find that, during risk-off episodes when the VIX index spiked — including the "Liberation Day" tariff shock and periods of elevated US policy uncertainty — local mutual funds and banks significantly increase their portfolio holdings of IDR-denominated corporate bonds. When monthly change in the VIX index doubles, fund and bank ownership share of local currency corporate bonds increases by an average of around 0.3 percentage points at the bond level, even after controlling for bond

fundamentals through bond fixed effects. Meanwhile, mutual funds and banks rotate out of riskier local equity positions and into corporate bonds, suggesting that local currency corporate bonds serve as the safe-haven asset for domestic price-sensitive investors during periods of tight global financial condition. Local insurance companies and pension funds (ICPFs) and foreign investors accommodate their safe-haven inflows by marginally reducing their corporate bond positions.

The key finding of my paper is that the safe-haven demand of price-sensitive domestic investors contributes to the countercyclical responses of local currency corporate credit spreads to global risks. By merging my granular holding composition data with detailed bond yield data, I demonstrate that the estimated yield spread sensitivity to global risk factors is strongly associated with change in mutual fund and bank holding shares at the bond level. A one percentage point increase in the mutual fund and bank inflow (as a share of total amount outstanding) corresponds to a 140 basis point decline in the credit spread sensitivity to global risks, defined as the change in credit spread in response to a one-percent increase in the VIX index. A back-of-the-envelope calculation suggests that, when the monthly change in the VIX index doubles, the estimated increase in mutual fund and bank holding share of 0.3 percentage point at the bond level translates into a narrowing of local currency credit spread by approximately 40 basis points. I also present evidence that local mutual funds and banks predominantly invests in short-term corporate bonds with maturity less than 3 years, whereas insurers and pension funds dominates the longer end of the credit market. I show that safe-haven inflows into IDR-denominated corporate bonds are indeed concentrated in short-maturity bonds, whose credit spreads tighten due to increased demand from these price-sensitive investors. My empirical evidence suggests that flights to safety by local mutual funds and banks into local currency corporate bonds during risk-off periods is crucial for understanding their credit spread response to global risks. I formalize this finding in a simple equilibrium model where heterogeneous investors with mean-variance preferences demand local-currency assets and are exposed to global risks.

Related literature My paper contributes to three strands of literature. A growing literature in international finance focuses on investor base and market development of local currency bonds in emerging markets.[3] Maggiori, Neiman, and Schreger (2020) highlight the home currency bias exhibited in the corporate bond holdings of global investors' portfolios, which are heavily tilted towards corporate bonds denominated in hard currency rather than local currency. Dos Santos (2024) shows that government bonds supports the development of local currency corporate bond markets by facilitating price discovery. Clayton et al. (2025) and Fang, Hardy, and Lewis (2025) shows that investor base composition is crucial for understanding bond market development

[3]See Florez-Orrego et al. (2024) for a review of the international finance literature that uses micro data to document patterns global capital allocations.

strategy and sovereign borrowing costs. My paper contributes to this literature by focusing on local currency corporate bonds as a distinct emerging market asset class held predominantly by domestic investors and by empirically characterizing its safe-haven properties — two dimensions largely overlooked in the existing literature.

My paper is also closely related to the literature on the role of investor base composition in global financial transmission to emerging markets. Morelli et al. (2022) shows that global financial intermediaries play a key role in driving borrowing cost fluctuations in emerging markets. Chari, Stedman, and Lundblad (2022), Bergant, Milesi-Ferretti, and Schmitz (2023) show that foreign investor sentiments and behaviors amplify the impact of global risk shocks on emerging market asset prices and capital flows. Converse et al. (2023) find that the growth of ETFs amplifies the tranmission of global financial cycle to emerging markets. Zhou (2024) shows that higher foreign investment fund ownership of sovereign bonds increases the sensitivity of sovereign borrowing costs to global risks. Belz and Breckenfelder (2025) shows that local currency sovereign borrowing is sensitive to global financial shocks due to their higher ownership by foreign intermediaries vulnerable to fire sales. Coppola (2025) shows that investor base composition is crucial for understanding corporate bond price fluctuations in market downturns despite the focus on US market. My paper contributes to this literature by focusing on *local* investors in emerging markets, as prior work focuses predominantly on foreign investors. I use granular security-level holding composition data from a large emerging market economy to examine the portfolio allocation behaviors of local investor base in response to global financial shocks as well as the implications for local currency corporate bond market.

A separate strand of literature studies how global financial conditions transmit to emerging market borrowing costs. Kalemli-Özcan (2019) shows that US monetary policy have large spillovers to local credit spreads in emerging markets through effects on global investors' risk perceptions. Bräuning and Ivashina (2020) document that US monetary tightening eases borrowing conditions of firms in emerging markets. Cesa-Bianchi and Sokol (2022) and Akinci and Queralto (2024) also provide empirical evidence and theoretical models that support the observed effects of US monetary policy on local credit spreads. While this literature consistently finds that tighter global financial conditions widen local credit spreads and compress credit supply in emerging markets, my paper contributes by identifying a striking departure from this pattern: global risk shocks compress — rather than widen — local currency corporate bond spreads in emerging markets, in contrast to the negative impact on local currency loan spreads documented in the existing literature.

Outline In section 2, I study the empirical patterns of emerging market local currency corporate bonds using bond index and yield data. In section 3, I present my novel micro data and evidence on how investor base composition affects local currency

credit spread responses to global risks. In section 4, I develop a stylized theoretical model to formalize the empirical results. Section 5 concludes.

2 Empirical features of EM local currency corporate bonds

2.1 Data sources

My analysis of the local currency corporate bond market in emerging markets begins by characterizing the empirical properties of monthly raw and excess returns on local currency corporate bond indexes. Due to the improved market depth and liquidity of the local currency corporate bond markets in emerging markets, many global index providers and local stock exchanges have developed local currency corporate bond indexes in the past decade. I collect data on local currency corporate and government bond index for each emerging market from Bloomberg, LSEG, and local stock exchanges.[4] All indexes are fixed-rate total return indexes, which combines price changes and fixed coupon payments that are reinvested, available at the monthly frequency from January 2018 to Decemebr 2025. To complement the analysis of corporate bond indexes, I also obtain data on individual bond yield from LSEG to study the dynamics of local currency corporate bond spread at the security level. Local currency corporate bond spreads are calculated as the difference between corporate bond yield and the maturity-matched government bond yield in the same currency computed from a linearly interpolated benchmark yield curve. To understand the degree of segmentation between the local and foreign currency corporate bonds in emerging markets, we obtain the J.P. Morgan Corporate Emerging Markets Bond Index (CEMBI) that tracks liquid US dollar denominated corporate bonds in emerging markets for the same set of countries.

2.2 Safe-haven properties

2.2.1 Corporate bond index excess returns

To understand the cross-country pattern of local currency corporate bond price dynamics, we first perform a standard principal component analysis on the monthly returns of local currency corporate bond indexes from January 2018 to December 2025. For comparison, we also perform the same principal component analysis on the monthly returns of indexes for other major EM asset classes (local currency government bond, local currency stock, US dollar corporate bond, US dollar government bond) for the same period.

[4]See detailed description of local currency bond market indexes in Table A1.

Table 1: Principal Component Analysis of Monthly Returns on Major Emerging Market Asset Classes

Panel A: Cross-country Correlation of Monthly Raw Returns					
Variance explained by	LC Corp	LC Govt	LC Stock	USD Corp	USD Govt
First PC	0.39	0.48	0.53	0.74	0.87
Second PC	0.11	0.11	0.08	0.08	0.06
Third PC	0.10	0.09	0.06	0.06	0.02
Mean pairwise correlation	**0.12**	0.18	0.22	0.29	0.37
Panel B: Correlation between First PC and Global Risk Factors					
Variable	LC Corp	LC Govt	LC Stock	USD Corp	USD Govt
Mean return	0.95	0.96	0.99	0.98	0.99
VIX log change	-0.29	-0.48	-0.68	-0.37	-0.36
S&P 500 return (-)	-0.55	-0.63	-0.77	-0.62	-0.61
US corp spread change	-0.45	-0.51	-0.80	-0.68	-0.51

Notes: This table reports summary statistics of the principal component analysis of monthly local currency denominated corporate bond (LC Corp), local currency denominated government bond (LC Govt), local currency denominated stock (LC Stock), US dollar denominated corporate bond (USD Corp), US dollar denominated government bond (USD Govt) index returns in selected EMEs from Jan 2018 to Dec 2025. The countries include BZL,CHL,CHN,HUN,IDN,KOR,MEX,MYS,PER,PHL,THA,TUR,ZAF.

Local currency corporate bond is the most *local* asset class in emerging market. Panel A of Table 1 shows that the first principal component of local currency corporate bond index returns only explain 39 percent of the total variance, and the mean pairwise correlation is only 0.12. Both statistics are significantly lower than those of other EM asset classes. Panel B of Table 1 shows that local currency corporate bonds are much more insulated from global risk factors. Compared to other EM asset classes, the first principal component of local currency corporate bond index returns, which is a level factor that co-moves near perfectly with the cross-country mean returns, displays a relatively moderate degree of correlation with standard global risk factors measured by the movements in the VIX index, S&P 500 index, and US corporate bond spread. In short, local currency corporate bond index returns have a weaker factor structure than other EM asset classes, as shown by the lower cross-country correlations and sensitivity to global risk factors.

Investors depend risk premia for holding risk assets as compensation beyond the risk-free rate.[5] We compute the excess returns of the index for each EM asset class relative to the government bond index in the same currency. For example, the excess return of a local currency corporate bond index is computed over the local currency government bond index, whereas the excess return of a US dollar corporate bond index is computed over the US Treasury index. We then perform the same principal component analysis on excess returns for these EM asset classes and highlight their

[5]Corporate bonds are priced at a spread to the maturity matched risk-free benchmark in the same currency.

Table 2: Principal Component Analysis of Monthly Excess Returns on Major Emerging Market Asset Classes

Panel A: Cross-country Correlation of Monthly Excess Returns				
Variance explained by	LC Corp	LC Stock	USD Corp	USD Govt
First PC	0.35	0.30	0.79	0.66
Second PC	0.13	0.16	0.08	0.16
Third PC	0.11	0.10	0.04	0.05
Mean pairwise correlation	0.10	0.10	0.34	0.37
Panel B: Correlation between First PC and Global Risk Factors				
Variable	LC Corp	LC Stock	USD Corp	USD Govt
Mean excess return	0.80	0.95	0.99	0.99
VIX log change	0.39	-0.40	-0.50	-0.45
S&P 500 return (-)	0.49	-0.63	-0.49	-0.57
US corp spread change	0.42	-0.57	-0.78	-0.82

Notes: This table reports summary statistics of the principal component analysis of monthly local currency denominated corporate bond (LC Corp), local currency denominated government bond (LC Govt), local currency denominated stock (LC Stock), US dollar denominated corporate bond (USD Corp), US dollar denominated government bond (USD Govt) index returns in selected EMEs from Jan 2018 to Dec 2025. The countries include BZL,CHL,CHN,HUN,IDN,KOR,MEX,MYS,PER,PHL,THA,TUR,ZAF.

differential sensitivity to global risk factors.

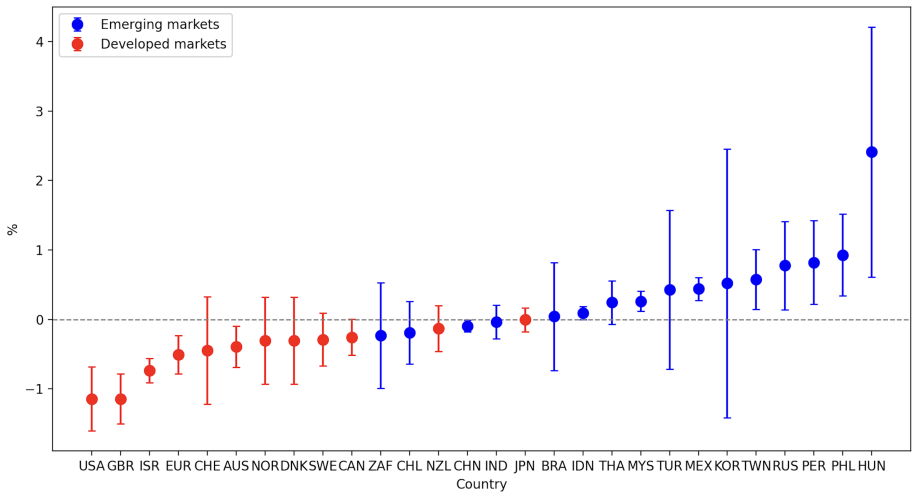
Local currency corporate bonds is the only asset class in emerging markets that have counter-cyclical excess returns. Table 2 shows that the first principal component of local currency corporate bond index excess returns is positively correlated with global risk factors: when global risk increase (for example, as measured by a rise in the VIX index), the excess returns of EM local currency corporate bonds increase. This stands in contrast to EM local currency stocks whose excess returns comoves negatively with global risk factors, as well as EM US dollar corporate or government bonds whose excess returns display the same risk-off dynamics. Local currency corporate bonds clearly stands out as the only EM asset class that offer investors a hedge against global financial risks.

Local currency corporate bond markets in emerging markets have heterogeneous exposure to global financial shocks. For each emerging market economy, I estimate the sensitivity of its local currency corporate bond index to global risks from the slope coefficient β_i^{LC} in the time-series regression

$$rx_{i,t}^{LC} \equiv R_{i,t}^{LC} - R_{f,t}^{LC} = \alpha_i^{LC} + \beta_i^{LC} \Delta \log \text{VIX}_t + \varepsilon_{i,t}$$

where $rx_{i,t}^{LC}$ is the monthly excess return of the local currency corporate bond index of country i at month t over the local currency risk-free benchmark, and $\Delta \log \text{VIX}_t$ is the monthly percent change in the VIX index at month t. Throughout my analysis, I follow the standard practice in the international finance literature to use the CBOE VIX index (option-implied volatility of the S&P 500) as the empirical proxy for the

Figure 1: Sensitivity of Local Currency Corporate Bond Index Excess Return to VIX Index Percent Change



Note: The y-axis plots time-series regression coefficients of monthly corporate bond index excess returns on monthly percent change in the VIX index, multiplied by 100. The error bars are the 90 percent confidence intervals based on Newey-West standard errors. Data is from Jan 2018 to Dec 2025.

global risk factor.[6] In the meantime, I also estimate the local currency corporate bond market sensitivity to global risks for developed market economies for comparison with emerging market economies.

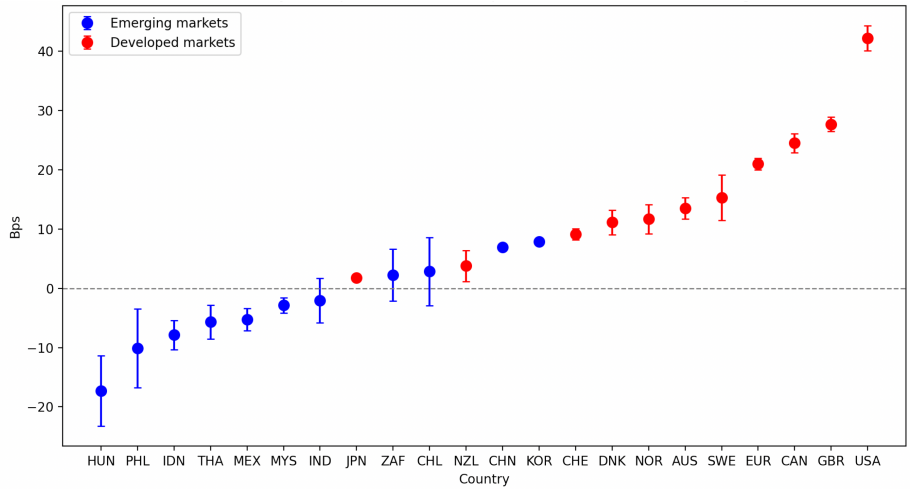
Figure 1 shows that the estimated sensitivity of corporate bond excess return to global risks is positive for the vast majority of emerging market economies, consistent with the positive correlation between their first principal component and global risk factors calculated in Table 2. Interestingly, we find corporate bond excess return in developed markets exhibit the exact opposite response to global risks: corporate bond excess return responds negatively to increases in global shocks in all developed market economies, especially in the US In terms of magnitude, when the monthly change in the VIX index doubles, local currency corporate bond excess returns in emerging markets such as Peru and Phillipines *increase* by 1 percent, whereas the same excess returns in developed markets such as the US and Britain *decrease* by 1 percent. The positive reaction of the local currency corporate bond market to global financial risks is thus a phenomenon unique to emerging markets where corporate bond prices are more stable than government bond prices in response to global volatility.

2.2.2 Corporate bond yield spreads

Despite the fact that local currency corporate bond indexes offer a liquid and tradable alternative that captures the performance of the aggregate bond market, one might expect the excess return of these local currency corporate bond indexes are partly driven by the discrepancy in maturities between the corporate and government bond indexes. To address this concern, I collect yield data at the bond level to compute

[6] See Kalemli-Özcan (2019) for a detailed illustration.

Figure 2: Sensitivity of Local Currency Corporate Bond Spread to VIX Index Percent Change



Note: The y-axis plots time-series regression coefficients of monthly corporate bond yield spread on monthly percent change in the VIX index, multiplied by 100. The error bars are the 90 percent confidence intervals based on standard errors clustered at the bond level. Data is from Jan 2018 to Dec 2025.

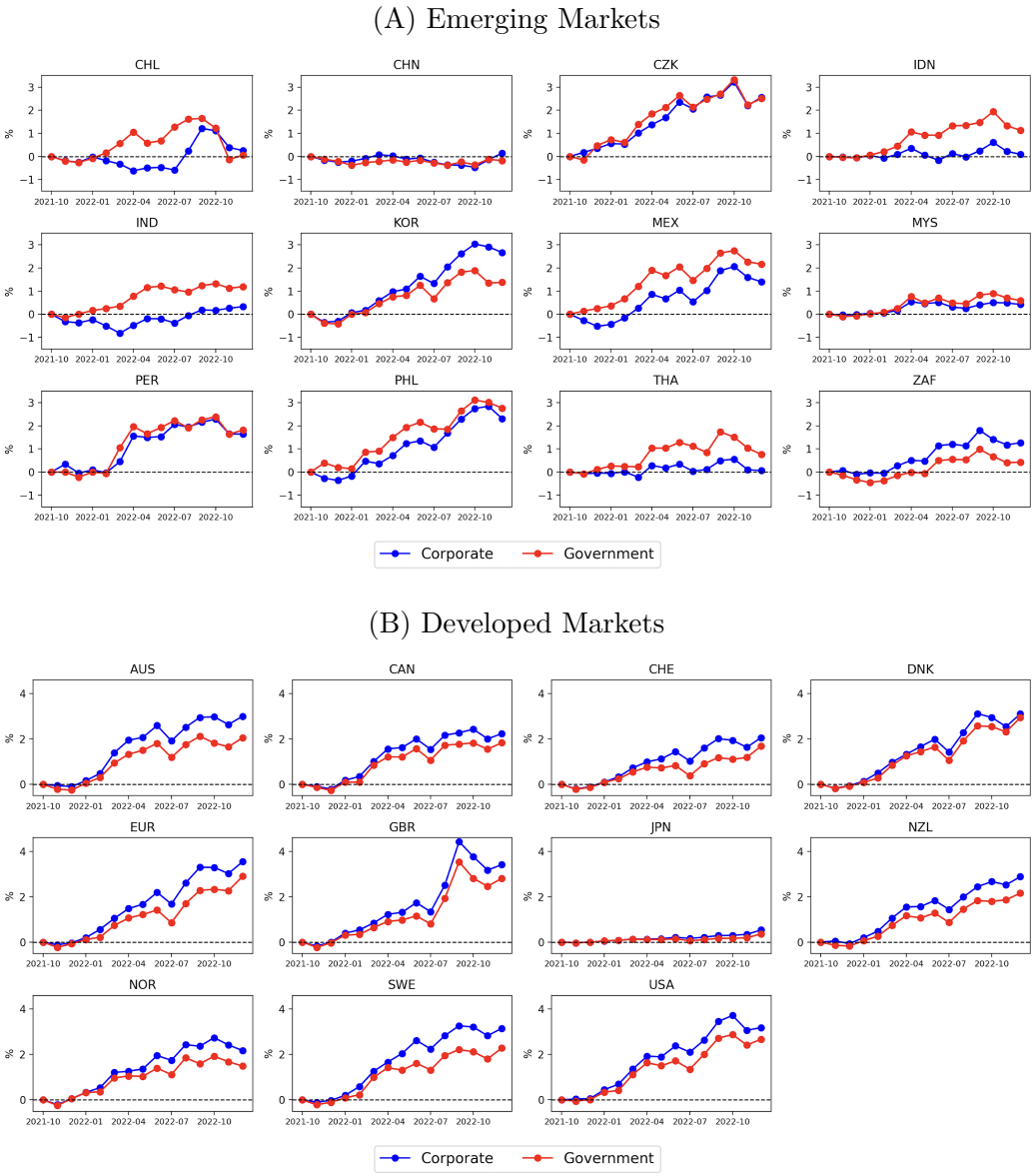
credit spreads relative to maturity-matched government bond yields. For each emerging market economy, I then estimate the sensitivity of its local currency corporate credit spread to global risks from the coefficient β_i^{LC} in the panel regression

$$\Delta s_{i,j,t}^{LC} \equiv \Delta y_{i,j,t}^{LC} - \Delta y_{f,t}^{LC} = \alpha_j^{LC} + \beta_i^{LC} \Delta \log \text{VIX}_t + \varepsilon_{i,j,t}$$

where $\Delta s_{i,j,t}^{LC}$ is the monthly changes in the yield spread of bond j issued by a firm in country i at month t over the maturity-matched local currency government bond yield. I include bond fixed effects α_j^{LC} to control for time-invariant heterogeneity at the bond level.

Figure 2 shows that the bond-level panel estimates confirm the aggregate market responses to global shocks: higher global risks compress local currency corporate credit spreads in emerging markets. It also confirms the asymmetric responses of aggregate corporate bond market to global shocks for emerging and developed market, where corporate bond spreads display the opposite responses to changes in the VIX index. In emerging markets such as the Phillipines and Hungary, when the monthly change in the VIX index doubles, local currency corporate credit spreads on average *falls* by over 10 basis points. In contrast, local currency corporate credit spreads in the developed markets such as the Eurozone and Australia *rises* by about 10 basis points in response to the same magnitude of VIX shocks. Therefore, evidence from corporate bond index excess returns and evidence from individual corporate bond yield spreads both suggest the robust empirical pattern that local currency corporate bond prices exhibit more resilience to global shocks than government bonds in emerging markets, whereas the local currency corporate bond markets is much more vulnerable to global shocks than the government bond market in developed markets.

Figure 3: Average Yield Changes of Local Currency Corporate and Government Bonds (3-7 Years to Maturity) from Oct 2021 to Dec 2022



Note: These figures plot the monthly average yield of local currency corporate bonds with 3-7 years to maturity (in blue) and of maturity-matched local currency government bonds (in red) for 12 emerging market economies (Panel A) and 11 developed market economies (Panel B) during the 2021-22 global stagflation and monetary tighening cycle. Bond yields are reported as changes relative to October 2021 levels. Data is monthly from October 2021 to December 2022. Data source: LSEG.

To illustrate the dynamics of local currency corporate bond spreads during periods of high global financial risks, I perform a case study of the evolution of local currency corporate and government yields in various emerging and developed market economies during the global inflation surge from 2021 to 2022. I focus on bonds with intermediate maturity (3-7 years) for the best data coverage. Specifically, I calculate the average yield of all local currency corporate bonds in a given country as well as the maturity-matched government bond yield at the monthly frequency. Panel A of Figure 3 shows that, in most emerging market economies, local currency corporate bond yields either stays flat (e.g. Chile, China, Indonesia, India, Malaysia, Thailand) or rises by

less than government bond yields (e.g. Czech Republic, Mexico, Peru, Phillipines), except for South Korea and South Africa. The compression of local currency credit spreads in emerging market economies stands in stark contrast to the widening of local currency credit spreads in developed market economies during this period of tight global financial condition. Panel B of Figure 3 shows that in all developed market economies, local currency corporate bond yields increase much more than government bond yields when global central banks tighten monetary policy to combat stagflationary shocks.

2.3 Currency segmentation

Many firms in emerging markets issue corporate bonds in both local currency and foreign currency.[7] In complete markets, the borrowing costs in local currency and in foreign currency should be equal on an FX-hedged basis due to arbitrage activities. Therefore, local and foreign currency corporate bond credit spreads should display the same reaction to global risk factors. However, if the corporate bond market is segmented by currency, local currency corporate spreads could deviate from FX-hedged foreign currency corporate spreads, and the two credit spreads can exhibit differential response to global risk factors. Indeed, there are good reasons to expect that corporate bond markets in emerging markets are segmented by currency due to different investor bases.

2.3.1 Corporate bond index excess returns

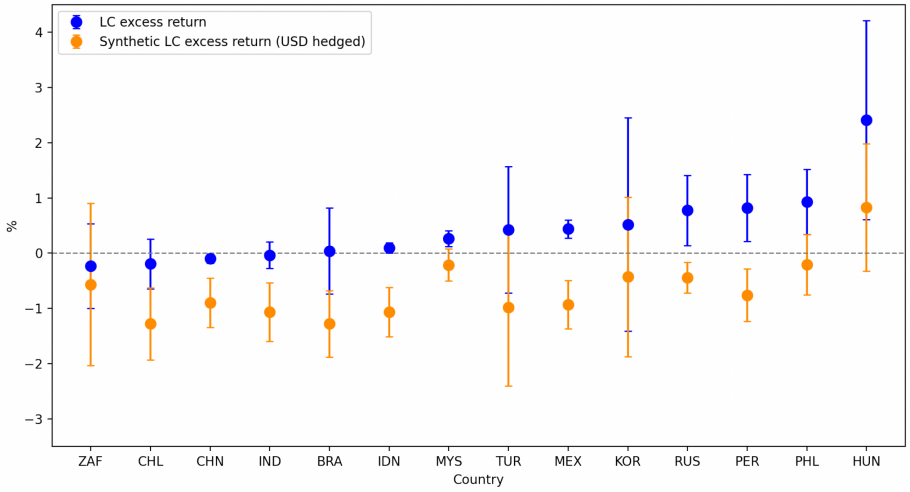
To understand the degree of currency segmentation of emerging market corporate bond markets, we construct synthetic local currency corporate bond index excess return in the spirit of Du and Schreger (2016) by converting US dollar corporate bond index return back to local currency with a currency hedge. While the direct local currency corporate excess return is the difference between local currency corporate and government bond index return, the synthetic local currency excess return is the difference between the FX-hedged US dollar corporate bond index return and the local currency corporate bond return.

$$rx_{i,t}^{USD/LC} \equiv R_{i,t}^{USD} - \frac{F_{t-1} - S_{t-1}}{S_{t-1}} - R_{f,t}^{LC}$$

where $rx_{i,t}^{USD/LC}$ is the synthetic local currency corporate excess return, where the FX-hedged US dollar corporate bond return is the difference between the US dollar corporate bond return $R_{i,t}^{USD}$ and the cost of entering an FX swap with the same

[7] Liao (2020) provides evidence that firms choose the currency denomination of their bond issuance by minimizing their currency-hedged borrowing costs. Colacito, Qian, and Stathopoulos (2025) shows that large firms' debt currency denomination is strongly associated with the geographical distribution of their global sales.

Figure 4: Sensitivity of Direct and Synthetic Local Currency Corporate Bond Index Excess Return to VIX Index Percent Change



Note: The y-axis plots time-series regression coefficients of direct (in blue) and synthetic (in orange) local currency monthly corporate bond index excess return on monthly percent change in the VIX index, multiplied by 100. The error bars are the 90 percent confidence intervals based on standard errors clustered at the bond level. Data is from Jan 2018 to Dec 2025.

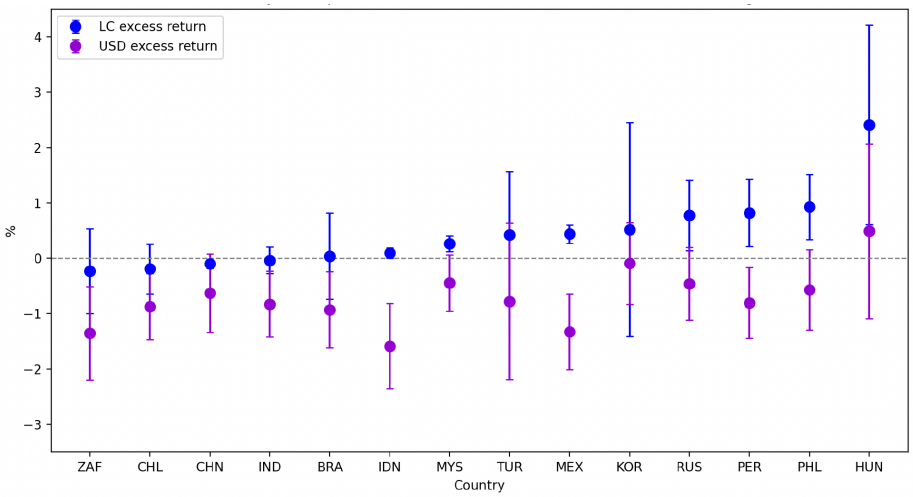
horizon ahead of time, which equals the forward premium $\frac{F_{t-1}-S_{t-1}}{S_{t-1}}$. The synthetic local currency excess return is the FX-hedged excess return of for local investors who invest in US dollar denominated corporate bonds issued by domestic firms. As before, I estimate the sensitivity of synthetic local currency corporate bond index excess returns to global risk factors for each country from the coefficient $\beta_i^{USD/LC}$ in the following time-series regression

$$rx_{i,t}^{USD/LC} = \alpha_i^{USD/LC} + \beta_i^{USD/LC} \Delta \log \text{VIX}_t + \varepsilon_{i,t}$$

I find strong evidence of currency segmentation in emerging market corporate bonds, as shown by the asymmetric responses of direct and synthetic local currency corporate bond excess returns to global risk factors. While direct local currency corporate bond excess returns increase when the VIX index rises, synthetic local currency corporate bond excess returns reacts negatively to changes in the VIX index, as shown by Figure 4. For all emerging market economies, US dollar denominated corporate bonds issued by emerging market firms behave like standard risk assets for local investors: their currency-hedged returns fall more than the local risk-free return during risk-off periods, while local currency excess returns exhibit the opposite safe-haven properties. The observed currency segmentation in emerging market corporate bonds is perhaps unsurprising, since many emerging market economies have capital control measures that prevent local investors from freely investing in foreign currency assets.

From the perspective of US dollar based investors, the excess returns of investing in US dollar denominated corporate bonds issued by emerging market firms are

Figure 5: Sensitivity of Local Currency and US Dollar Corporate Bond Index Excess Return to VIX Index Percent Change



Note: The y-axis plots time-series regression coefficients of local currency (in blue) and US dollar (in purple) local currency monthly corporate bond index excess return on monthly percent change in the VIX index, multiplied by 100. The error bars are the 90 percent confidence intervals based on standard errors clustered at the bond level. Data is from Jan 2018 to Dec 2025.

calculated relative to the risk-free Treasury benchmark. This should be the most relevant excess return measure for US dollar denominated corporate bonds since local investors in emerging markets rarely participate in this market, which contribute to the currency segmentation documented above. To understand whether US dollar denominated corporate bonds issued by emerging market firms exhibit safe-haven properties similar to their local currency counterparts, I first estimate the sensitivity of US dollar corporate bond index excess returns to global risk factors for each country from the coefficient β_i^{USD} in the usual time-series regression

$$rx_{i,t}^{USD} \equiv R_{i,t}^{USD} - R_{f,t}^{USD} = \alpha_i^{USD} + \beta_i^{USD} \Delta \log \text{VIX}_t + \varepsilon_{i,t}$$

where $rx_{i,t}^{USD}$ is the monthly excess return of the US dollar corporate bond index of countrty i at month t over the US Treasury index benchmark return.

Figure 5 shows that the excess return of US dollar corporate bond indexes also responds negatively to global risks for almost all emerging market economies: when the VIX index rises, returns on US dollar corporate bonds issued by emerging market firms fall by more than the risk-free US Treasury benchmark return. This is unsurprising given the safe haven status of the US Treasury. Yet, it is still worth highlighting that, for both local currency and US dollar based investors, investing in US dollar denominated corporate bonds issued by emerging market firms are risky because of their price dynamics in risk-off periods shown in Figures 4 and 5. In contrast, local currency based investors can find safety in local currency denominated corporate bonds issued by their domestic firms as their yields are more stable compared to the local risk-free yields.

Table 3: Differential Yield Spread Responses to VIX Index Percent Changes for Local Currency and US Dollar Bonds

	BRA	CHN	IDN	IND	KOR	MEX	MYS	PER	PHL	THA	ZAF
$\Delta \log \text{VIX} \times \mathbf{1}_{LC}$	-0.95**	-0.30***	-0.86***	-1.34***	-0.35***	-1.83***	-0.24***	-0.86***	-0.57***	-0.52***	-0.64***
	(0.38)	(0.03)	(0.13)	(0.16)	(0.07)	(0.61)	(0.07)	(0.29)	(0.15)	(0.06)	(0.21)
$\Delta \log \text{VIX}$	1.01***	0.35***	0.89***	1.22***	0.40***	1.77***	0.24***	0.88***	0.32***	0.47***	0.73***
	(0.27)	(0.03)	(0.13)	(0.15)	(0.07)	(0.61)	(0.07)	(0.28)	(0.12)	(0.05)	(0.21)
$\mathbf{1}_{LC}$	0.01	-0.06**	0.03	0.14	0.03	0.02	-0.01	0.01	0.01	-0.01	0.07
	(0.03)	(0.02)	(0.04)	(0.14)	(0.03)	(0.03)	(0.01)	(0.03)	(0.07)	(0.04)	(0.07)
Issuer FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Maturity FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rating FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	2,341	61,063	14,661	7,394	66,754	9,567	4,399	3,656	1,781	2,249	5,192

Notes: This table reports the estimated coefficients from weighted least squares (WLS) regressions with bond sizes as weights. Standard errors are clustered at the issuer by month level and are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

2.3.2 Corporate bond yield spreads

I can use bond level data to precisely estimate the differential responses of yield spreads to global risks for local currency and US dollar denominated bonds issued by emerging market firms. Specifically, I estimate the following panel regression which compares the yield spread reactions to changes in the VIX index for local currency and US dollar denominated bonds issued by the same firm with similar credit and duration risks for each emerging market country

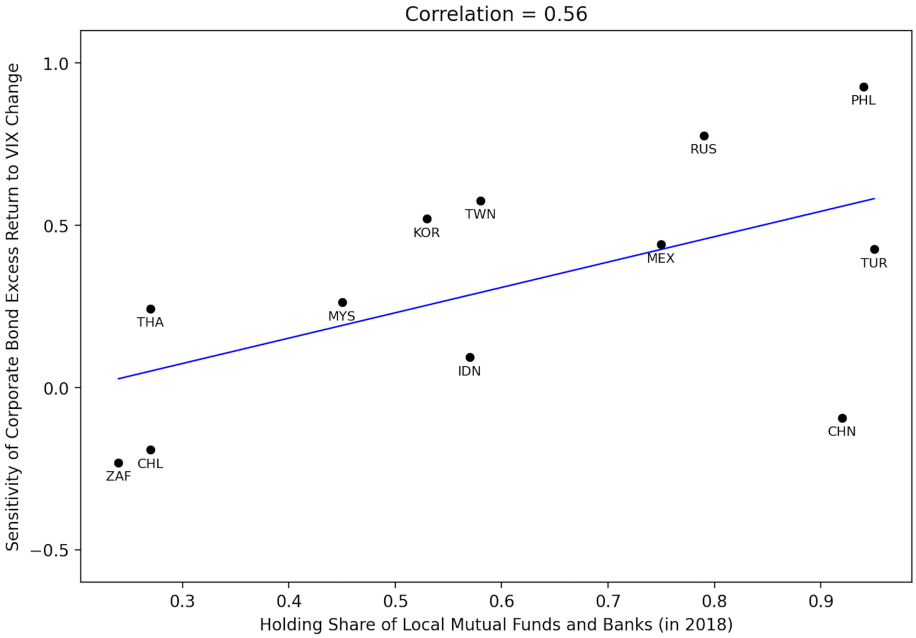
$$\Delta s_{i,j,t} = \alpha \mathbf{1}_{LC,i} \times \Delta \log \text{VIX}_t + \beta \Delta \log \text{VIX}_t + \gamma \mathbf{1}_{LC,i} + \lambda_{f,t} + \delta_{m,t} + \theta_{r,t} + \epsilon_{i,j,t}$$

where α is the country-specific coefficient of interest, $s_{i,j,t}$ is the yield spread of bond i issued by firm j at month t, $\mathbf{1}_{LC,i}$ is an indicator variable for LC bond, and $\lambda_{f,t}, \delta_{m,t}, \theta_{r,t}$ are fixed effects for firm, maturity bracket, and rating at month t.

Table 3 shows that the credit spread responses of local currency corporate bonds to global risks are significantly more negative than US dollar denominated bonds issued by the same firm with similar credit ratings and years to maturity for all emerging market economies. While credit spreads of US dollar denominated bonds issued by emerging market firms widens when global risks rise as shown by the positive coefficients on $\Delta \log \text{VIX}$, local currency spreads respond by much less than dollar spreads as shown by the negative coefficients on $\Delta \log \text{VIX} \times \mathbf{1}_{LC}$. In fact, local currency spreads in emerging market countries either tightens or exhibit insigificant responses to global risks, once we inspect the sum of the two coefficients.

In short, emerging market corporate bond markets are segmented by currency in terms of their credit spread response to global risks. Local currency corporate bonds exhibit safe haven properties that are absent from US dollar bonds even after controlling for credit and duration risks at the issuer level. Clearly there are certain intrinsic features of the local currency corporate bonds that distinguish them from not only the foreign currency corporate market but also other EM asset classes.

Figure 6: Sensitivity of Local Currency Corporate Bond Excess Returns to Global Risks and Investor Composition: Cross-country Patterns



Note: The y-axis plots time-series regression coefficients of local currency monthly corporate bond index excess return on monthly percent change in the VIX index, estimated in Figure 1 over Jan 2018 to Dec 2025.. The x-axis plots the holding share of local mutual funds in total amount outstanding of local currency corporate bonds at the country level, calculated using BIS survey data in 2018 provided by Drehmann and Villar (2019).

2.4 Investor base composition

Local currency corporate bonds in different emerging market economies have heterogeneous exposure to global financial risks, as shown in Figure 1 for instance. Given the observed currency segmentation of emerging market corporate bond markets, the composition of the local investor base could potentially be an important determinant of local currency corporate bond price dynamics in response to global shocks.[8]

Local currency corporate bonds have a distinctly local investor base compared to other emerging market asset classes. While foreign investors play an outsized role in emerging market government bond markets due to their flighty tendency during periods of market stress, their presence in local currency corporate bonds is minimal: foreigners hold less than 5 percent of outstanding bonds in nearly all emerging market economies. Given the limited foreign participation, foreign investors have little bearing on local currency corporate bond price dynamics. Instead, we focus on various local investor groups, including mutual funds, banks, insurance companies and pension funds (ICPFs), corporations and high-net-worth individuals. At the country level, the aggregate holding share of local mutual funds and banks display a strong

[8]Recent studies have shown that investor base composition is a crucial determinant of bond price dynamics. Coppola (2025) documents that corporate bonds held predominantly by insurers experience more shallow drawdowns in market downturns. Zhou (2024) finds that sovereign bonds with higher institutional ownership by foreign investment funds are more sensitive to changes in global financial conditions.

correlation with the sensitivity of local currency corporate bond excess returns to global shocks.

Figure 6 shows that, in countries where local currency corporate bonds are predominantly held by local mutual funds and banks, local currency corporate bond excess returns react more positively to changes in the VIX index. The significance of mutual fund and bank holdings for local currency corporate bond prices is not unexpected, given that these are the most price-sensitive investor groups who tend to create the strongest price impact on bond markets.[9] It is interesting though that mutual fund and bank ownership have *positive* effects on local currency corporate bond prices in periods when global financial risks are high, contrary to the common understanding that these price-sensitive investors tend to rotate out of risk assets and even fire-sale bonds in bad times. I will explore the mechanisms through which mutual fund and bank ownership of local currency corporate bonds supports local currency credit spreads when global financial conditions tighten using granular micro-level data in the next section.

3 Investor base composition and EM local currency credit spread responses to global risks

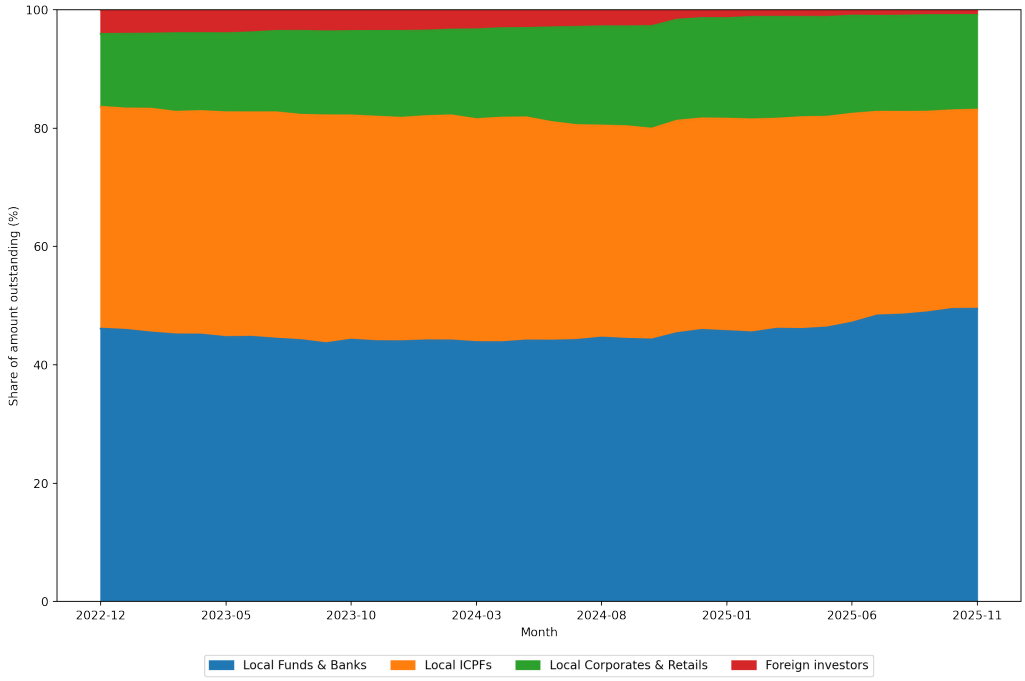
The impact of global financial shocks on local currency corporate credit spreads is positively correlated with the holding share of price-sensitive local investors such as mutual funds and banks. Motivated by this aggregate cross-country pattern, I use security-level micro data to analyze the extent to which the behaviors of the local investor base explain the countercyclical properties of local currency corporate bonds. The granularity of my security-level dataset can allow me to map the investor composition dynamics of individual bonds to the credit spread responses to global shocks while controlling for observable issuer fundamentals and security characteristics.

3.1 Data sources

My main micro-level dataset is the holding composition (Local-Foreign) data obtained from Indonesian Central Securities Depository (KSEI). The dataset is publicly available from December 2022 to December 2025, and covers the holding composition of all securities traded on the Indonesia Stock Exchange (IDX). For each security, the dataset reports the holding share of total amount outstanding broken down by various local and foreign investor groups at the monthly frequency, allowing me to track how the investor base of individual securities evolves over time. The dataset covers the holding composition of Indonesian equities, government bonds, and corporate bonds,

[9] See Koijen et al. (2021), Jansen (2025), Eren et al. (2026) and others for estimated demand elasticities for various investor groups in global bond markets. Most of these studies find that mutual funds and banks have higher demand elasticities than insurers and pension funds.

Figure 7: Investor Base of Indonesian Rupiah (IDR) Denominated Corporate Bonds



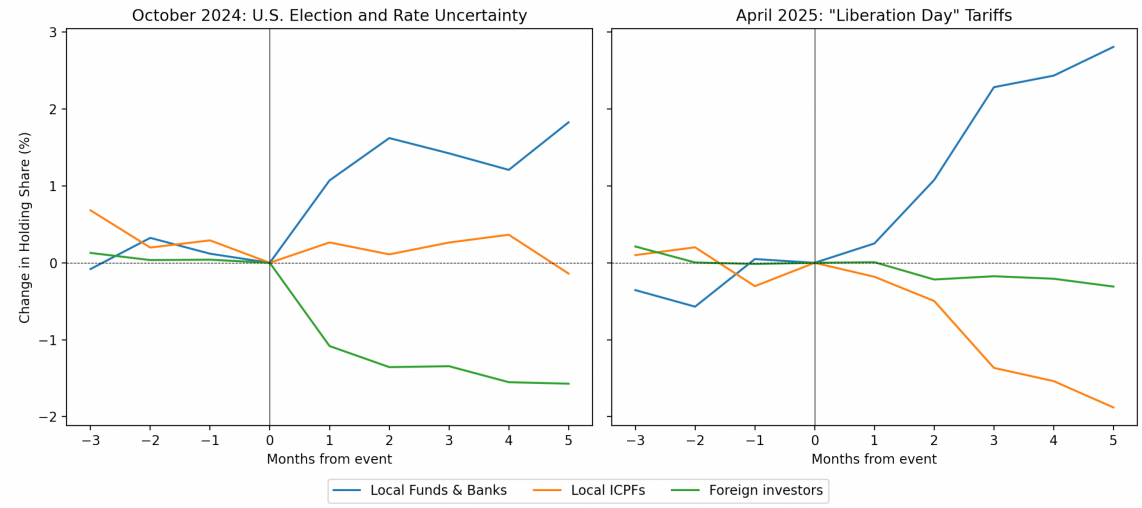
Note: The shaded areas represent the monthly holding shares of four investor groups in the IDR-denominated corporate bond market: local mutual funds and banks (in blue), local insurance companies and pension funds (in orange), local corporates and retails (in green), and foreign investors (in blue). Data is monthly from Dec 2022 to Dec 2025.

allowing us to compare ownership dynamics within and across asset classes.

Indonesia offers an empirical setting well-suited for understanding the impact of investor base composition on the transmission of global shocks to local currency credit spreads. Indonesia is one of the largest emerging market economies by population and GDP. It has a mid-sized local currency corporate bond market with 34 billion US dollar amount outstanding in December 2025, which is the tenth largest among all emerging market economies. Indonesia also has a vibrant capital market with various groups of sophisticated institutional investors. We focus on four main investor groups in Indonesia following the breakdown in ADB (2022). First, mutual funds and banks are price-sensitive, prefer shorter durations, and have relatively short investment horizons. Second, insurers and pensions are price-insensitive, prefer longer durations, and tend to buy and hold to maturity. Third, other local investors include corporations and high-net-worth individuals with more heterogeneous investment mandates and preferences. Fourth, foreign investors have limited participation in the local currency corporate bond market in Indonesia.

Figure 7 shows the time series evolution of the investor base composition of Indonesian Rupiah (IDR) denominated corporate bonds from December 2022 to Decemeber 2025 by aggregating the holding composition at the security level. The holding share of the four investor groups has remained largely stable over the three year period. Local funds and banks are the largest investor group of IDR-denominated corporate

Figure 8: Evolution of Investor Composition in Risk-off Episodes



Note: This figure plots the evolution of the aggregate share of IDR-denominated corporate bonds held by each investor category in major risk-off periods (defined by a monthly average VIX index exceeding 20). The two risk-off episodes in my sample are October 2024 (monthly average VIX is 20) and April 2025 (monthly average VIX is 32). For the second episode, monthly VIX is above 20 from March to May, though April is treated as the starting date to reflect the peak of the VIX index. Data is from December 2022 to December 2025.

bonds, accounting for nearly half of the total amount outstanding. Local insurers and pension funds are also significant investors of local currency corporate bonds in Indonesia, with an ownership share of cloe to 40 percent. Local corporates and retails account for roughly 10 percent of the total market. As discussed before, foreign investors hold less than 5 percent of outstanding local currency corporate bonds, confirming the aggregate statistics in Drehmann and Villar (2019).

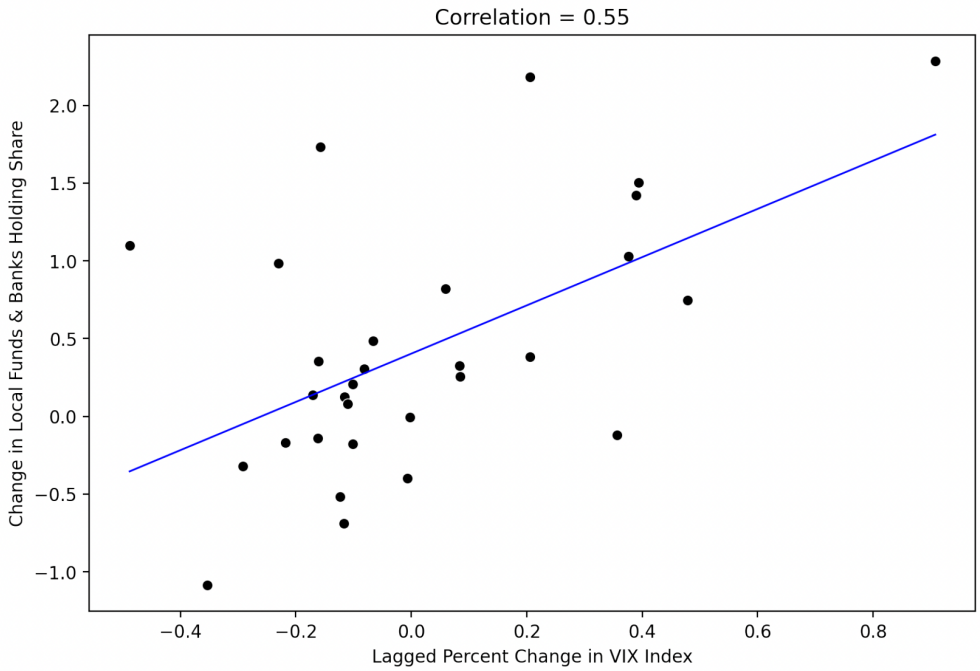
3.2 Impact of global risks on investor base composition

I first examine the impact of global risks on the investor base composition of IDR-denominated corporate bonds. I focus on how various investor groups adjust their corporate bond portfolio holdings in response to changes in global financial conditions. I begin by analyzing how the aggregate portfolio holdings of different investor groups evolve during major risk-off episodes in my sample. I perform a simple event study that tracks the evolution of aggregate holdings of IDR-denominated corporate bonds by these investor groups around October 2024 (election and rate uncertainty in the US) and around April 2025 ("Liberation Day" tariff announcements) which are two episodes where the monthly average value of the VIX index exceeds 20.[10]

Figure 8 shows that local mutual funds and banks increase their holdings of IDR-denominated corporate bonds in both risk-off episodes. During and after October 2024, local funds and banks in Indonesia increase their aggregate holding shares of local currency corporate bonds by 2 percentage points, while foreign investors

[10]A VIX reading above 20 is widely recognized by market participants as a risk-off environment where global uncertainty increases and risky assets sell off.

Figure 9: Global Shocks Predict Local Fund and Bank Inflows to IDR Corporate Bonds



Note: The figure shows the predictive relationship between change in the VIX index and change in IDR-denominated corporate bond holding share of local mutual funds and banks. The x-axis plots the lagged percent change in the VIX index for the last 3 months. The y-axis plots the change in holding share of local funds and banks in the next 3 months (in percentage point). Data is from December 2022 to December 2025.

reducing their holdings by a similar amount. In the aftermath of the "Liberation Day" tariff announcement, Indonesian funds and banks again increase their corporate bond holdings by 3 percentage points, while local insurers and pension funds sell their existing holdings. In addition, no significant pre-trends are observed preceding these two episodes. These patterns in the event studies provides suggestive evidence that price-sensitive local investors seek haven in local currency corporate bonds in periods of heightened global market volatility.

Figure 9 also shows that higher global risks on average can predict local fund and bank inflows into local currency corporate bonds. The scatterplot diagram illustrates that the lagged changes in the VIX index can positively predict changes in the aggregate holding shares of local funds and banks with a correlation of 0.55.

I then estimate the portfolio holding response to global financial shocks for the four investor groups by estimating panel regressions where I regress the monthly change in bond-level investor share on the monthly percent change in the VIX index controlling for local macroeconomic and financial variables (including the monthly changes in 10-year US Treasury yield, 10-year Indonesian government bond yield, log IDR/USD exchange rate, log amount outstanding and log new issuance of IDR-denominated corporate bonds) as well as bond fixed effects. I also augment the regressions with lagged investor base composition to control for time-variant bond characteristics that could impact portfolio choices. The panel regressions are estimated by weighted least

Table 4: Responses of Investor Base Composition of IDR-denominated Corporate Bonds to Global Risk Factors

	Dependent variable: Δ Bond-level Investor Share							
	Mutual Funds & Banks		ICPFs		Corporates & Retails		Foreigners	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ log VIX	0.322***	0.348***	-0.108***	-0.138***	-0.194*	-0.210**	-0.020	-0.001
	(0.102)	(0.108)	(0.042)	(0.046)	(0.100)	(0.104)	(0.015)	(0.014)
Δ US10Y yield		-0.109		0.012		0.078		0.019
		(0.107)		(0.057)		(0.096)		(0.027)
Δ ID10Y yield		-0.147		0.108		0.045		-0.005
		(0.104)		(0.067)		(0.105)		(0.025)
Δ log IDR exchange rate		0.742		0.141		-0.277		-0.590
		(1.527)		(0.791)		(1.421)		(0.480)
Δ log amount outstanding		0.587		-0.752		-0.127		0.299
		(1.372)		(0.745)		(1.345)		(0.288)
Δ log issuance		-0.004		0.003***		-0.000		0.001
		(0.002)		(0.001)		(0.002)		(0.001)
Bond FE	✓	✓	✓	✓	✓	✓	✓	✓
Lag investor share controls	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.36	0.36	0.10	0.11	0.42	0.42	0.22	0.23
Observations	23,964	23,964	23,964	23,964	23,964	23,964	23,964	23,964

Notes: This table reports the estimated coefficients from weighted least squares (WLS) regressions with bond sizes as weights. The sample includes all IDR-denominated corporate bonds traded in Indonesia from December 2022 to December 2025. The regressions are augmented with measures of lagged investor composition including shares of mutual funds and banks, insurers and pensions, and foreigners. Standard errors are clustered at the security level and are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

squares with bond sizes as weights.

Table 4 reports the responses of investor holding shares to changes in the VIX index for the four investor groups in the Indonesian corporate bond market. Consistent with the aggregate holdings response to global shocks documented in Figures 8 and 9, mutual funds increase their holdings of IDR-denominated corporate bonds when global financial risks increases. If the VIX shock doubles, the holding share of mutual funds and banks increase by 0.3 percentage points at the individual bond level. These price-sensitive local investors are the only investor groups that increase local currency corporate bond purchases when global uncertainty rises, as all the other investor groups reduce their corporate bond holdings during high-VIX periods.

Having shed light on the dynamics of investor base composition in response to global shocks in IDR-denominated corporate bonds, I then take a closer look at the portfolio responses of mutual funds and banks who step in as the marginal buyers of local currency corporate bonds in Indonesia during periods of tight global financial conditions. Since my dataset also covers detailed investor composition of the universe of Indonesian stocks, I can estimate the same regression specification over the sample of IDR-denominated corporate stocks. Due to the lack of portfolio holding data, I cannot perform the ideal empirical exercise where I examine portfolio reallocation at the investor level. Yet, the underlying dynamics of investor flows can still be

Table 5: Responses of Investor Base Composition of IDR-denominated Corporate Stocks to Global Risk Factors

	Dependent variable: Δ Stock-level Investor Share							
	Mutual Funds & Banks		ICPFs		Corporates & Retails		Foreigners	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ log VIX	-0.055***	-0.049***	-0.001	-0.010	0.119	0.078	-0.063	-0.018
	(0.018)	(0.017)	(0.018)	(0.017)	(0.093)	(0.105)	(0.092)	(0.103)
Δ US10Y yield		-0.002		0.015		0.225		-0.238
		(0.022)		(0.025)		(0.168)		(0.164)
Δ ID10Y yield		0.037*		0.035		-0.107		0.036
		(0.019)		(0.022)		(0.112)		(0.109)
Δ log IDR exchange rate		-0.525		-0.397		1.518		-0.594
		(0.333)		(0.522)		(2.125)		(2.105)
Δ log amount outstanding		-2.271		-8.571		-11.179		22.037
		(2.673)		(6.440)		(23.972)		(24.180)
Δ log issuance		0.002***		0.002*		0.005		-0.009
		(0.001)		(0.001)		(0.006)		(0.006)
Bond FE	✓	✓	✓	✓	✓	✓	✓	✓
Lag investor share controls	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.036	0.037	0.043	0.051	0.036	0.037	0.036	0.038
Observations	33,258	33,258	33,258	33,258	33,258	33,258	33,258	33,258

Notes: This table reports the estimated coefficients from ordinary least squares (OLS) regressions. The sample includes all IDR-denominated corporate stocks traded in Indonesia from December 2022 to December 2025. The regressions are augmented with measures of lagged investor composition including shares of mutual funds and banks, insurers and pensions, and foreigners. Standard errors are clustered at the security level and are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

identified from the aggregate patterns of portfolio substitution across asset classes based on security-level data.

Table 5 reports the responses of investor holdings shares of Indonesian local stocks to global risks for various investor groups. In the local stock markets, mutual funds and banks are once again the only investor groups that significantly adjust their stock positions in response to global shocks. When global risks increase, these price-sensitive investors reduce their holdings of IDR-denominated stocks in an attempt to reduce their risk exposure. Taken together with the results in Table 4, we can conclude that mutual funds and banks rebalance their portfolio away from local currency stocks into local currency corporate bonds when global financial condition tightens. Mutual funds and banks are sensitive to price fluctuation to the local stock markets, and therefore seek haven in local currency corporate bond markets that are much more insulated from global volatility. Even though long-term investors such as insurance companies and pension funds may not proactively adjust their portfolio holdings during risk-off periods due to their inelastic demand, they would accomodate the increased demand for corporate bonds from funds and banks by selling parts of their portfolios under the new market equilibrium.

Table 6: Reactions of IDR-denominated Corporate Bond Yield Spread to Global Risk Factors: the Role of Investor Base Composition Changes

	Dependent variable: Δ Credit Spread			
	(1)	(2)	(3)	(4)
Δ log VIX	-0.040**	0.112	-0.049***	0.074
	(0.017)	(0.071)	(0.019)	(0.071)
Δ log VIX × Δ Local fund and bank share		-0.013**		-0.014***
		(0.006)		(0.006)
Δ log VIX × Δ Local insurer and pension share		-0.003		-0.006
		(0.012)		(0.013)
Δ log VIX × Δ Foreign investor share		-0.019		-0.015
		(0.030)		(0.030)
Δ Local fund and bank share		0.001		0.001
		(0.002)		(0.001)
Δ Local insurer and pension share		-0.003		-0.001
		(0.004)		(0.001)
Δ Foreign investor share		-0.001		-0.002
		(0.001)		(0.003)
Δ US10Y yield			-0.221***	-0.221***
			(0.023)	(0.023)
Δ ID10Y yield			0.009	0.010
			(0.017)	(0.017)
Δ log IDR exchange rate			1.640***	1.638***
			(0.279)	(0.280)
Δ log total amount outstanding			0.994***	0.997***
			(0.219)	(0.221)
Δ log total new issuance			0.004***	0.004***
			(0.001)	(0.001)
Bond FE	✓	✓	✓	✓
Lagged investor share controls	✓	✓	✓	✓
Observations	23,964	23,964	23,964	23,964

Notes: This table reports the estimated coefficients from weighted least squares (WLS) regressions with bond sizes as weights. The sample includes all IDR-denominated corporate bonds traded in Indonesia from December 2022 to December 2025. Standard errors are clustered at the security level and are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

3.3 Mapping investor base dynamics to local currency credit spread responses to global shocks

The dynamics of investor base composition at the bond level that I documented above can explain the safe-haven properties of local currency corporate bonds. The key empirical result of this paper is that local currency credit spread tightens during risk-off periods because of local fund and bank inflows at the bond level. In the following regression, I estimate how the sensitivity of corporate bond yield spread to global risks depend on changes in investor base composition

$$\Delta s_{i,t} = \alpha \Delta \log \text{VIX}_t + \beta' \Delta \Theta_{i,t} \times \Delta \log \text{VIX}_t + \gamma' \Delta \Theta_{i,t} + \delta' X_{i,t} + \lambda_i + \epsilon_{i,t}$$

where $s_{i,t}$ is the yield spread of bond i at month t, $\Theta_{i,t}$ is a vector of investor base composition including the share of local funds and banks, local ICPFs, and foreign investors of bond i at month t, $X_{i,t}$ is the vector of macroeconomic and financial control variables as well as lagged investor shares. λ_i denote bond fixed effects. Note that time fixed effects are not included here since they would otherwise be absorbed

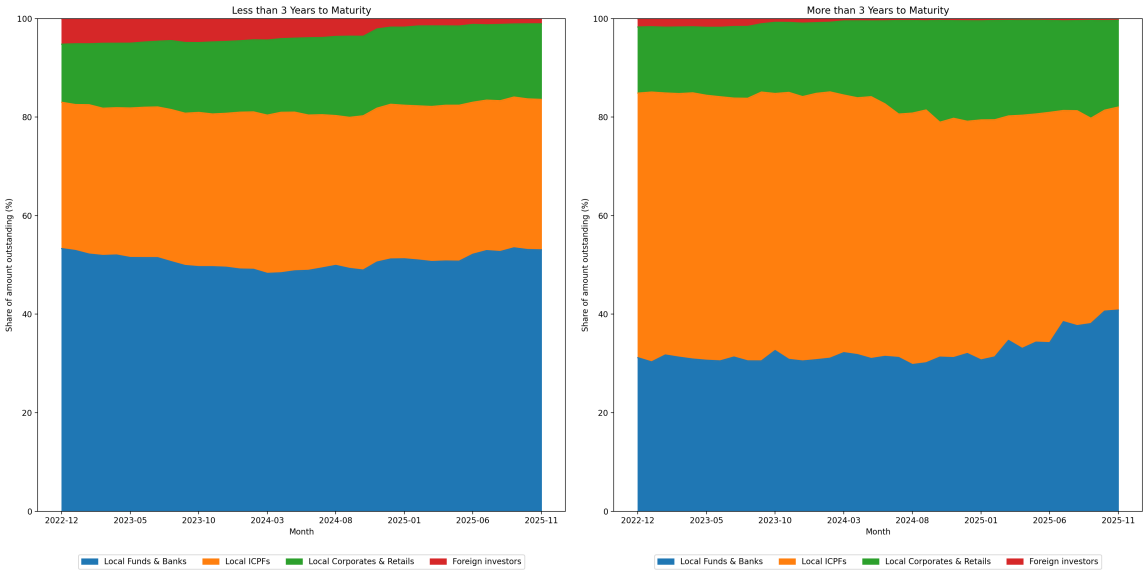
by global risk factors $\Delta \log \text{VIX}_t$. The coefficients of interest are β, which capture how the sensitivity of corporate bond yield spreads to global risk varies with changes in investor base composition at the bond level. The regression is performed on the same sample of IDR-denominated corporate bonds as in Table 4 with identical sample size, so we can compare the previously estimated responses of investor base composition to global risks with the newly estimated credit spread reactions to global risks across bonds with different investor flow dynamics.

Table 6 shows that IDR-denominated corporate bonds experiencing larger increases in local fund and bank ownership in response to rising global financial risks also exhibit greater yield spread tightening. When the monthly change in the VIX index doubles, an increase in bond-level fund and bank ownership by 1 percentage points directly translates into a fall in local currency credit spread by 140 basis points, as shown by column (2). In the absence of increased ownership of these price-sensitive local investors, local currency credit spreads slightly widens though the coefficient on $\Delta \log$ VIX is statistically insignificant. The economic magnitude is similar when we control for additional macroeconomic and financial variables that could confound global risk factors in column (4). Therefore, the cross-sectional responses of local currency corporate bonds to global shocks highlight the role of investor base composition in contributing to credit spread tightening at the aggregate level.

Crucially, mutual funds and banks are the only investor groups whose net purchase affect local currency bond prices in response to global financial risks. Neither local insurance companies and pension funds nor foreign investors exert significant price pressure on corporate bonds in terms of changes in their holding shares at the bond level. This finding does not come as a surprise because insurance companies and pension funds have long investment horizons and liability-matching mandates, making them relatively insensitive to short-term VIX fluctuations as shown by their limited responses in Table 4. The limited participation of foreign investors implies that their actions cannot lead to significant price impact event if they do react to global shocks. Therefore, during risk-off periods, price-sensitive investors such as mutual funds and banks are the marginal investors in the IDR-denominated corporate bond markets: their bond buying activities have significant impact on bond price dynamics.

My empirical results demonstrate that the inflows of local mutual funds and banks into local currency corporate bonds lead to credit spread tightening at the bond level. The observed flight to safety by price-sensitive local investors is achieved by portfolio rebalancing at the aggregate level from local stocks to corporate bonds. Due to the capital control measures imposed by Indonesian authorities, Indonesian investors does not have significant portfolio positions in foreign currency demoninated assets. The absence of local safe-haven inflows into the US-dollar denominated corporate bonds issued by Indonesian firms explain the opposite response of foreign and local currency credit spreads to global risks in a credit market highly segmented by currency in terms

Figure 10: Ownership heterogeneity by bond maturity



Note: The left (right) figure shows the investor composition of IDR-denominated corporate bonds with less than (greater than) 3 year to maturity. In both figures, the shaded areas represent the monthly holding shares of four investor groups in the IDR-denominated corporate bond market: local mutual funds and banks (in blue), local insurance companies and pension funds (in orange), local corporates and retails (in green), and foreign investors (in blue). Data is monthly from Dec 2022 to Dec 2025.

of the investor base.

3.4 Ownership heterogeneity by bond maturity

Having demonstrated that local mutual funds and banks' flight to safety in local currency corporate bonds support credit spreads when global risks increase, I then take advantage of the rich cross-sectional variation in bond characteristics in the universe of corporate bonds covered by my dataset to explore the heterogeneity in investor flows and bond price dynamics. I seek to identify the subset of corporate bonds that are the most subject to safe haven inflows and investigate whether their price dynamics are explained by the same flight-to-safety channel.

Different investor groups have distinct investment mandates and risk preferences, leading them to sort into bonds with different characteristics. In the IDR-denominated corporate bond market, bond maturity is a key dimension of investors' sorting: if certain investors systematically favor shorter- or longer-maturity bonds, and if they are the marginal investors that exert significant impact on bond prices during risk-off periods, then investor sorting along the maturity dimension could explain a substantial share of the observed relationship between investor base dynamics and credit spread responses to global shocks. Figure 10 shows that mutual funds and banks have strong preferences for short-term bonds (holding over half of total outstanding amount of bonds with less than 3 years to maturity), whereas insurers and pension funds dominate the long-maturity market segment (holding close to 60 percent of to-

Table 7: Responses of Investor Base Composition of IDR-denominated Corporate Bonds to Global Risk Factors: Short vs. Long Maturity Bonds

	Dependent variable: Δ Holding Share of Funds and Banks			
	Years to Maturity ≤ 3 Years		Years to Maturity > 3 Years	
	(1)	(2)	(3)	(4)
Δ log VIX	0.372***	0.421***	0.181	0.147
	(0.105)	(0.119)	(0.167)	(0.157)
Δ US10Y yield		-0.121		-0.027
		(0.126)		(0.151)
Δ ID10Y yield		-0.153		-0.257**
		(0.125)		(0.113)
Δ log IDR exchange rate		0.098		3.690**
		(1.856)		(1.684)
Δ log amount outstanding		1.274		1.051
		(1.609)		(2.078)
Δ log issuance		-0.004		-0.003
		(0.003)		(0.002)
Bond FE	✓	✓	✓	✓
Lag investor share controls	✓	✓	✓	✓
R-squared	0.48	0.48	0.11	0.11
Observations	16,609	16,609	7,355	7,355

Notes: This table reports the estimated coefficients from weighted least squares (WLS) regressions with bond sizes as weights. The sample includes all IDR-denominated corporate bonds traded in Indonesia from December 2022 to December 2025. The sub-sample for columns (1) and (2) include bonds with years to maturity less than 3 years. The sub-sample for columns (3) and (4) include bonds with years to maturity greater than 3 years. The regressions are augmented with measures of lagged investor composition including shares of mutual funds and banks, insurers and pensions, and foreigners. Standard errors are clustered at the security level and are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

tal outstanding amount of bonds with greater than 3 years to maturity). My findings confirms ADB (2022) which discusses the different maturity preferences for various Indonesian investor groups.

Given the dominant role of mutual funds and banks in the short-term corporate bond market, I examine whether the dynamics of investor base composition during risk-off periods differ across corporate bonds with different maturities. Table 7 shows the responses of investor holding shares of IDR-denominated corporate bonds with short and long maturities to global risks separately. For short-maturity bonds, an increase in global risks significantly increases the holding share of local mutual funds and banks. In contrast, for long-maturity bonds, monthly changes in the VIX index does not have a statistical significant impact on investor base dynamics, indicating that local fund and bank inflows during risk-off periods are concentrated in the short-maturity segment of the corporate bond market. This observed pattern is consistent with the maturity preferences documented in Figure 6: since mutual funds and banks predominantly hold short-term bonds, it is precisely these bonds that experience the largest ownership shifts in response to global risk shocks. Taken together, these results suggest that the safe-haven dynamics of IDR-denominated corporate bonds are primarily a short-maturity phenomenon, driven by the flight of price-sensitive local investors into the short end of the corporate bond market during periods of heightened global uncertainty.

Table 8: Investor Base Dynamics and Sensitivity of IDR-denominated Corporate Bond Yield Spread to Global Risk Factors: Short vs. Long Maturity Bonds

	Dependent variable: Δ Credit Spread			
	Years to Maturity ≤ 3 Years		Years to Maturity > 3 Years	
	(1)	(2)	(3)	(4)
Δ log VIX	0.114	0.083	0.142	0.089
	(0.089)	(0.090)	(0.104)	(0.101)
Δ log VIX × Δ Local fund and bank share	-0.015**	-0.015**	-0.005	-0.004
	(0.006)	(0.006)	(0.013)	(0.012)
Δ log VIX × Δ Local insurer and pension share	-0.001	-0.003	-0.011	-0.013
	(0.014)	(0.014)	(0.029)	(0.029)
Δ log VIX × Δ Foreign investor share	-0.031	-0.031	-0.022	0.003
	(0.045)	(0.051)	(0.051)	(0.045)
Δ Local fund and bank share	0.001	0.001	0.003	-0.001
	(0.002)	(0.002)	(0.003)	(0.001)
Δ Local insurer and pension share	-0.002	-0.002	-0.003	-0.001
	(0.003)	(0.003)	(0.003)	(0.001)
Δ Foreign investor share	-0.001	-0.002	0.011	-0.001
	(0.006)	(0.005)	(0.011)	(0.002)
Δ US10Y yield		-0.204***		-0.252***
		(0.031)		(0.025)
Δ ID10Y yield		0.006		0.022
		(0.021)		(0.031)
Δ log IDR exchange rate		1.804***		1.162***
		(0.363)		(0.360)
Δ log total amount outstanding		1.195***		0.482**
		(0.307)		(0.241)
Δ log total new issuance		0.008***		-0.005***
		(0.002)		(0.001)
Bond FE	✓	✓	✓	✓
Lagged investor share controls	✓	✓	✓	✓
Observations	16,609	16,609	7,355	7,355

Notes: This table reports the estimated coefficients from weighted least squares (WLS) regressions with bond sizes as weights. The sample includes all IDR-denominated corporate bonds traded in Indonesia from December 2022 to December 2025. The sub-sample for columns (1) and (2) include bonds with years to maturity less than 3 years. The sub-sample for columns (3) and (4) include bonds with years to maturity greater than 3 years. Standard errors are clustered at the security level and are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8 confirms that the safe-haven price dynamics of IDR-denominated corporate bonds is driven entirely by the short-maturity segment where local mutual funds and banks are the flight to safety behaviors. For short-maturity bonds, the negative response of the credit spread to global risks is concentrated on bonds that experience an increased ownership share of local funds and banks. In contrast, local fund and bank inflows do not exert significant price impact on the long end of the corporate bond market during risk-off periods. As before, neither local insurers and pension funds nor foreign investors exert a statistically significant price impact on either maturity segment. These findings collectively suggest that the safe-haven dynamics of IDR-denominated corporate bonds operate through investor demand channel: price-sensitive local mutual funds and banks concentrate their risk-off purchases in short-maturity bonds, and it is precisely this behavior that drives credit spread tightening in the aggregate market.

4 A stylized model of flights to safety in local-currency corporate bonds

I develop a simple theoretical framework to explain why local investors in emerging markets seek safety in local-currency corporate bonds when global financial conditions tighten. Because foreign investors have limited participation in these markets, local-currency corporate bonds are relatively insulated from foreign selling pressure during risk-off episodes. By contrast, local-currency equities, with their higher foreign ownership, face stronger selling pressure. Local investors who must remain invested in domestic assets therefore reallocate toward corporate bonds as a relative safe haven. The model yields testable predictions that align with the empirical evidence presented in the preceding sections.

4.1 Model setup

Assets and global conditions. The economy has N local-currency assets, three groups of investors, and a global state. Each asset j is in fixed supply and has risk premium μ_j, defined as its expected return in excess of the local risk-free rate. For corporate bonds, changes in μ_j equal changes in yield spreads over the sovereign benchmark, holding expected default losses and the sovereign risk premium fixed. Global financial conditions are indexed by θ, with $\Delta\theta > 0$ denoting a tightening. The variance of the next global shock, $v(\theta)$, rises with θ, so tighter global financial conditions increase global risk.

Investor demand. Three groups hold these assets: foreign investors (F), elastic local investors (E), and inelastic local investors (I). Elastic investors comprise mutual funds and banks; inelastic investors comprise insurers and pension funds. Each group's demand is linear in the asset's risk premium, which follows from mean-variance portfolio optimization. I normalize the units of each asset so that the aggregate demand slope equals one. The three groups' demand slopes are therefore f_j, e_j, and $1 - f_j - e_j$, where f_j measures foreign participation.[11] Global conditions affect demand through group-specific demand shifters, measured as the change in demand per unit of global financial tightening at given risk premia, divided by the group's demand slope. These demand shifters are thus expressed in risk premium units.

Foreign investors. Foreign investors evaluate returns in hard currency and can instead hold hard-currency assets. Each foreign investor in market j chooses its

[11] Each group's share of the aggregate demand slope is proportional to its ownership share times its semi-elasticity of demand (Appendix C.3). Foreign ownership is therefore a valid proxy for f_j when semi-elasticities and the mix of local holders are similar across assets.

local-currency holding y to maximize

$$\max_y \; y\left[\mu_j + c(\theta)\right] - \frac{\gamma_F}{2} y^2 \left[\sigma^2 + \sigma_e^2(\theta)\right] \tag{1}$$

where $c(\theta)$ is the expected excess return on the local currency, $\sigma_e^2(\theta)$ is the variance of currency return, σ^2 is the variance of local-currency asset return, and $\gamma_F > 0$ is absolute risk aversion. For simplicity, currency returns are uncorrelated with local-currency asset returns. A tightening of global financial conditions lowers expected currency returns and raises currency risk: $c'(\theta) < 0$ and $(\sigma_e^2)'(\theta) > 0$. Linearizing around $\theta = 0$ yields normalized foreign demand (derived in Appendix C.1):

$$D_j^F = f_j(\mu_j + \phi\theta), \qquad \phi = c' - y_0 \gamma_F (\sigma_e^2)' < 0 \tag{2}$$

where ϕ is the demand shifter for foreign investors, and $y_0 > 0$ is the baseline holding. At a given risk premium, tighter global financial conditions reduce foreign demand through lower expected currency returns and higher currency risk. When per-investor demand slopes are comparable across markets, f_j increases with the number of foreign investors in market j.

Exposure to global shocks. In the model, global shocks can move local asset prices through foreign investor flows. Absent any shift in local demand, a tightening of global financial conditions lowers foreign demand for asset j by $-f_j\phi$ at the initial level of risk premium. Because the total demand slope is one, the risk premium must rise by the same amount to clear the market. I assume that local investors gauge an asset's exposure to the next global shock by this first-round price impact. Normalizing duration to one, asset j's exposure to global risks is

$$\kappa_j = -f_j\phi > 0, \tag{3}$$

which is proportional to foreign participation. An asset that foreigners barely hold faces little selling pressure and holds its value in bad times.

Elastic local investors. Mutual funds and banks must remain invested in local-currency assets because of fund mandates and banks' need to deploy deposits. They choose dollar holdings $x \in \mathbb{R}^N$ to maximize

$$\max_x \; x'\mu - \frac{\gamma}{2} x'\Sigma x \quad \text{s.t.} \quad \mathbf{1}'x = W, \qquad \Sigma = \sigma^2 I + v(\theta)\kappa\kappa', \tag{4}$$

where $\mu = (\mu_1, \ldots, \mu_N)'$ collects the risk premia, $\gamma > 0$ is risk aversion, and W is their fixed budget. The covariance matrix captures both idiosyncratic risk and a common global risk component. The budget constraint prevents these investors from moving to cash, so they respond to higher global risk by reallocating across local assets. Their

first-order condition is

$$x = \frac{1}{\gamma}\Sigma^{-1}(\mu - \lambda \mathbf{1}), \tag{5}$$

where λ is the budget multiplier. Linearizing around $\theta = 0$ gives normalized demand of elastic local investors (derived in Appendix C.2):

$$D_j^E = e_j(\mu_j - \bar{\mu} + \eta_j \theta), \qquad \eta_j = h(\bar{f} - f_j), \qquad h \equiv -\gamma v' \kappa_p \phi > 0. \tag{6}$$

Here, $\bar{\mu} = N^{-1}\sum_k \mu_k$ is the average risk premium, $\kappa_p = \kappa' x$ is the investors' baseline portfolio exposure, and $\bar{f} = N^{-1}\sum_k f_k$ is average foreign participation. Because the budget must be fully invested, demand for an asset depends on its risk premium relative to the average risk premium. The demand shifter η_j captures the degree of portfolio rotation at a given level of risk premium. Local demand rises for assets with below-average foreign participation ($f_j < \bar{f}$) and falls for those with above-average participation ($f_j > \bar{f}$). This captures the portfolio rotation toward relatively insulated assets, such as local-currency corporate bonds, and away from more foreign-owned assets, such as equities. Because baseline holdings are nonnegative, $\kappa_p = -\phi \sum_k f_k x_k > 0$, so the rotation intensity $h = \gamma v' \phi^2 \sum_k f_k x_k$ is positive and rises with risk aversion, the sensitivity of global risk to tightening, the strength of foreign selling, and the foreign participation of the investors' portfolio.

Inelastic local investors. Insurers and pension funds have long investment horizons and match assets to liabilities. I assume their holdings respond to risk premia but not directly to global conditions:

$$D_j^I = (1 - f_j - e_j)\mu_j. \tag{7}$$

Equilibrium. Each asset market clears:

$$D_j^F + D_j^E + D_j^I = q_j, \tag{8}$$

where q_j is the supply of asset j in normalized units, net of the constant terms in demand (Appendix C.3).

4.2 Model results

I use the model to derive the equilibrium response of risk premia and investor flows to global shocks. Appendix C.4 provides the derivations.

Equilibrium risk premium response to global shocks. Differentiating the market-clearing condition (8) with respect to θ gives the equilibrium response of

the risk premium to a tightening of global financial conditions:

$$\beta_j \equiv \frac{d\mu_j}{d\theta} = -f_j\,\phi - e_j\,\eta_j. \tag{9}$$

The equilibrium risk premium response depends on the composition of demand from foreign investors and elastic local investors. Since $\phi < 0$, foreign selling pressure, $-f_j\phi > 0$, unequivocally raises the risk premium. Substituting $\eta_j = h(\bar{f} - f_j)$ into (9) gives

$$\beta_j = -f_j\,\phi - e_j\,h\,(\bar{f} - f_j). \tag{10}$$

For assets with below-average foreign participation ($f_j < \bar{f}$), local safe-haven demand lowers the risk premium. For assets with above-average foreign participation ($f_j > \bar{f}$), local rotation away from these assets raises the risk premium further.

Risk premia fall ($\beta_j < 0$) if and only if local safe-haven demand outweighs foreign selling pressure, $e_j\eta_j > -f_j\phi$. Risk premium compression therefore requires foreign participation to be sufficiently below average and is more likely for assets with more elastic local demand (higher e_j; Appendix C.4). Outright risk premium compression thus indicates a shift in local demand beyond the absorption of foreign sales.

Portfolio rotations in response to global shocks. Purchases by mutual funds and banks in response to global financial tightening are

$$\frac{dD_j^E}{d\theta} = e_j(\beta_j + \eta_j) = \underbrace{-e_j f_j\,\phi}_{\text{absorbing foreign sales}} + \underbrace{e_j(1-e_j)\,\eta_j}_{\text{safe-haven rotation}}. \tag{11}$$

For assets with below-average foreign participation, both terms are positive. The first captures elastic local investors' absorption of foreign selling pressure; the second captures additional purchases due to safe-haven rotation. This rotation is stronger when tighter global financial conditions generate a larger increase in global risk: a higher v' raises h and therefore increases $\eta_j = h(\bar{f} - f_j)$ for every asset with $f_j < \bar{f}$. Foreign investors sell, while elastic local investors absorb their sales. When risk premia compress, inelastic local investors also sell passively, as their holdings decline with the lower premium: $-(1 - f_j - e_j)\beta_j > 0$.

For assets with above-average foreign participation, both foreigners and elastic local investors reduce their holdings at a given risk premium. The risk premium therefore rises by more than foreign selling alone would imply: $\beta_j > -f_j\phi > 0$. Inelastic local investors passively absorb some of the resulting supply, $(1-f_j-e_j)\beta_j > 0$. Elastic local investors, however, sell on net when the rotation away from these assets outweighs their absorption of foreign sales, $(1 - e_j)(-\eta_j) > -f_j\phi$.

4.3 Taking the model to the data

The key insight of the model is that the responses of risk premia and investor flows to global shocks depend on an asset's foreign ownership. For assets with high foreign ownership, both foreign and elastic local investors seek to reduce their holdings during periods of global financial tightening, putting upward pressure on risk premia. By contrast, assets with limited foreign ownership attract safe-haven demand from elastic local investors, which supports prices and can compress risk premia. The stronger this safe-haven rotation, the greater the resulting compression in risk premia.

The empirical results strongly support the prediction of the model. Local currency corporate bonds in emerging markets have limited foreign ownership. In risk-off periods, downward price pressure is limited, which induces increased demand from mutual funds and banks, tightening their yield spreads in equilibrium. In the cross-section, bonds with increased fund and bank inflows experience a strong compression of their yield spreads. Meanwhile, mutual funds and banks rotate their portfolios out of local equities, which has higher foreign ownership. The observed risk premium and portfolio responses to global financial tightening matches the prediction of the model.

5 Concluding remarks

Local currency corporate bonds is increasingly important as a funding source for firms in emerging markets and as a key asset class for institutional investors. This paper documents surprising safe-haven properties of local currency corporate bonds in emerging markets: local currency credit spreads narrow when global risks increase. I show that investor base composition is key to understanding the price dynamics of local currency corporate bonds, as local mutual funds and banks serve as the marginal price-setters during risk-off episodes. In contrast to local currency government bond markets where foreign investor behavior amplifies volatility, local fund and bank inflows into local currency corporate bonds act as a stabilizing force, supporting credit spreads precisely when global uncertainty rises. My findings highlight the importance of domestic investor heterogeneity in understanding the safe-haven properties of emerging market local currency corporate bonds. The structure of the local investor base — particularly the role of price-sensitive intermediaries — is a key determinant of how local currency corporate bond prices respond to global shocks.

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Appendix

A. Local Currency Corporate and Government Bond Indexes

In this section we describe the bond market index data used to construct our measures of local currency corporate and sovereign bond returns for the 16 emerging market economies in our sample. For each country, we collect one index tracking the domestic corporate bond market and one index tracking the domestic government bond market, both denominated in the local currency. Table A1 lists the specific indexes and the data vendor from which each series is obtained. The indexes are compiled by a combination of global index providers (S&P Dow Jones Indices and FTSE Russell), local exchanges (B3, the Bombay Stock Exchange, the Budapest Stock Exchange, the Moscow Exchange, the Johannesburg Stock Exchange, and Borsa İstanbul), and local pricing agencies or bond market associations (Anbima in Brazil, LVA Indices in Chile and Peru, Bond Pricing Agency Malaysia, and the Thai Bond Market Association). The series are retrieved from Bloomberg Terminal and LSEG Workspace where available, and directly from the index provider otherwise. We pair the corporate and government indexes from the same provider and index family where possible, so that differences between the two series reflect the credit segment of the market rather than differences in construction methodology, pricing sources, or rebalancing rules.

Table A1: List of Local Currency Corporate and Government Bond Indexes

Country	Corporate bond total return index	Government bond total return index	Source
BRA	S&P/B3 Brazil Liquid IPCA Corp Bond Index	Anbima Brazil Govt Bonds IMA Index	Bloomberg
CHL	LVA Chilean Corp Bonds Total Return Index	LVA Chilean Govt Bonds Total Return Index	Bloomberg
CHN	S&P China Corp Bond Index	S&P China Govt Bond Index	Bloomberg
HUN	BSE Corp Bond Index	GDMA Hungary Total Return MAX Index	BSE/GDMA
IND	S&P BSE India Corp Bond Index	S&P BSE India Govt Bond Index	LSEG
IDN	INDOBeX Corp Bond Index	INDOBeX Govt Bond Index	Bloomberg
KOR	FTSE South Korean Broad Bond Index (Corp)	FTSE South Korean Broad Bond Index (Govt)	LSEG
MYS	FTSE BPAM Corp All Bond Index	FTSE BPAM Govt All Bond Index	LSEG
MEX	S&P/BMV Corp Bond Index	S&P/BMV All Sovereign Bond Index	Bloomberg
PER	LVA-AFP Peru Corp Fixed Income Index	LVA-AFP Peru Govt Fixed Income Index	Bloomberg
PHL	FTSE Philippine Broad Bond Index (Corp)	FTSE Philippine Broad Bond Index (Govt)	LSEG
RUS	MOEX Corp Bond Index in RUB	MOEX Govt Bond Index in RUB	MOEX
THA	ThaiBMA MTM Corp Bond Index	ThaiBMA MTM Govt Bond Index	Bloomberg
TUR	BIST-KYD Corp Bond Fixed Rate Index	BIST-KYD GDS ALL Index	Borsa İstanbul
TWN	S&P Taiwan Corp 5+ Year Bond Index	S&P Taiwan Govt 5+ Year Bond Index	Bloomberg
ZAF	FTSE/JSE All Bond Other Total Return Index	FTSE/JSE All Bond Govt Total Return Index	LSEG

All series are total return indexes. Unlike price indexes, which track only changes in the market value of the constituent bonds, a total return index measures the full return to an investor holding the index portfolio: price changes, accrued interest, and coupon payments, with coupons assumed to be reinvested in the index. Total return indexes

are therefore the appropriate measure of realized holding-period bond returns and are directly comparable across countries with different coupon structures and interest rates. Since all bond market indexes are denominated in local currency, the returns we compute are unaffected by exchange rate movements. Index coverage differs somewhat across countries: most indexes are broad, market value-weighted benchmarks covering all eligible bonds in the relevant segment, while a few are restricted to particular maturity buckets (e.g., bonds with more than five years to maturity in Taiwan), instrument types (e.g., fixed-rate bonds in Turkey and inflation-linked IPCA bonds for Brazilian corporates), or liquidity criteria. We use the indexes at a monthly frequency over the period January 2018 to December 2025, where both series are available for all countries.

B. Security-level Investor Holding Composition Data

In this section we describe the security-level holding composition (Local–Foreign) data obtained from the Indonesian Central Securities Depository (Kustodian Sentral Efek Indonesia, KSEI). KSEI is the central securities depository for the Indonesian capital market. It administers securities accounts, settles securities transactions, and distributes corporate actions for all securities deposited with it. As every investor in the Indonesian capital market is assigned a Single Investor Identification (SID) number that records both the investor's type and whether the investor is domestic or foreign, KSEI can aggregate holdings of each deposited security by investor type and by residency. KSEI publishes these aggregate statistics as the *Holding Composition (Local and Foreign)* files, which are publicly available at https://web.ksei.co.id/data/download-data-and-user-guide.

The data are released at a monthly frequency and report end-of-month positions. Each observation corresponds to a single security identified by its KSEI security code, together with the security type (e.g., equity, corporate bond, medium-term note, or sukuk), the number of securities outstanding, and the price used by KSEI for valuation. For each security, holdings are reported separately for nine investor types: insurance companies (IS), corporates (CP), pension funds (PF), financial institutions including banks (IB), individuals (ID), mutual funds (MF), securities companies (SC), foundations (FD), and others (OT). Each type is further split into local (domestic) and foreign investors, yielding eighteen holding categories. Holdings are measured in units of the security (number of shares for equities and nominal value for debt securities), so the eighteen categories sum to the total amount of the security held in KSEI's depository.

For our analysis, we aggregate the eighteen categories into four mutually exclusive investor groups, as shown in Table A2. The first group, *local funds and banks*, consists of domestic mutual funds, financial institutions, and securities companies. These

investors manage short-horizon or mark-to-market portfolios and are the most active domestic intermediaries in the secondary market. The second group, *local ICPFs*, consists of domestic insurance companies and pension funds, which typically follow buy-and-hold strategies to match long-duration liabilities. The third group, *local corporates and retail*, consists of domestic non-financial corporates and individuals, together with foundations and other domestic investors. The fourth group, *foreign investors*, pools all nine foreign investor types. We pool foreign investors into a single group because individual foreign types account for a small share of holdings and because our focus is on the distinction between domestic and foreign ownership.

Table A2: Mapping from KSEI Investor Types to Investor Groups

Code	Investor type	Investor group
Panel A: Local investors		
MF	Mutual fund	Local funds and banks
IB	Financial institution	Local funds and banks
SC	Securities company	Local funds and banks
IS	Insurance	Local ICPFs
PF	Pension fund	Local ICPFs
CP	Corporate	Local corporates and retail
ID	Individual	Local corporates and retail
FD	Foundation	Local corporates and retail
OT	Others	Local corporates and retail
Panel B: Foreign investors		
MF	Mutual fund	Foreign investors
IB	Financial institution	Foreign investors
SC	Securities company	Foreign investors
IS	Insurance	Foreign investors
PF	Pension fund	Foreign investors
CP	Corporate	Foreign investors
ID	Individual	Foreign investors
FD	Foundation	Foreign investors
OT	Others	Foreign investors

For each security i, investor group g, and month t, we compute the holding share of group g as

$$s_{g,i,t} = \frac{H_{g,i,t}}{\sum_{g'} H_{g',i,t}},$$

where $H_{g,i,t}$ is the sum of holdings across all KSEI investor categories assigned to group g. Because the four groups are mutually exclusive and exhaustive, the shares sum to one for each security and month. Coverage is limited to securities deposited at KSEI. Indonesian government bonds are primarily registered and settled through Bank Indonesia's scripless securities settlement system rather than KSEI, so we focus our analysis on corporate bonds and stocks.

C. Model Derivations

This appendix derives each group's demand in natural units (C.1 and C.2), normalizes units (C.3), derives the equilibrium premium response and flows (C.4), and shows how feedback from local rotation to exposure affects the results (C.5). Derivatives with respect to θ are evaluated at the calm baseline $\theta = 0$, where $v(0) = 0$.

C.1 Foreign investors' demand. Objective (1) approximates the hard-currency excess return on a local-currency asset by the sum of the asset's excess return in local currency and the excess return on the currency, and treats the two components as uncorrelated. Its first-order condition gives the optimal holding of each foreign investor:

$$y_j = \frac{\mu_j + c(\theta)}{\Gamma(\theta)}, \qquad \Gamma(\theta) \equiv \gamma_F[\sigma^2 + \sigma_e^2(\theta)].$$

The second-order condition is $-\Gamma(\theta) < 0$, so the optimum is unique whenever total variance is positive.

Let $\mu_{j,0}$ and $y_{j,0}$ denote the premium and holding at the baseline. Differentiating the optimal holding with respect to the premium gives

$$\frac{\partial y_j}{\partial \mu_j} = \frac{1}{\Gamma}.$$

At a given premium, differentiating with respect to global financial conditions gives

$$\frac{\partial y_j}{\partial \theta} = \frac{c' - y_j \Gamma'}{\Gamma}, \qquad \Gamma' = \gamma_F(\sigma_e^2)'.$$

A first-order Taylor expansion around $(\mu_{j,0}, 0)$ therefore yields

$$y_j - y_{j,0} \approx \frac{1}{\Gamma_0}\left[(\mu_j - \mu_{j,0}) + \left(c' - y_{j,0}\gamma_F(\sigma_e^2)'\right)\theta\right],$$

where $\Gamma_0 = \gamma_F(\sigma^2 + \sigma_{e,0}^2)$. Assuming a common baseline holding $y_{j,0} = y_0 > 0$, define

$$\phi \equiv c' - y_0\gamma_F(\sigma_e^2)'.$$

Because $c' < 0$, $(\sigma_e^2)' > 0$, $y_0 > 0$, and $\gamma_F > 0$, we have $\phi < 0$.

With m_j foreign investors in market j, the natural-unit demand slope is $\alpha_j = m_j/\Gamma_0$. Absorbing the baseline constant $m_j y_0 - \alpha_j \mu_{j,0}$ into net supply, foreign demand becomes

$$D_j^{F,\text{nat}} = \alpha_j(\mu_j + \phi\theta).$$

Dividing by the total demand slope S_j (Appendix C.3) gives (2) with $f_j = \alpha_j/S_j$. Since α_j is proportional to m_j when the per-investor demand slope is common, f_j increases with the number of foreign investors, holding the other groups' demand slopes fixed.

For simplicity, foreign investors' risk omits the asset's exposure to the global shock. If total variance instead includes a global-risk component, $v(\theta)\kappa_j^2$, then

$$\Gamma_j(\theta) = \gamma_F[\sigma^2 + \sigma_e^2(\theta) + v(\theta)\kappa_j^2],$$

and, because $v(0) = 0$, the demand shifter becomes asset-specific:

$$\phi_j = c' - y_0\gamma_F[(\sigma_e^2)' + v'\kappa_j^2].$$

The additional term $-y_0\gamma_F v'\kappa_j^2$ makes foreign demand fall more for assets with greater exposure to the global shock. Because exposure rises with foreign participation, this term sharpens the contrast between corporate bonds and equities. The main text omits it to keep ϕ common across assets.

C.2 Elastic local investors' demand. The first-order condition of (4) is $\mu - \lambda\mathbf{1} = \gamma\Sigma x$, which gives (5). At $\theta = 0$, $\Sigma = \sigma^2 I$, so $x_j = A(\mu_j - \lambda)$, where $A \equiv 1/(\gamma\sigma^2)$. Summing over assets and imposing the budget constraint gives $\lambda = \bar{\mu} - W/(NA)$, so

$$x_j = \frac{W}{N} + A(\mu_j - \bar{\mu}).$$

Because the budget must be fully invested, demand depends on the asset's premium relative to the average premium.

To obtain the demand shifter, differentiate the first-order condition with respect to θ at given premia. Because $d\Sigma/d\theta = v'\kappa\kappa'$ at $v = 0$,

$$-\frac{d\lambda}{d\theta}\,\mathbf{1} = \gamma\sigma^2\,\frac{dx}{d\theta} + \gamma v'\kappa_p\,\kappa, \qquad \kappa_p \equiv \kappa' x.$$

The budget constraint requires $\mathbf{1}'dx/d\theta = 0$, so $d\lambda/d\theta = -\gamma v'\kappa_p\bar{\kappa}$, with $\bar{\kappa} \equiv \mathbf{1}'\kappa/N$. Substituting back gives the rotation at given premia:

$$\frac{dx_j}{d\theta} = A\,\eta_j, \qquad \eta_j \equiv \gamma v'\kappa_p\,(\bar{\kappa} - \kappa_j). \tag{12}$$

It sums to zero across assets: the investor sells assets with above-average exposure and buys those with below-average exposure. Substituting $\kappa_j = -f_j\phi$ from (3) gives $\bar{\kappa} - \kappa_j = -\phi(\bar{f} - f_j)$, so $\eta_j = h(\bar{f} - f_j)$ with $h \equiv -\gamma v'\kappa_p\phi$. Because $\kappa_j > 0$ and baseline holdings are nonnegative, $\kappa_p = -\phi\sum_k f_k x_k > 0$, so $h = \gamma v'\phi^2\sum_k f_k x_k$ is positive.

Combining the two results, the first-order expansion around the baseline is

$$x_j - x_{j,0} \approx A\left[(\mu_j - \mu_{j,0}) - (\bar{\mu} - \bar{\mu}_0) + \eta_j\theta\right].$$

Dividing by S_j and absorbing constants into q_j (Appendix C.3) gives (6) with $e_j =$

A/S_j.

The budget constraint is essential. Without it, $\lambda = 0$, so at given premia the investor reduces every exposed asset, $dx_j/d\theta = -(v'\kappa_p/\sigma^2)\,\kappa_j$, and moves to cash. No asset would then attract inflows at given premia, and any purchases would be a response to falling prices.

C.3 Units and investor shares. In natural units, such as dollars, the three groups' demands are, up to constants, $\alpha_j(\mu_j + \phi\theta)$, $A(\mu_j - \bar{\mu} + \eta_j\theta)$, and $B_j\mu_j$. Their slopes are $\alpha_j = m_j/\Gamma_0$ (C.1), $A = 1/(\gamma\sigma^2)$ (C.2), and $B_j > 0$, where the slope of mutual funds and banks holds the average premium fixed. Let $S_j \equiv \alpha_j + A + B_j$ be asset j's total demand slope. Measuring asset j in units of S_j divides every demand and the supply by S_j. Let q_j denote the resulting supply, net of the constant terms in demand. This gives (2), (6), and (7) with

$$f_j = \frac{\alpha_j}{S_j}, \qquad e_j = \frac{A}{S_j}, \qquad 1 - f_j - e_j = \frac{B_j}{S_j}. \tag{13}$$

Premia and demand shifters are in premium units, so the change of units does not affect them. In natural units, market clearing gives $\beta_j = -(\alpha_j\phi + A\eta_j)/S_j$, which is the same as (9). Flows in the text are per unit of S_j. Multiplying them by S_j converts them to natural units without changing their signs.

The shares also map to ownership data. Each slope equals the group's holdings times its semi-elasticity: $\alpha_j = q_j^F\zeta_j^F$, $A = q_j^E\zeta_j^E$, and $B_j = q_j^I\zeta_j^I$. Here q_j^g is group g's holdings of asset j, and $\zeta_j^g \equiv \partial \log D_j^g/\partial\mu_j$. Dividing by total holdings gives

$$f_j = \frac{\omega_j^F\,\zeta_j^F}{\omega_j^F\,\zeta_j^F + \omega_j^E\,\zeta_j^E + \omega_j^I\,\zeta_j^I}, \tag{14}$$

where ω_j^g is group g's ownership share of asset j. Given the semi-elasticities and the mix of local holders, f_j increases with foreign ownership ω_j^F. Because ζ_j^I is close to zero, insurers and pension funds contribute little to the total slope even when they hold much of an asset, so $f_j \approx \omega_j^F\zeta_j^F/(\omega_j^F\zeta_j^F + \omega_j^E\zeta_j^E)$. Foreign ownership is therefore a valid proxy for f_j when semi-elasticities and the mix of local holders are similar across assets.

C.4 Equilibrium premium response and flows. Substituting (2), (6), and (7) into (8) gives

$$\mu_j - e_j\bar{\mu} + (f_j\phi + e_j\eta_j)\,\theta = q_j.$$

Treating $\bar{\mu}$ as a constant and differentiating with respect to θ gives (9). Substituting $\eta_j = h(\bar{f} - f_j)$ gives (10). Because $\bar{f}$ and h are common to all assets, differencing (10) across two assets with $e_j = e_k = e$ gives

$$\beta_j - \beta_k = (-\phi + e\,h)\,(f_j - f_k), \tag{15}$$

so among assets with the same e_j, the premium response rises with foreign participation. Rearranging (10), $\beta_j < 0$ if and only if $f_j(e_j h - \phi) < e_j h \bar{f}$, that is,

$$f_j < \frac{e_j h}{e_j h - \phi}\, \bar{f}.$$

Because $\phi < 0$, the right-hand side lies below $\bar{f}$ and increases with e_j.

Flows. By (6), the demand of mutual funds and banks responds to a tightening by $e_j(\beta_j+\eta_j)$ per unit of S_j. Foreign demand responds by $f_j(\beta_j+\phi)$, and inelastic demand by $(1-f_j-e_j)\beta_j$. Supply is fixed, so these responses sum to zero, which is again (9). Substituting (9) into $e_j(\beta_j+\eta_j)$ gives (11). Foreign purchases equal $f_j[(1-f_j)\phi-e_j\eta_j]$, which is negative whenever $\eta_j \geq 0$ because $\phi < 0$. Purchases by mutual funds and banks net of the price-induced amount $e_j\beta_j$ equal $e_j\eta_j$. When $\eta_j < 0$, (11) shows that these investors are net sellers if and only if $(1-e_j)(-\eta_j) > -f_j\phi$.

Average premium. Treating $\bar{\mu}$ as a constant imposes the budget constraint at given premia, where it generates the rotation, but not after premia adjust. If $\bar{\mu}$ instead adjusts so that the budget holds exactly, its response $\bar{\beta} \equiv N^{-1}\sum_k \beta_k$ adds $e_j\bar{\beta}$ to the right-hand side of (9). For assets with the same e_j, this term is common, so it cancels from (15) and leaves the ranking of premium responses unchanged.

C.5 Exposure feedback. Exposure (3) is the first-round price impact of foreign selling. It ignores how local rotation itself moves premia. Suppose instead that mutual funds and banks anticipate this effect, so that exposure equals the equilibrium premium response, $\kappa = \beta$, and that their portfolio loses value in a tightening, $\kappa_p = \beta' x > 0$. Let $g \equiv \gamma v' \kappa_p > 0$; under first-round exposure, $h = -\phi g$. By (12), the demand shifter becomes $\eta_j = g(\bar{\kappa} - \beta_j)$, where $\bar{\kappa}$ is now the average premium response. Substituting into (9) gives

$$(1 - g\, e_j)\, \beta_j = -f_j\phi - g\, e_j \bar{\kappa}.$$

The coefficient $1 - ge_j$ is the effective total demand slope, which I assume is positive. For two assets with $e_j = e_k = e$, the common term cancels:

$$\beta_j - \beta_k = \frac{-\phi}{1 - g\, e}\,(f_j - f_k),$$

whereas first-round exposure gives $\beta_j - \beta_k = -\phi\,(1 + g\, e)(f_j - f_k)$ by (15). For a given g, the feedback therefore preserves the ranking of premium responses by foreign participation and amplifies their dispersion, since $1/(1-ge) = 1 + ge + (ge)^2 + \cdots$. First-round exposure is the first-order approximation in ge. Because g depends on β through κ_p, the feedback model must be solved as a fixed point. The main text uses first-round exposure because it gives premium responses in closed form.