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Primary Balances, Debt Composition, and Sovereign Bond Yields in Emerging Economies

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Primary Balance, Debt Composition, and Sovereign Bond Yields in Emerging Economies

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Abstract

Sovereign yields in emerging economies differ from those in advanced economies because of default risk and the currency and ownership composition of government debt. As a result, the relative important of the channel through which fiscal consolidation affects yields is not clear ex ante. We decompose ten-year sovereign yields in 17 emerging markets into default-risk premia, expected short rates, and term premia. We show that debt vulnerabilities, including high foreign-currency borrowing ("original sin"), large foreign holdings of local-currency debt ("original sin redux"), and large domestic holdings of foreign-currency debt, are associated with higher default-risk and term premia. The results suggest that debt composition, rather than the fiscal stance alone, governs the transmission of fiscal consolidation to sovereign yields in emerging economies. While fiscal consolidation could lower term premia in vulnerable economies, easing borrowing conditions, stronger growth prospects or anticipated monetary tightening could push expected short rates higher. Understanding these channels can help central banks assess overall financial conditions more accurately.

Keywords: Original Sin, Original Sin Redux, Default Risk, Yield Curve, Term Premium, Primary Balance

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Highlights

- We decompose ten-year sovereign yields in emerging markets into three components: the default-risk premium, the expected short rate, and the term premium.

- Vulnerable countries–those with high foreign-currency debt or high foreign participation in local-currency debt–face higher default-risk and term premia, and higher yields.

- Projected five-year-ahead primary balance improvements do not transmit through the default-risk premia.

- The transmission is mainly through the expected short rate and term premia in nonvulnerable and vulnerable economies, respectively.

- In vulnerable economies, a one-percentage-point improvement in the primary balance lowers the five-year yield five years ahead by about 20 basis points.

1. Introduction

Government deficits leading to the accumulation of debt, are generally considered inflationary, and often give rise to higher interest rates. Elevated deficits, by raising borrowing costs, can reduce private investment and hence growth. A substantial body of research has examined the macroeconomic effects of government deficits. For example, Laubach (2009) uses U.S. time-series data and finds that a one percentage point increase in the projected fiscal deficit-to-GDP ratio raises the 5-year and 10-year forward rates by 20 to 30 basis points. More recently Plante et al. (2026) show that a one percentage point increase in the debt-to-GDP ratio raises the 5-year-ahead, 5-year Treasury rate by 3 basis points, with roughly three-quarters of this increase driven by the term premium rather than expected short-term real rates in the U.S. In emerging economies, Nose and Menkulasi (2025) find that a one percentage point rise in expected primary deficits leads to a persistent increase of about 36 basis points in the 10-year domestic bond yield over 2.5 years. They also demonstrate that larger holdings of government debt by banks amplify the transmission from fiscal deficits to sovereign yields.

However, while Nose and Menkulasi (2025)[6] document a significant pass-through effect, they do not decompose it into changes in expected rates and term premia - an important distinction highlighted by Liu (2023) and Plante et al. (2026). Furthermore, the existing literature largely omits sovereign default risk, which is especially relevant in emerging markets. Emerging economies also have well-documented vulnerabilities in the government debt market. They have a higher foreign currency share of debt and higher foreign participation in the domestic currency debt market, known as original sin and original sin redux, respectively, (Eichengreen and Hausmann, 1999; Eichengreen et al., 2005; Hofmann et al., 2020a; Bertaut et al., 2025; Onen et al., 2023). These vulnerabilities may influence the different components of the yield curve differently and may also affect the dynamics between fiscal consolidation and the yield curve in emerging economies. This paper addresses these gaps by decomposing the yield curve of emerging economies and estimating the pass-through of projected primary balance to these yield curve components, considering these vulnerabilities.

The paper makes four contributions. First, we decompose ten-year sovereign yields into the default-risk premium, expected short rate, and term premium for a large set of emerging-market economies at monthly frequency over 2000-2025. Since the widely used term structure models apply to default-free yields, and it is difficult to argue that emerging-market government debt is default-free, we construct a synthetic yield for emerging markets. The synthetic yield for emerging markets is given by the sum of the US yield for a given tenor and the forward discount on the respective currency with USD, following Du and Schreger (2016).

[6] The empirical framework used in Nose and Menkulasi (2025) is likely to give biased estimates because they do not include the required lags in their local projection regressions.

The difference between actual yield and synthetic yield gives the default risk premium.[7] We decompose synthetic yield in emerging markets into expected short rate and term premium following the regression-based affine model of Adrian et al. (2013). The above steps give us the three components of the yield curve in the emerging markets. We also obtain a five-year yield five years ahead, following Plante et al. (2026).

Second, using the data from Onen et al. (2023), we construct three measures of vulnerability in the government debt market in emerging economies: (i) Foreign Currency Share, the share of foreign-currency debt in total government debt, which corresponds to "original sin" (Eichengreen and Hausmann, 1999; Eichengreen et al., 2005); (ii) Domestic Currency Held Abroad, the share of domestic-currency government debt held by foreign investors, which corresponds to "original sin redux" (Hofmann et al., 2020a; Bertaut et al., 2025; Onen et al., 2023); and (iii) Foreign Currency Held Domestically, the share of foreign-currency government debt held domestically, which captures domestic liability dollarisation and exposure of domestic financial institutions to foreign currency sovereign debt. These three measures capture distinct sources of vulnerability: original sin reflects sudden-stop and balance sheet risk for sovereigns, original sin redux reflects valuation risk arising from exchange-rate movements, and Foreign Currency Held Domestically reflects inflation and currency-mismatch risk borne by domestic investors. We show that these vulnerabilities are associated with a higher default risk and term premia in emerging markets, conditional on growth, inflation, country, and year fixed effects, and hence with a higher yield as expected. Thus, we provide direct evidence of the adverse effect of these vulnerabilities on different components of sovereign yield in emerging markets.

Third, using the local projection approach of Jordà (2005) with a rich set of current and projected controls, we show that, on average, the pass-through from projected five-year-ahead primary balances in the World Economic Outlook (WEO, IMF) to sovereign yields does not operate through the default-risk premium. Although the default risk premium is not the same as the cross-currency basis, it is constructed in a similar way. Hence, these findings are not surprising given that Du et al. (2018b) argue that the cross-currency basis for major currencies is not explained by credit/default risk. Fourth, using local projections of Cloyne et al. (2023), we document significant heterogeneity in pass-through of projected primary balances on different components of sovereign yield in emerging markets. We find that in nonvulnerable countries, the improvement in projected primary balance mainly transmits through higher expected short rates and increases nominal yield with no effect on the five-year yield five years ahead. On the other hand, in countries with above-median share of foreign-currency debt, above-median foreign holdings of domestic-currency debt, or above-median share of foreign currency debt held domestically, the transmission mainly happens through a decline in the term premium. Results suggest that a percentage point improvement in projected fiscal balance reduces the five-year yield five years ahead by 20 basis points in the medium run in these economies. These effects are large compared to Plante et al. (2026) and emerge

[7] This default risk premium is not the same as the cross-currency basis (Borio et al., 2016, 2018; Du et al., 2018b). Although we use the same expression based on covered interest rate parity, the difference is the cross-currency basis only if the rates are risk-free, which we believe is not the case in emerging markets. Although we refer to this as default risk premium in the paper, it may also contain liquidity risk and other market frictions.

gradually over the medium term. This delayed response is consistent with investors assigning limited initial weight to distant fiscal projections until subsequent budget implementation and fiscal reforms confirm their credibility. As uncertainty declines, markets revise expectations about debt sustainability, inflation, default risk, and future borrowing needs, particularly when maturing debt must be refinanced. We show that these findings are robust to omitted-variable bias, the median classification threshold, category switching, and influential countries.

The evidence supports the view that credible, pre-announced fiscal consolidation directly reduces sovereign borrowing costs, with the largest savings occurring in economies most exposed to currency-mismatch and rollover risks. Because these vulnerabilities are priced into sovereign yield curves, fiscal consolidation calls for distinct policy responses across them. The above findings have important policy implications. Eichengreen and Hausmann (1999) and Eichengreen et al. (2005) argue that "original sin" is a structural feature of emerging markets. Results in this paper suggest that if these countries cannot quickly overcome "original sin" or "original sin redux", they can lower their cost of borrowing by improving their fiscal trajectory. Further, they can actively manage the maturity profile of their debt while pursuing fiscal consolidation, since the term premium is highly responsive to such consolidation, to obtain the desired reduction in sovereign yield.

The remainder of the paper is organised as follows. Section 2 describes the data and the decomposition of the yield curve. It also documents the relationship between the currency and ownership composition of debt and the different components of the yield curve. Section 3 presents the local-projection empirical framework, including the state-dependent specification. Section 4 reports the local-projection results for the ten-year yield, its three components, and the five-year yield five years ahead. Section 5 discusses these results and compares them with results from a subset of emerging economies from Asia. Section 6 concludes with policy implications for fiscal authorities and debt-management offices in emerging Asia. The appendix contains the country list (Tables A.1–A.3), the affine term-structure model (Appendix B) and country-by-country plots of the decomposed yield (Appendix C). Appendix D reports the results using the four-year-ahead projected primary balance instead of the five-year-ahead measure. The direct statistical test for heterogeneous responses across vulnerable and nonvulnerable economies is reported in Appendix E. The robustness checks with commodity prices and gross debt as additional controls are given in Appendices F and G. Additional robustness exercises using top- and bottom-quartile comparisons based on debt-composition vulnerability, a rolling lagged measure of vulnerability, and leave-one-country-out estimates to address influential observations are given in Appendix H. The Emerging-Asia-specific results (Appendix I) and the statistical comparison between Asian and other emerging economies (Appendix J) are also provided in the appendix.

2. Data

2.1 Default Risk Premium, Expected Short Rate, and Term Premium

We obtain the daily yield difference for our sample countries and the forward premium with respect to USD from Du and Schreger (2016) and Du et al. (2018a).[8] Table A.1 in Appendix A gives the list of countries and sample periods. For the US, we use 1 through 10 years, yields from the Gürkaynak et al. (2007) dataset, and 3- and 6-month yields from the Federal Reserve's H.15 database because they are robust at the short end of the curve. We decompose the zero-coupon yield into the expected short rate and the term premium. However, commonly used affine term structure models are only valid for non-defaultable bonds, which means they cannot be directly applied to yields from emerging economies Solis (2025). To address this, we first construct synthetic yields for these emerging economies using the method proposed by Du and Schreger (2016). We obtain synthetic yield $(\tilde{r}_{t,n}^{LC})$ for emerging economies based on the US Treasury yields and the forward premium on the USD, as given by equation 2.1:

$$\tilde{r}t,nLC = rt,nUS + \rho t,n \tag{2.1}$$

where $r_{t,n}^{US}$ is n period zero coupon yield in the US and $\rho_{t,n}$ is the forward premium on the USD for n period against the given emerging economy. $\tilde{r}_{t,n}^{LC}$ is the synthetic local currency yield in a country. Further, using the difference between the yield and the US yield, we obtain the yield $r_{t,n}^{LC}$ for these emerging economies. The difference between the yield and synthetic yield is called the default risk premium and is given by equation 2.2:

$$\text{Default Risk Premium} = r_{t,n}^{LC} - \tilde{r}_{t,n}^{LC} \tag{2.2}$$

We decompose the synthetic yield given by $\tilde{r}_{t,n}^{LC}$ into two components following Adrian et al. (2013). The details of this and estimates of the expected rate and term premium are provided in the Appendix B. With this decomposition, we can write synthetic yield as the sum of expected short rate and term premium given by equation 2.3:

$$r_{t,n}^{LC} = \text{Default Risk Premium}_{t,n} + \text{Expected Short Rate}_{t,n} + \text{Term Premium}_{t,n} \tag{2.3}$$

Appendix C provides the synthetic yield and its decomposition for all these countries. The above gives us four main dependent variables for regressions- ten-year yield, default risk premium, expected short rate, and term premium. Using the $r_{t,n}^{LC}$, we then construct the five-year forward rate starting five years from now, denoted as f_{55}, which is given by equation 2.4:

$$f_{5,5} = \left(\frac{(1 + r_{0,10})^{10}}{(1 + r_{0,5})^{5}} \right)^{1/5} - 1 \tag{2.4}$$

[8] https://sites.google.com/site/wenxindu/data/govt-cip?authuser=0

2.2 Semi-annual Panel

This rate effectively represents the expected yield on a 5-year Treasury bond beginning five years from today and is another dependent variable in this paper. It serves as one of the dependent variables in our regression analysis, following the methodologies of Laubach (2009) and Plante et al. (2026). We use this expected rate to reduce simultaneity bias between the primary deficit and interest rates. It is important to note that this expected rate includes the term premium.

Daily yield components are collapsed to monthly by selecting the last available daily observation of each month-year for each country, then matched to the WEO vintage month-year. The main independent variable is the five-year-ahead projection of the primary balance and is obtained from the World Economic Outlook (WEO) of the IMF. We denote this variable by $PB_{it}^{(5)}$, where the superscript indicates a five-year-ahead forecast and the subscript *t* denotes the WEO vintage in which the forecast is observed. In the figures and tables, we refer to this variable as PB_5. From WEO, we also obtain the five-year-ahead projection of GDP growth and inflation, as well as current estimates of GDP growth, inflation, and the gross debt-to-GDP ratio. We obtain the policy rate from the BIS. These variables are used as control variables in the local projection regression. We also obtain commodity and fuel exports from the World Development Indicators, and commodity prices from the IMF. In the next section, we explain the three debt vulnerability measures from Onen et al. (2023) used in this paper.

2.3 Debt-composition Vulnerability Measures

We use three measures of debt-composition vulnerability in emerging-market government debt: foreign-currency debt in government debt (Foreign Currency Share), domestic-currency debt held abroad (Domestic Currency Held Abroad), and foreign-currency debt held domestically (Foreign Currency Held Domestically). These variables are obtained from Onen et al. (2023). They capture related but conceptually different vulnerabilities because they distinguish the currency denomination of government debt from the investor base that holds it.

The first measure is the foreign-currency share of government debt:

$$FC_{it} = 100 \times \frac{GG_{it}^{FC}}{GG_{it}},$$

where GG^{FC}_{it} is foreign-currency-denominated government debt and GG_{it} denotes total government debt. Foreign Currency Share captures the vulnerability in emerging economies due to their inability to borrow domestically or internationally in their own currency. Eichengreen and Hausmann (1999) and Eichengreen et al. (2005) document this phenomenon as original sin. It is a sovereign-side currency-mismatch measure: when the exchange rate depreciates or foreign currency funding dries up, the domestic-currency burden and rollover risk of government debt rise. Argentina's 2001–02 crisis provides a clear example: once convertibility collapsed and the peso depreciated sharply, the

domestic-currency value of dollar-denominated public debt rose, turning foreign-currency debt exposure into a sovereign-solvency problem (Eichengreen et al., 2005; Bordo et al., 2010).

The second measure is the share of domestic-currency government debt held by foreign investors:

$$DC_HA_{it} = 100 \times \frac{GG_{it}^{DC,XB}}{GG_{it}^{DC}},$$

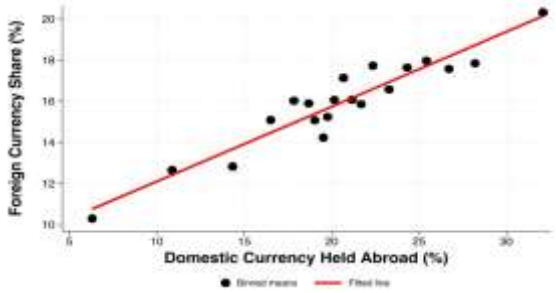
where GG^{DC}_{it} is domestic-currency government debt and $GG^{DC,XB}_{it}$ is the domestic-currency portion held by foreign investors. Domestic Currency Held Abroad captures another type of vulnerability in emerging economies, where domestic-currency bonds are held by foreign investors. Hofmann et al. (2020a) and Bertaut et al. (2025) call this original sin redux. This measure is not about the currency denomination of the sovereign liability itself; it captures exposure to foreign-investor retrenchment in the local-currency bond market. The relevant question is conditional: among the bonds that are insulated from direct currency mismatch, how much is held by investors who may rebalance quickly when global risk appetite or exchange-rate expectations change? The market stress in March 2020 during the COVID19 pandemic provides a useful example of the latter. Emerging-market local-currency bond markets experienced substantial foreign outflows, rising yields and exchange-rate pressure despite the debt being denominated in domestic currency (Hofmann et al., 2020b).

The third measure is the share of foreign-currency government debt held domestically:

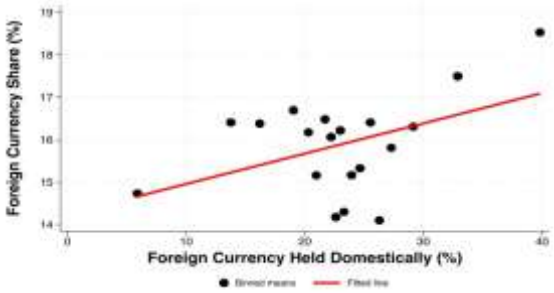
$$FC_DH_{it} = 100 \times \frac{GG_{it}^{FC} - GG_{it}^{FC,XB}}{GG_{it}^{FC}},$$

where $GG^{FC,XB}_{it}$ is foreign-currency government debt held abroad, so the numerator is foreign-currency government debt held domestically. Foreign Currency Held Domestically captures another source of vulnerability in emerging economies, where domestic investors hold foreign-currency-denominated government bonds instead of domestic-currency bonds. This is sometimes called domestic dollarisation or liability dollarisation. It is distinct from original sin because original sin captures the government-side currency mismatch, while this measure captures the investor-side exposure of domestic banks, pension funds, and other residents to foreign-currency sovereign claims. This may reduce reliance on external creditors, but it also links sovereign stress to domestic banks and institutional investors. For example, during the 2022 economic crisis in Sri Lanka, the domestic banking sector was particularly vulnerable because of its large sovereign exposures, including significant holdings of foreign-currency-denominated government debt (Breuer et al., 2025).

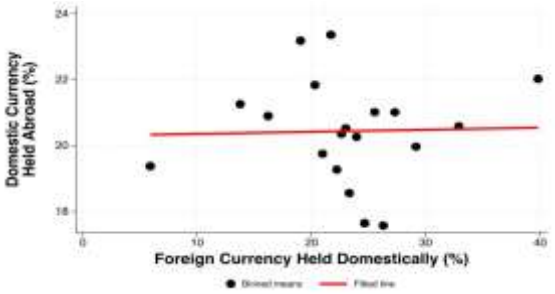
Figure 1: Pairwise Relationships among Debt-Composition Vulnerabilities



(a) Foreign Currency Share (%) and Domestic Currency Held Abroad (%)



(b) Foreign Currency Share (%) and Foreign Currency Held Domestically (%)



(c) Domestic Currency Held Abroad (%) and Foreign Currency Held Domestically (%)

Note: Each panel is a binned scatter plot. Each dot is the average value within a bin after partialling out country fixed effects from both variables, and the fitted line shows the corresponding conditional linear relationship. Foreign Currency Share is the foreign-currency share of government debt, Domestic Currency Held Abroad is the share of domestic-currency debt held abroad, and Foreign Currency Held Domestically is the share of foreign-currency debt held domestically.

These three variables therefore capture distinct vulnerabilities. Foreign Currency Share captures the sovereign's currency mismatch. Domestic Currency Held Abroad captures foreign participation in the local-currency bond market and the risk of foreign-investor retrenchment. Foreign Currency Held Domestically captures the domestic financial-system exposure to foreign-currency sovereign debt. Using the natural denominator for each exposure is important. Expressing all three variables as shares of total government debt would make them components of the same balance sheet and would mechanically mix the size of each debt category with the ownership risk within that category. For example, a country with little foreign-currency debt could appear to have low domestic exposure to foreign-currency bonds as a share of total debt even if domestic investors hold most of the foreign-currency bonds that do exist. Similarly, scaling foreign holdings of domestic-currency bonds by total debt would confound foreign participation in the domestic-currency market with the size of the domestic-currency market itself. The conditional measures therefore preserve the economic interpretation of each vulnerability: currency denomination of the sovereign balance sheet, foreign participation in local-currency debt, and domestic absorption of foreign-currency sovereign risk.

Figure 1 shows the pairwise relationships among the three measures after removing country fixed effects. The positive associations in Figures 1a and 1b suggest that foreign-currency borrowing is related to both external investor participation and domestic financial-sector exposure. Countries that borrow more in foreign currency may also attract greater foreign participation in domestic-currency debt markets and have domestic institutions that hold more foreign-currency debt. By contrast, the weaker relationship in Figure 1c indicates that foreign and domestic investor exposures are not systematically linked and represent distinct channels of vulnerability.

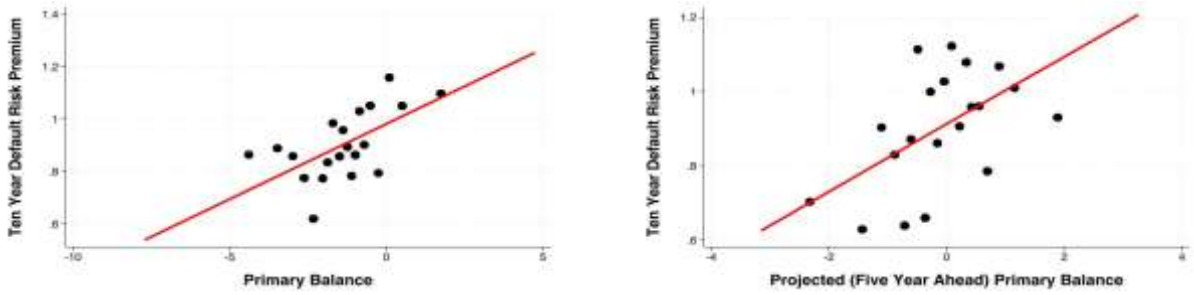
In the main empirical analysis, we use a dummy for each of these three variables by comparing the country-level median during 2010–2020 to the overall median. Countries with median values higher than the overall median receive a value of one and are classified as more vulnerable along that debt-composition margin. This classification is predetermined relative to the local-projection exercise and is intended to capture cross-country differences in typical debt-composition vulnerabilities rather than short-run changes in the same country. These country classifications are given in Tables A.2 and A.3 in Appendix A. In the next section, we explore the relationship between primary balance and yield curve components.

2.4 Primary Balance and Yield Curve Components

Figures 2–5 plot four sovereign bond yield components against the current primary balance (PB_0, left panels) and the five-year-ahead projected primary balance ($PB_{it}^{(5)}$, labelled PB_5 in the right panels), conditional on country fixed effects, year fixed effects, GDP growth, and inflation. With one important exception, the cross-sectional associations are uniformly positive across both fiscal measures and all yield components: countries with better fiscal positions face higher country risk premia, higher expected short-term rates, and higher overall yields. The exception is the ten-year term premium, which displays a *negative* association with the current primary balance but a *positive* association with the five-year-ahead projection.

Ten-Year Default Risk Premium: Figure 2 shows that the country default risk premium is positively associated with both PB_0 and PB_5. For PB_0 (Figure 2a), the fitted slope is positive over the range [−5,2] pp, with the risk premium rising from approximately 0.72% to 1.05%. The PB_5 (Figure 2b) shows a tighter, more precisely fitted positive relationship over the range [−3,2] pp, with the risk premium rising from approximately 0.69% to 1.07%. The positive relationship may look counterintuitive from the perspective of the standard fiscal channel, which predicts that consolidation reduces default risk. Two explanations are plausible. First, in a cross-section of emerging markets, countries with stronger primary balances tend to be faster-growing economies with higher capital demand from the private sector, which raises interest rates across all components of the yield curve regardless of the fiscal contribution. Second, and more importantly, the positive within correlation may partly reflect reverse causality: countries facing high country risk premia are disciplined by bond markets to tighten fiscal policy, so that both good fiscal positions and high-risk premia co-exist in equilibrium. The local projection methodology in Section 4 is designed specifically to isolate the dynamic causal effect of a fiscal improvement on the risk premium within country-over-time variation, controlling for this equilibrium association.

Figure 2: Ten-Year Default Risk Premium (%) and Primary Balance (%)

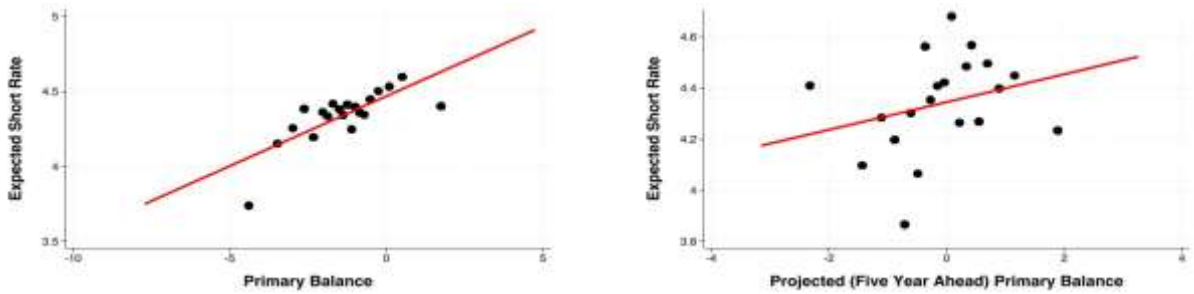


(a) Current Primary Balance (PB_0) (b) Five-Year-Ahead Primary Balance (PB_5)

Note: Each panel is a binned scatter plot of the ten-year country default risk premium against the current primary balance (panel a) and the five-year-ahead projected (panel b) primary balance. Each dot is a bin average after partialling out GDP growth, inflation, country fixed effects, and year fixed effects from both variables. The fitted line shows the corresponding conditional linear relationship.

Expected Short Rate: Figure 3 documents the cross-sectional relationship between the expected short rate component of the ten-year yield and the two fiscal measures. The current primary balance (Figure 3a) shows a steep and tightly fitted positive slope, with the expected short rate rising from approximately 4.03% at $PB_0 = -5$ pp to 4.60% at $PB_0 = 2$ pp. This is the most precisely estimated cross-sectional relationship among all yield components when measured against the current primary balance, suggesting that the contemporaneous fiscal position is highly informative about the current monetary policy stance- a reflection of fiscal-monetary coordination in emerging markets, where central banks operating near the boundary of fiscal dominance tend to maintain higher policy rates in periods of fiscal consolidation, as space for monetary independence expands. The PB_5 (Figure 3b) shows a positive but flatter and more dispersed relationship, with the fitted slope rising from approximately 4.19% to 4.41% over the [−3,2] pp range. The weaker fit for the forward-looking measure suggests that the medium-term projected fiscal improvement may arise from different reasons that weaken the relationship between expected short rates and the projected primary balance.

Figure 3: Expected Short Rate (%) and Primary Balance (%)



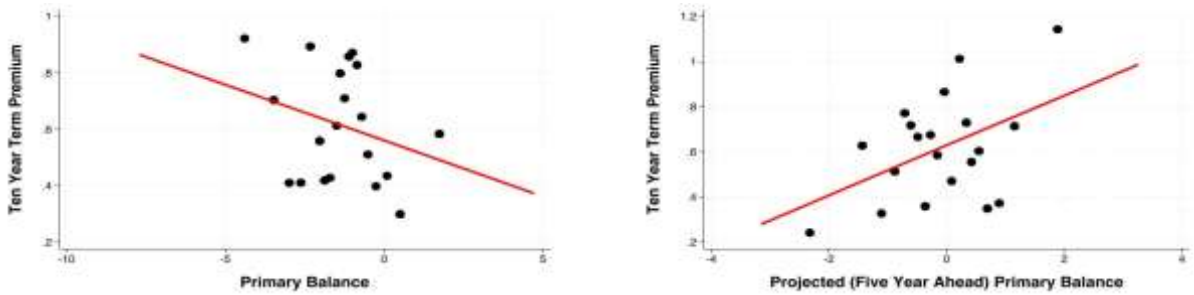
(a) Current Primary Balance (PB_0) (b) Five-Year-Ahead Primary Balance (PB_5)

Note: Each panel is a binned scatter plot of the expected short rate component of the ten-year yield against the current (panel a) and five-year-ahead projected (panel b) primary balance. Each dot is a bin average after partialling out GDP growth, inflation, country fixed effects, and year fixed effects from both variables. The fitted line shows the corresponding conditional linear relationship.

Ten-Year Term Premium: Figure 4 presents the most striking finding of this section: the term premium exhibits a sign reversal between the two fiscal measures. Against the current primary balance (Figure 4a), the fitted slope is *negative*- the term premium declines from approximately 0.73% at $PB_0 = -5$ pp to 0.50% at $PB_0 = 2$ pp. Against the five-year-ahead projected primary balance (Figure 4b), the slope is *positive and pronounced*- the term premium rises from approximately 0.37% at $PB_5 = -3$ pp to 0.83% at $PB_5 = 2$ pp. This reversal has a clear economic interpretation. The negative relationship with the current primary balance reflects the standard risk-reduction channel: in periods of acute fiscal stress (low PB_0), investors demand a higher term premium as compensation for inflation risk, monetisation risk, and general financial uncertainty. When the current fiscal position improves, this risk compensation falls, reducing the term premium. This is the channel typically emphasised in the empirical fiscal-yield literature (Laubach, 2009; Baldacci and Kumar, 2010). The positive relationship with the projected primary balance is likely to be driven by reverse causality: countries facing high country term premia are forced to undertake fiscal consolidation.

Ten-Year Nominal Yield: Figure 5 shows that the ten-year nominal yield is positively associated with both fiscal measures, and that the slope is steeper for the projected balance. Against PB_0 (Figure 5a), the fitted line rises from approximately 5.50% to 6.15%, a range of 0.65 pp over the [−5,2] pp fiscal spectrum. Against PB_5 (Figure 5b), the slope is steeper, with the fitted line rising from approximately 5.28% to 6.28%, a range of 1.0 pp. The net positive association with the overall yield reflects the sum of the component effects: the positive expected rate and risk premium gradients more than offset the negative term premium gradient (for PB_0), while against PB_5, all three components- expected rate, risk premium, and term premium- contribute positively. Although these relationships are not causal, they are not in line with the existing literature. The preferred habitat framework of Greenwood and Vayanos (2010) and the convenience yield framework of Krishnamurthy and Vissing-Jorgensen (2012) would suggest that a decline in government bond supply should reduce the yield on the government bond, which is not the case in emerging economies. Therefore, the decomposition of the yield curve and country-level heterogeneity is useful to understand the heterogeneity in the transmission of fiscal consolidation on the yield curve in emerging economies.

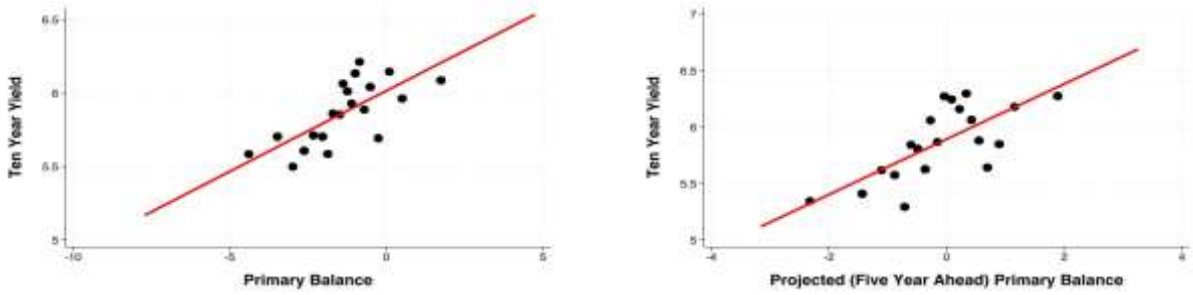
Figure 4: Ten-Year Term Premium (%) and Primary Balance (%)



(a) Current Primary Balance (PB_0) (b) Five-Year-Ahead Primary Balance (PB_5)

Note: Each panel is a binned scatter plot of the ten-year term premium against the current (panel a) and five-year-ahead projected (panel b) primary balance. Each dot is a bin average after partialling out GDP growth, inflation, country fixed effects, and year fixed effects from both variables. The fitted line shows the corresponding conditional linear relationship.

Figure 5: Ten-Year Nominal Yield (%) and Primary Balance (%)



(a) Current Primary Balance (PB_0) (b) Five-Year-Ahead Primary Balance (PB_5)

Note: Each panel is a binned scatter plot of the ten-year nominal yield against the current (panel a) and five-yearahead projected (panel b) primary balance. Each dot is a bin average after partialling out GDP growth, inflation, country fixed effects, and year fixed effects from both variables. The fitted line shows the corresponding conditional linear relationship.

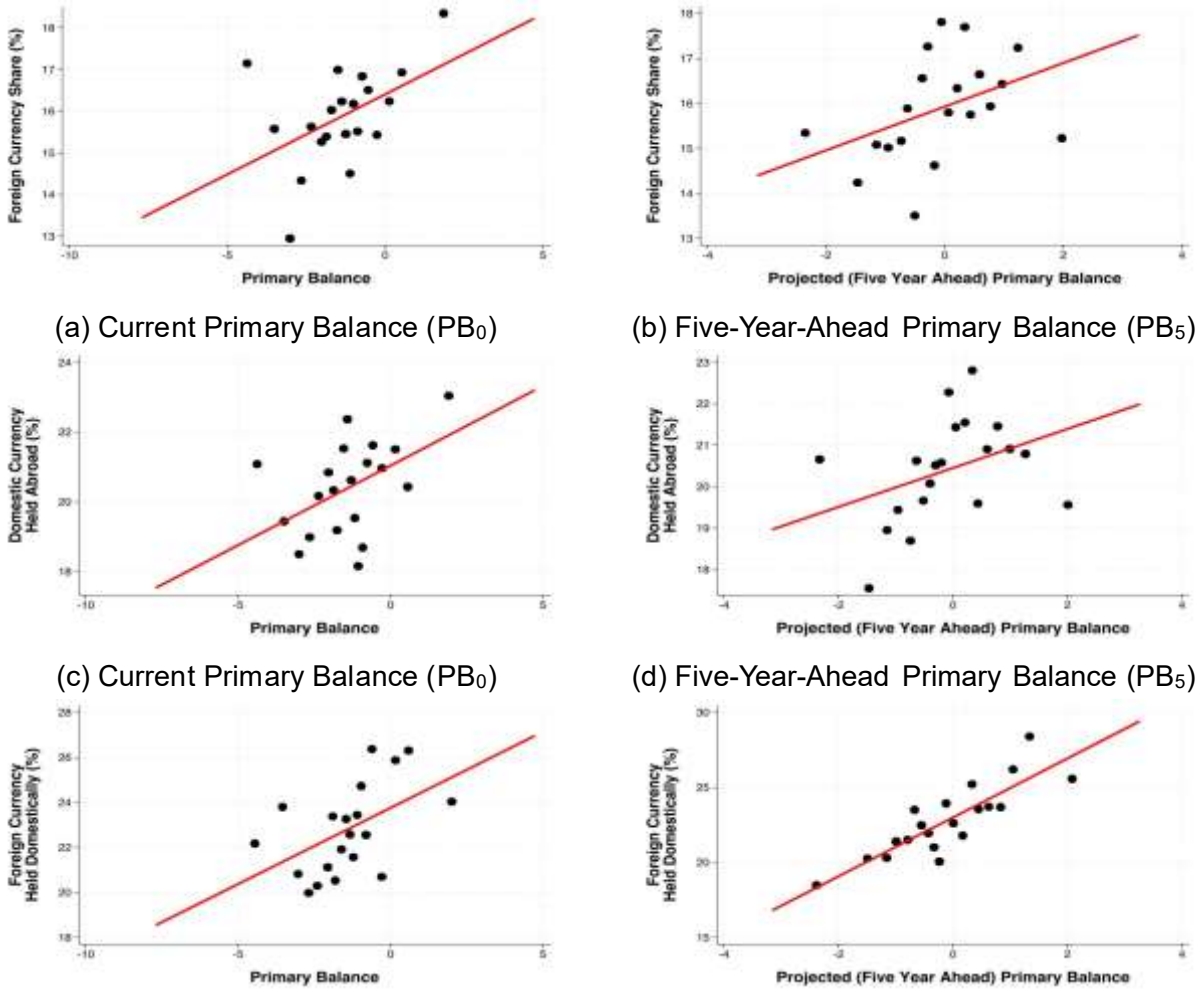
2.5 Primary Balance and Debt Composition

Figure 6 documents the within-country relationship between the three debt composition measures- Foreign Currency Share (%), Domestic Currency Held Abroad (%), and Foreign Currency Held Domestically (%)- and the two primary balance measures. All three relationships are positive for both PB_0 and PB_5: countries with stronger fiscal positions have greater foreign participation in their bond market as well as domestic currency bond markets. Foreign Currency Share (%): The first row of Figure 6 shows that the aggregate foreign currency share of government bonds is positively associated with both the current and projected primary balance, with broadly similar slopes across the two measures. Against PB_0 (Figure 6a), the fitted line rises from approximately 14.6% to 17.0% over the [−5,2] pp range, and against PB_5 (Figure 6b) from approximately 14.7% to 16.9% over the [−3,2] pp range. Both panels have substantial scatter, indicating that the overall foreign currency share is shaped by many factors beyond the fiscal stance- including exchange rate regime choices, market development, and historical debt restructuring. Nevertheless, the positive gradient confirms the argument in Eichengreen et al. (2005) that the vulnerability is largely structural rather than a consequence of domestic policy.

Domestic Currency Held Abroad (%): The second row of Figure 6 shows that the share of domestic currency bonds held by foreign investors is positively associated with both fiscal measures. Against PB_0 (Figure 6c), the fitted line rises from approximately 18.8% at the worst fiscal positions to approximately 21.5% at the best, over the range [−5,2] pp. The current primary balance relationship has moderate scatter but a discernible positive slope, consistent with the view that countries in periods of fiscal health attract more foreign participation into their local currency bond markets. Against PB_5 (Figure 6d), the slope is flatter (from approximately 19.1% to 21.1%) and the scatter is wider, indicating that the medium-term fiscal projection is a weaker predictor of current foreign participation than the contemporaneous primary balance. This suggests that foreign investors respond primarily to current-year fiscal outturns rather than to projected fiscal paths when deciding their allocation to domestic currency bonds- a finding consistent with the short investment horizons documented for foreign participants in local currency bond markets.

Foreign Currency Held Domestically (%): The third row of Figure 6 shows that the share of foreign currency bonds held by domestic investors is positively associated with both fiscal measures, with the steeper relationship against the projected balance. Against PB_0 (Figure 6e), the fitted line rises from approximately 21.7% to 26.5% over the [−5,2] pp range. Against PB_5 (Figure 6f), the slope is notably steeper, rising from approximately 19.4% to 28.1% over the [−3,2] pp range. The stronger medium-term relationship here contrasts with the weaker one for DC ₋HA, and reflects a different mechanism: domestically held foreign currency bonds are a long-lived portfolio decision by institutional investors (banks, pension funds) who plan over multi-year horizons and therefore respond more to the projected fiscal trajectory than to annual outturns.

Figure 6: Debt-Composition Vulnerabilities and Primary Balance (%)



(a) Current Primary Balance (PB_0) (b) Five-Year-Ahead Primary Balance (PB_5)

(c) Current Primary Balance (PB_0) (d) Five-Year-Ahead Primary Balance (PB_5)

(e) Current Primary Balance (PB_0) (f) Five-Year-Ahead Primary Balance (PB_5)

Note: Each panel is a binned scatter plot of a debt-composition vulnerability against the current (left column) and five-year-ahead projected (right column) primary balance. The first row shows Foreign Currency Share, the second row shows Domestic Currency Held Abroad, and the third row shows Foreign Currency Held Domestically. Each dot is a bin average after partialling out GDP growth, inflation, country fixed effects, and year fixed effects from both variables. The fitted line shows the corresponding conditional linear relationship.

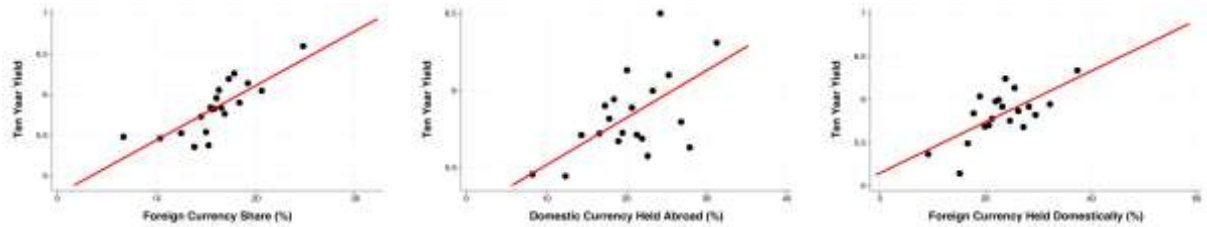
Taken together, Figure 6 establishes that these three vulnerabilities in emerging markets are not driven by fiscal stance alone as argued by Eichengreen et al. (2005). If that were the case, then the improvement in fiscal situation, both current as well as projected, should reduce these vulnerabilities. Given the contemporaneous relationship between debt composition and primary balance, we classify countries based on their average values of these three variables to mitigate reverse causality concerns in the local projection regressions, as explained before.

2.6 Debt Composition and Yield Curve Components

Figures 7-10 document the cross-sectional relationship between sovereign bond yield components and three dimensions of debt structure: Foreign Currency Share (%), Domestic Currency Held Abroad (%), and Foreign Currency Held Domestically (%). Each figure is a binned scatter plot. Each dot is a bin average after partialling out growth, inflation, country fixed effects, and year fixed effects from both the yield component and the debt-composition measure. The fitted line shows the corresponding conditional linear relationship. The relationship is strongest and most systematic for the yield, the country default-risk premium, and the term premium. The expected short-rate component shows a more mixed pattern, which is consistent with the idea that debt-composition vulnerabilities are priced mainly through risk premia rather than through expected monetary-policy rates. The economic mechanisms differ by component, however, and we discuss each in turn.

Ten-Year Yield: Figure 7 shows that the ten-year nominal yield rises steeply with all three debt composition measures. Countries at the high end of the Foreign Currency Share distribution (around 25%) carry yields roughly 1 percentage point above countries at the low end (around 7%), as shown in Figure 7a. A similar gradient is visible for Domestic Currency Held Abroad (Figure 7b): countries where around 30% of domestic currency bonds are held by foreigners face yields close to 6.4%, compared to around 5.4% for countries with only 8% foreign ownership. Foreign Currency Held Domestically (Figure 7c) shows an equally pronounced positive slope over the 8–40% range of the distribution. Together, these patterns indicate that the cost of sovereign borrowing is systematically higher in countries with these three types of vulnerability due to currency risk, rollover risk, and capital flight risk.

Figure 7: Ten-Year Yield (%) and Debt Composition

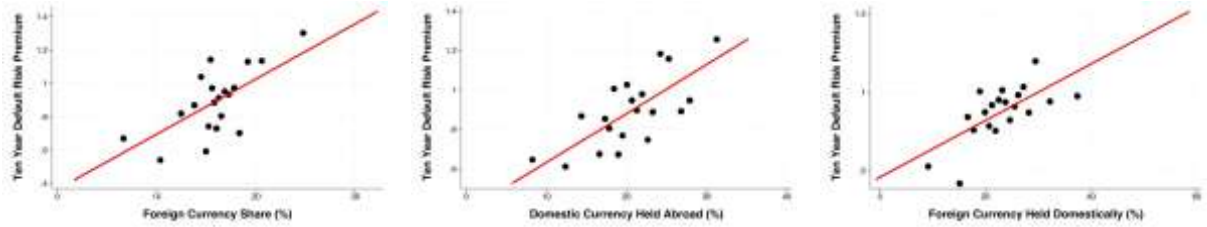


(a) Foreign Currency Share (%) (b) Domestic Currency Held Abroad (%) (c) Foreign Currency Held Domestically (%)

Note: Each panel is a binned scatter plot of the ten-year nominal yield against one debt-composition measure. Each dot is a bin average after partialling out GDP growth, inflation, country fixed effects, and year fixed effects from both variables. The fitted line shows the corresponding conditional linear relationship. Foreign Currency Share is the foreign-currency share of government debt, Domestic Currency Held Abroad is the share of domestic-currency debt held abroad, and Foreign Currency Held Domestically is the share of foreign-currency debt held domestically

Ten-Year Default Risk Premium: Figure 8 shows that the country default risk premium is particularly sensitive to debt composition, with the steepest and most precisely fitted slopes of the three yield components. Foreign Currency Share (Figure 8a) is associated with a country risk premium that rises from roughly 0.65% at the low end to over 1.2% at the high end of the distribution. This is consistent with the "*original sin*" framework of Eichengreen et al. (2005) and Bordo et al. (2010): sovereigns that are more indebted in foreign currency face higher default risk because of the potential exchange rate depreciation that will inflate the real debt burden, raising the probability of a debt distress event. For Domestic Currency Held Abroad (Figure 8b), the positive slope reflects the sudden stop channel Calvo (1998): countries with a larger share of domestic currency bonds held by foreign investors are more vulnerable to abrupt capital outflows, which can trigger rollover crises and compress market liquidity. Bond markets price this exit risk into the country risk premium even in normal times. Foreign Currency Held Domestically (Figure 8c) reveals a similarly positive gradient, indicating that even domestically-held foreign currency bonds contribute to perceived sovereign risk. This measure can be interpreted as a form of domestic financial dollarisation: when domestic investors prefer claims indexed to foreign currency because of inflation or depreciation risk, the sovereign's foreign-currency liabilities become embedded in domestic balance sheets. This can raise default-risk premia because depreciation weakens the sovereign balance sheet while also increasing the exposure of domestic banks and institutional investors to sovereign stress.

Figure 8: Ten-Year Default Risk Premium (%) and Debt Composition

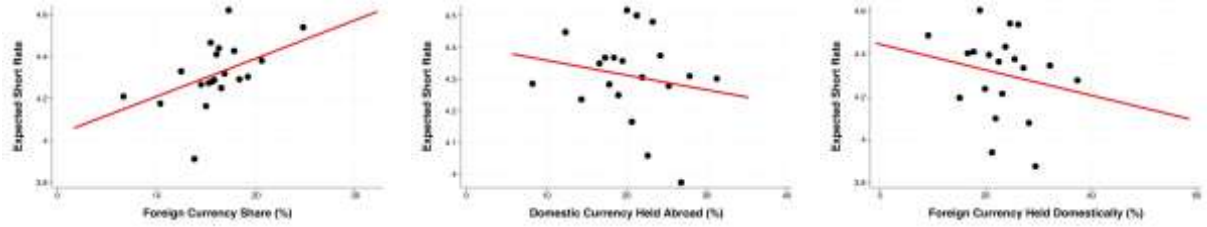


(a) Foreign Currency Share (%) (b) Domestic Currency Held Abroad (%) (c) Foreign Currency Held Domestically (%)

Note: Each panel is a binned scatter plot of the ten-year country default risk premium against one debt-composition measure. Each dot is a bin average after partialling out GDP growth, inflation, country fixed effects, and year fixed effects from both variables. The fitted line shows the corresponding conditional linear relationship. Foreign Currency Share is the foreign-currency share of government debt, Domestic Currency Held Abroad is the share of domestic-currency debt held abroad, and Foreign Currency Held Domestically is the share of foreign-currency debt held domestically

Expected Short Rate: Figure 9 shows that the expected short-rate component has a weaker and less systematic relationship with debt composition than the default-risk premium or the term premium. The relationship is positive for Foreign Currency Share (Figure 9a), but mildly negative for Domestic Currency Held Abroad (Figure 9b) and Foreign Currency Held Domestically (Figure 9c). This pattern suggests that the debt-composition variables are not simply capturing a common positive association with every part of the yield curve. Expected short rates are more closely related to monetary-policy expectations and the macroeconomic cycle, while the vulnerability channels emphasised in this paper operate mainly through compensation for default and duration risks.

Figure 9: Expected Short Rate (%) and Debt Composition



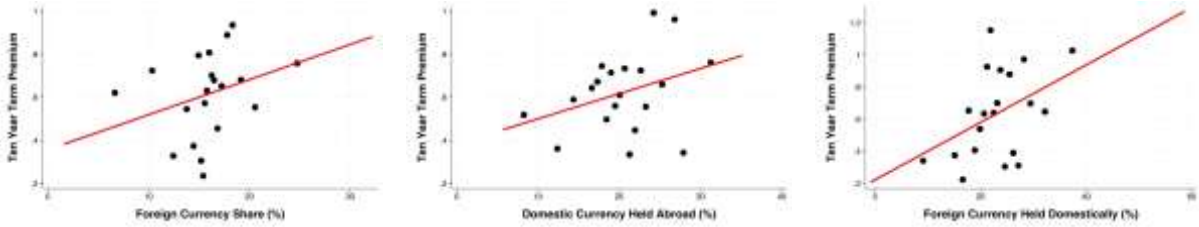
(a) Foreign Currency Share (%) (b) Domestic Currency Held Abroad (%) (c) Foreign Currency Held Domestically (%)

Note: Each panel is a binned scatter plot of the expected short-rate component against one debt-composition measure. Each dot is a bin average after partialling out GDP growth, inflation, country fixed effects, and year fixed effects from both variables. The fitted line shows the corresponding conditional linear relationship. Foreign Currency Share is the foreign-currency share of government debt, Domestic Currency Held Abroad is the share of domestic-currency debt held abroad, and Foreign Currency Held Domestically is the share of foreign-currency debt held domestically.

Ten-Year Term Premium: Figure 10 presents the analogous relationships for the ten-year term premium. The slopes are positive across all three debt-composition measures but are shallower and more dispersed than for the country risk premium, indicating that debt structure shapes duration risk pricing more moderately than default risk pricing. For Foreign Currency Share (Figure 10a), the term premium rises from around 0.4% at the low end to 0.7%

at the high end: countries with greater foreign currency issuance tend to have more volatile and less liquid domestic bond markets, requiring investors to embed a larger compensation for duration uncertainty. For Domestic Currency Held Abroad (Figure 10b), foreign holders of domestic currency bonds demand a currency risk component on top of the standard duration premium, pushing up the equilibrium term premium in countries with high Domestic Currency Held Abroad. The relationship between term premium and Foreign Currency Held Domestically (Figure 10c) is strongest among the three term premium panels, suggesting that the presence of domestically-held foreign currency bonds is particularly informative about the market environment that shapes the duration premium. This is consistent with the dollarisation interpretation: domestic demand for foreign-currency sovereign claims is likely to be stronger when inflation risk, depreciation risk, or weak monetary credibility makes local-currency claims less attractive. The term premium therefore captures not only duration risk, but also the compensation investors require in markets where domestic portfolios are tilted toward foreign-currency protection. Taken together, the evidence in this section establishes that debt currency composition and ownership carry substantial information about the sovereign yields and their components in emerging markets. The positive relationship between debt-composition vulnerability and the sovereign yield is mainly due to the pricing of vulnerability through risk premia, both the default-risk premium and the term premium. The mixed expected-short-rate relationships reinforce this interpretation, because they indicate that the main pricing of debt-composition vulnerability occurs through risk premia rather than through expected short-rate paths.

Figure 10: Ten-Year Term Premium (%) and Debt Composition



(a) Foreign Currency Share (%) (b) Domestic Currency Held Abroad (%) (c) Foreign Currency Held Domestically (%)

Note: Each panel is a binned scatter plot of the ten-year term premium against one debt-composition measure. Each dot is a bin average after partialling out GDP growth, inflation, country fixed effects, and year fixed effects from both variables. The fitted line shows the corresponding conditional linear relationship. Foreign Currency Share is the foreign-currency share of government debt, Domestic Currency Held Abroad is the share of domestic-currency debt held abroad, and Foreign Currency Held Domestically is the share of foreign-currency debt held domestically.

3. Empirical Framework

Given the contemporaneous relationships between the variables as shown above, we argue that local projection regression is best suited for estimating the effect of primary balance on yield curve components. The empirical strategy is similar to (Laubach, 2009; Plante et al., 2026; Nose and Menkulasi, 2025). We use local projection to regress these four dependent variables: ten-year default risk premium, expected short rate, ten-year term premium, and ten-

year yield, one by one using semi-annual frequency[9] with five-year-ahead projections of primary balance, which are expected to be more relevant than ex-post outcomes in driving bond yields. The baseline local projection regression following (Jordà, 2005; Cloyne et al., 2023) is given by equation 3.1:

$$y_{i,t+h} - y_{i,t-1} = \beta_1^h PB_{it}^{(5)} + \sum_{j=1}^{2} \phi_j^h y_{i,t-j} + \sum_{j=1}^{2} \gamma_j^h PB_{i,t-j}^{(5)} + \sum_{j=0}^{2} \theta_j^{h\prime} X_{i,t-j} + \Phi_i + \Phi_t + e_{it} \quad (3.1)$$

where $y_{i,t}$ is one of the four dependent variables mentioned above for country i at time t. β_1^h gives the cumulative changes in each yield component at horizon h due to a one percentage-point improvement in the five-year-ahead projected primary balance. $PB_{it}^{(5)}$ is the five-year-ahead projected primary balance for country i observed in WEO vintage t, and $PB_{i,t-j}^{(5)}$ denotes lagged WEO vintages of the same five-year-ahead projection. X_{it} denotes country-level controls such as inflation, growth, growth projections, inflation projections, and Φ_i and Φ_t are country and time fixed effects. We use Driscoll–Kraay standard errors (Driscoll and Kraay, 1998) via xtscc. These regressions are at the country level, where cross-sectional dependence is likely to be important. Hence, we estimate all these regressions with Driscoll-Kraay standard errors. Driscoll-Kraay standard errors also offer an advantage over conventional clustered standard errors because they are robust to heteroskedasticity, serial correlation, and general cross-sectional dependence in panel data. While clustered standard errors typically assume that observations are independent across clusters, this assumption may be violated in multi-country panels where common shocks, such as global financial conditions or commodity price movements, can affect many units simultaneously. Driscoll-Kraay standard errors relax this assumption by allowing the error terms to be correlated across cross-sectional units as well as over time. We estimate further regression models to explore the pass-through of the projected primary balance to different components of interest rates based on the composition of government debt. Following Cloyne et al. (2023), we estimate a local projection by including the interaction between projected primary balance and a given debt vulnerability measure as given by equation 3.2:

$$\begin{aligned} y_{i,t+h} - y_{i,t-1} = {} & \beta_1^h PB_{it}^{(5)} + \beta_2^h PB_{it}^{(5)} \times \text{Debt Composition}_i \\ & + \sum_{j=1}^{2} \phi_j^h y_{i,t-j} + \sum_{j=1}^{2} \gamma_j^h PB_{i,t-j}^{(5)} + \sum_{j=0}^{2} \theta_j^{h\prime} X_{i,t-j} \\ & + \Phi_i + \Phi_t + e_{it} \end{aligned} \quad (3.2)$$

where Debt Composition$_i$ is a dummy variable equal to one for countries with an above-median share of foreign currency in government debt (FC Share), above-median share of foreign holding of domestic currency government debt (DC Held Abroad), and above-median share of foreign currency debt held domestically (FC Held Domestically). We estimate these models separately and obtain the effect of projected primary balance on these yield curve components, given by β_1 and $\beta_1 + \beta_2$ in non-vulnerable economies and vulnerable economies, respectively. As a robustness check, we include government debt and the policy rate as additional control

[9] We use semi-annual frequency because the projected primary balance from IMF WEO is available twice a year in April and October.

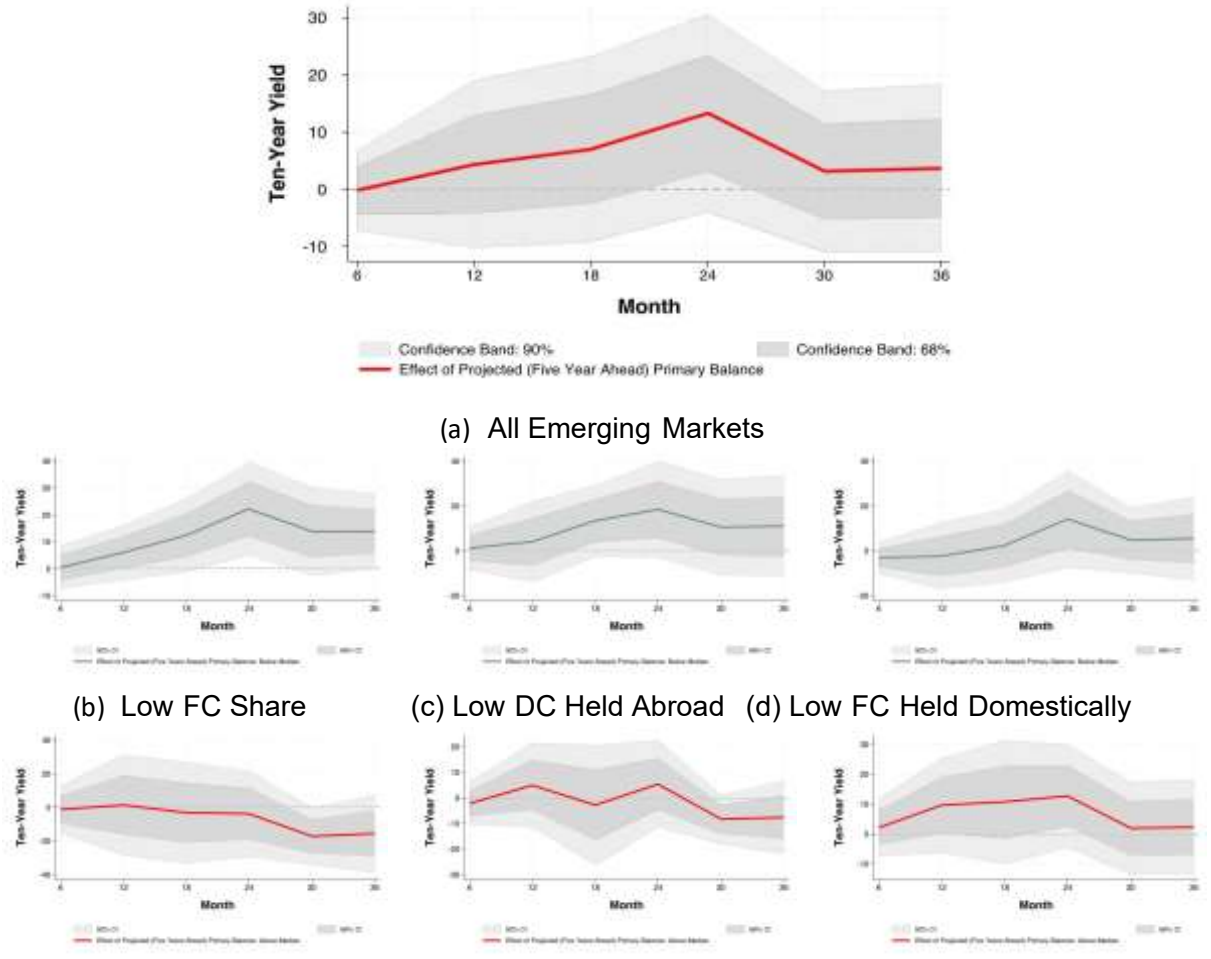
variables, (Liu, 2023; Kumar and Mallick, 2024). We also estimate the above models for the five-year rate five years ahead to capture the effect of improvement in projected primary balance on the yield curve. The five-year rate five years ahead is unlikely to be driven by the current macroeconomic conditions and gives us the most credible estimate in this setting.

4. Results and Analysis

In this section, we report the results from local projection regression. Horizons run from 6 to 36 months in six-month steps, given the semi-annual availability of data from WEO.

Ten-Year Yield: Figure 11 presents the cumulative response of the ten-year nominal yield, which aggregates the country default risk premium, expected short rate, and term premium components. The impact on yield is negligible on impact and remains positive, although insignificant.

Figure 11: Impulse Response of Ten-Year Nominal Yield to a 1 pp Improvement in Primary Balance (5-Year-Ahead Projection)



(a) All Emerging Markets

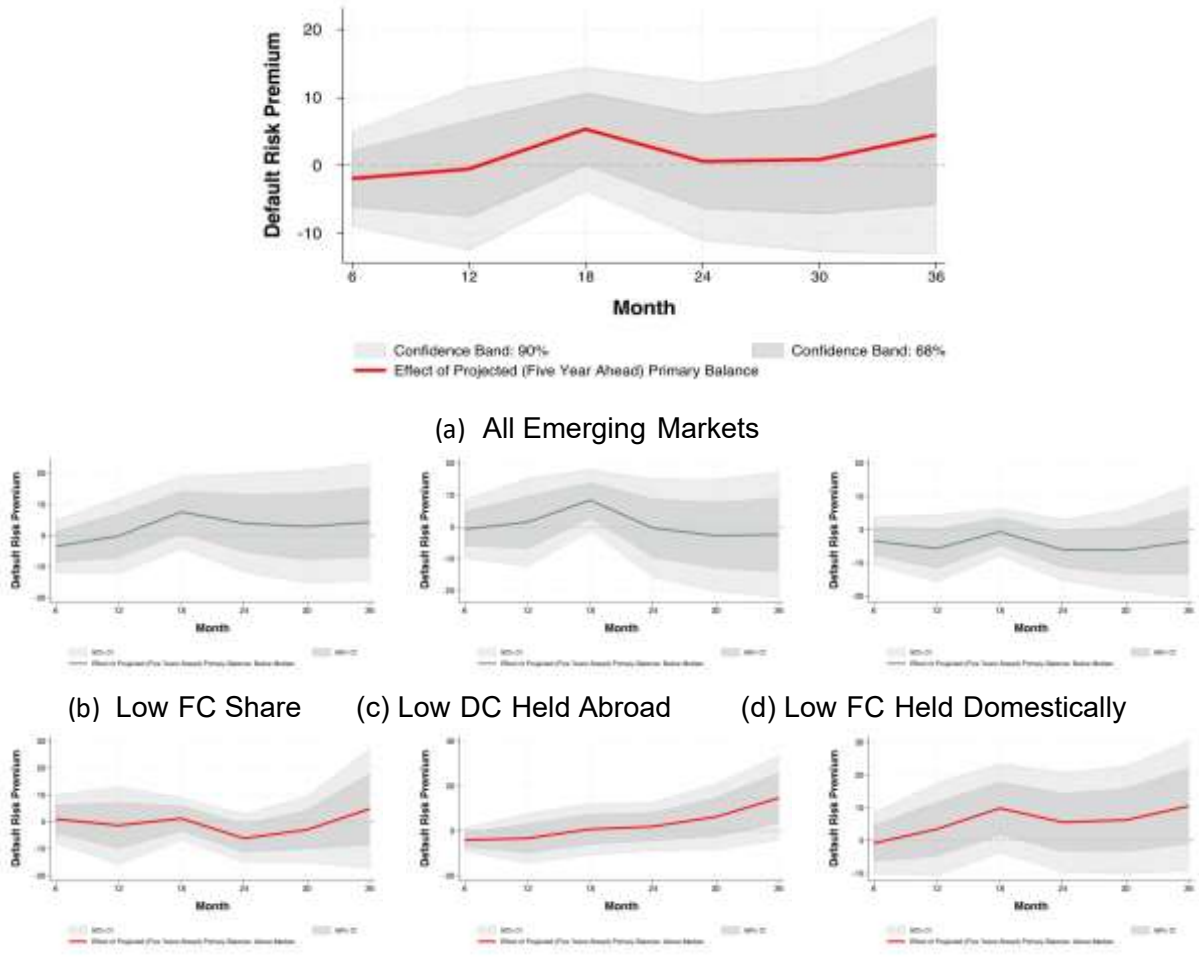
(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners and above-median proportion of foreign currency bonds held domestically, respectively. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

This is in contrast to Laubach (2009) results from the US and a larger set of countries in Baldacci and Kumar (2010) and Nose and Menkulasi (2025). Although Baldacci and Kumar (2010) use a different time-period and annual frequency, Nose and Menkulasi (2025) use the same WEO dataset but different countries, and hence the results are not directly comparable. Moreover, Nose and Menkulasi (2025) does not include the lag of the dependent variable and independent variable, which is likely to bias the estimates from local projection. We include gross debt and policy rate as additional control variables, but these do not change the response of ten-year yield due to a change in projected primary balance, Figure 11a.

Figure 12: Impulse Response of Ten-Year Default Risk Premium to a 1 pp Improvement in Primary Balance (5-Year-Ahead Projection)



(a) All Emerging Markets

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

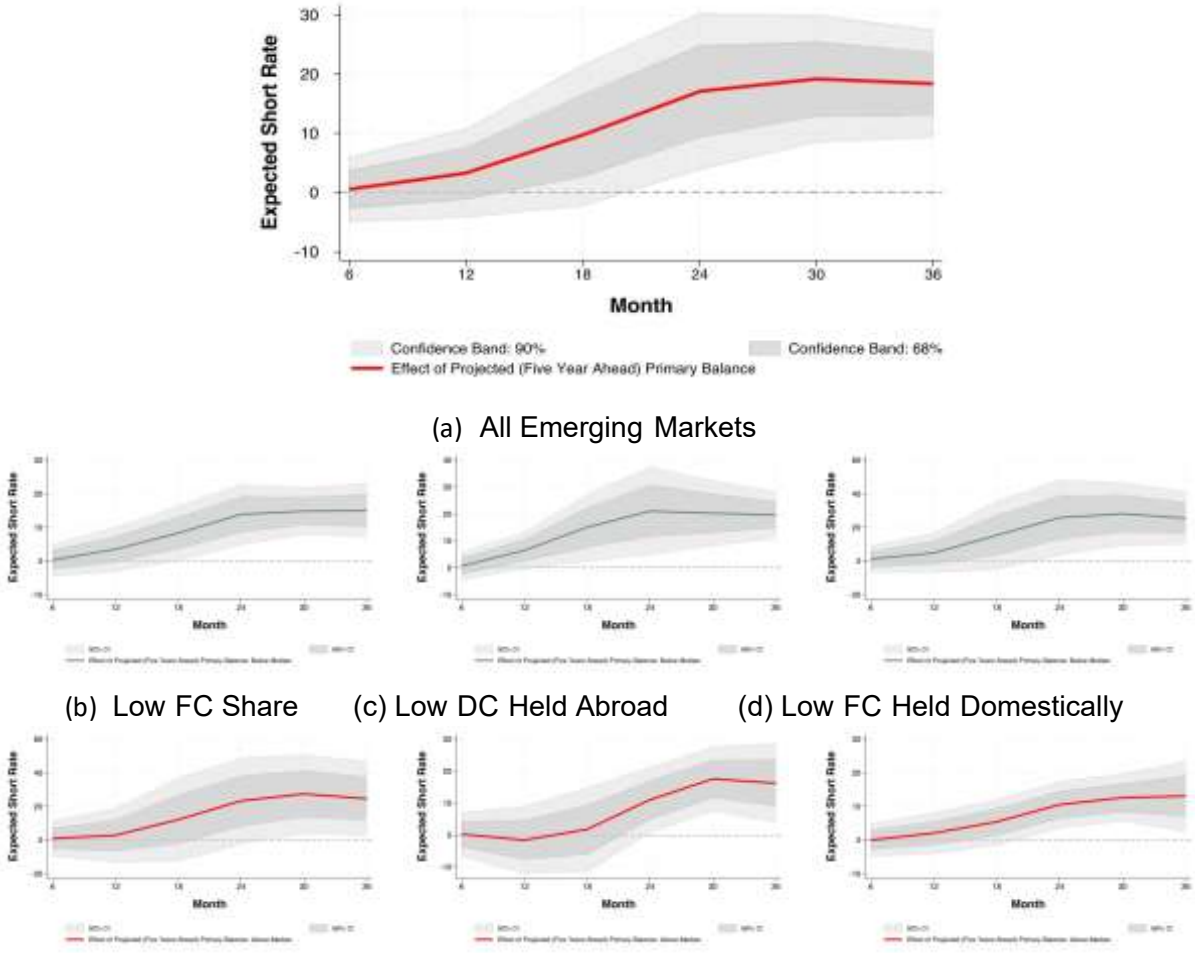
Note: Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners and above-median proportion of foreign currency bonds held domestically, respectively. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

This gives us confidence that these responses are not likely to be biased due to omitted variables, as the inclusion of gross debt and policy rate does not affect these responses. Therefore, it seems that the negative effect of primary balance on yield in Nose and Menkulasi (2025) is likely driven by the absence of lag variables in the local projection regression. Further comparing the countries with and without vulnerability, we find that the projected improvement in primary balance leads to an increase in the yield in less vulnerable countries. The effects on vulnerable countries are mixed and insignificant.

Country Default Risk Premium: Figure 12 presents the response of the country default risk premium due to the changes in projected primary balance. A credible fiscal improvement should reduce sovereign default risk, lowering the country's default risk premium. The baseline panel documents this negative response, but it is statistically insignificant. Further comparing the countries with and without vulnerability, we find that the projected improvement in primary balance does not have a significantly different effect on default risk premium in these countries. Overall, we find that improvement in primary balance does not transmit through changes in default risk premium. Although the default risk premium is not the same as the cross-currency basis, it is constructed similarly. Hence, these findings are not surprising given that Du et al. (2018b) argue that the cross-currency basis for major currencies is not explained by credit/default risk.

Expected Short Rate: Figure 13 shows the response of the expected short rate component of the ten-year yield. This component captures the market's expectation of the average level of policy rates over the next ten years. The effect of fiscal consolidation on expected rates is theoretically ambiguous. Under the standard demand-side view (Blanchard and Perotti, 2002), consolidation is contractionary in the short-run - lower aggregate demand reduces inflation and output, leading markets to price in an easier monetary policy and a lower expected short rate path. But we find that expected short rates are increasing over time. Figures 13b-13d and 13e-13g show that the projected primary balance increases expected short rates in all these countries in a qualitatively similar way after 6 months, which is close to 20 basis points after 3 years, but the effect is stronger in less vulnerable economies. The impact of the projected primary balance on expected rates suggests that, compared to more vulnerable economies, projected fiscal improvements in less vulnerable economies are interpreted more as an improvement in economic conditions. And since the expected short rates are likely to be confounded with the current business cycle, the effects are contrary to the expectations. Similar arguments can be raised about the results in Figures 11b-11d and 11e-11g. We address these concerns by estimating the effect of projected primary balance on the five-year rate five- years-ahead in the next section, which is unlikely to be confounded by the current business cycle and gives the most credible evidence.

Figure 13: Impulse Response of Expected Short Rate to a 1 pp Improvement in Primary Balance (5-Year-Ahead Projection)



(a) All Emerging Markets

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

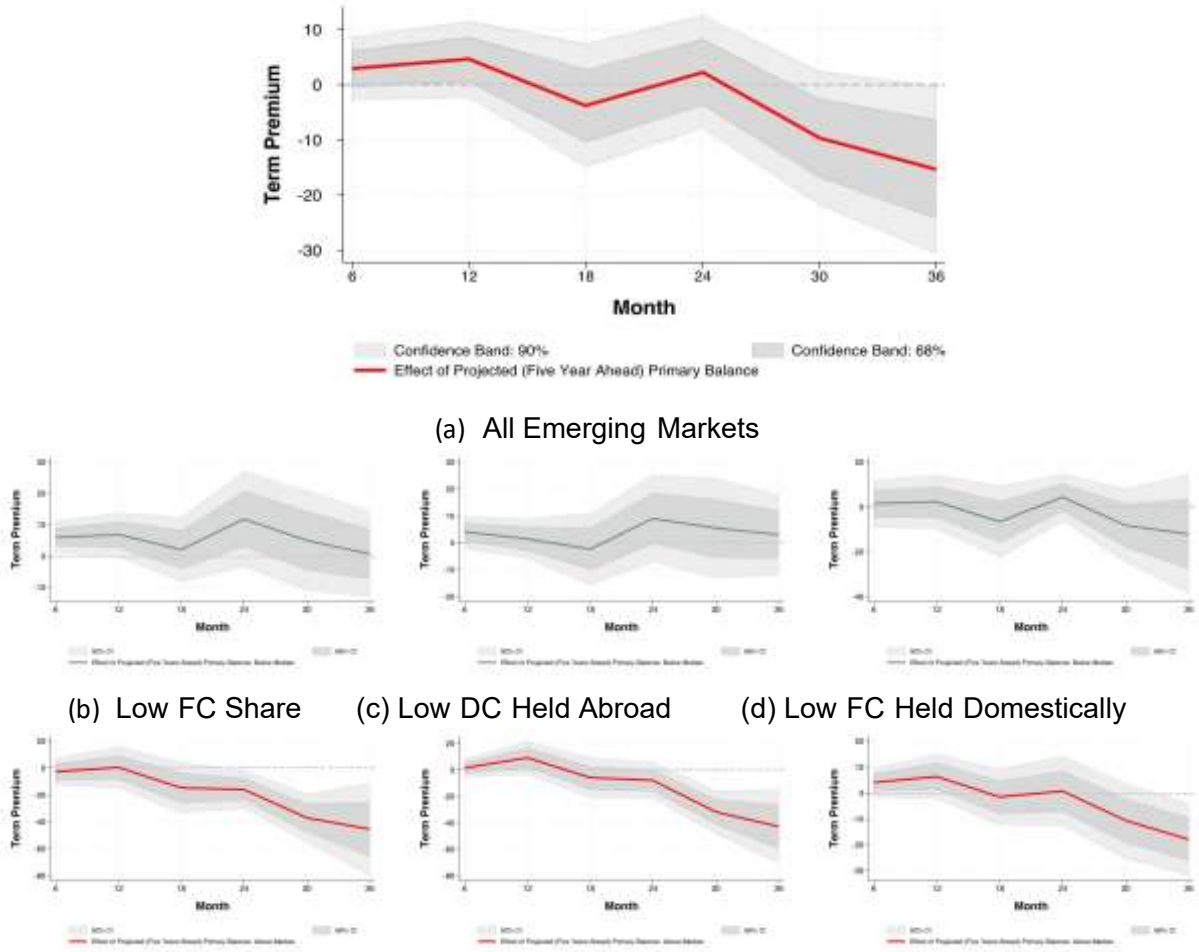
(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

Ten-Year Term Premium: Figure 14 reports the response of the ten-year term premium to a fiscal improvement. The baseline estimate (Figure 14a) reveals a statistically insignificant positive response, peaking at approximately 12 months and then moderating, which becomes negative after 2 years. Figures 14b- 14d show that the primary balance does not affect the term premium in countries with a low foreign currency share in government debt, low foreign participation in the domestic currency government debt market, or a low share of foreign currency debt held domestically. However, an improvement in the projected primary balance reduces the term premium in countries with a higher foreign currency share in government debt, higher foreign participation in the domestic currency government debt market, or a higher share of foreign currency debt held domestically in the medium-run (Figures 14e- 14g). The effect is smaller for countries with a higher share of foreign currency debt held domestically

and is marginally significant at the end of three years. It is important to note that these countries also exhibit higher term premia, as shown in Figure 10. The decline is in the range of 20 to 40 basis points in the term premium in these economies due to a one percentage point improvement in the projected primary balance. This decline occurs in the medium run as projections of fiscal improvement are likely to become more credible.

Figure 14: Impulse Response of Ten-Year Term Premium to a 1 pp Improvement in Primary Balance (5-Year-Ahead Projection)



(a) All Emerging Markets

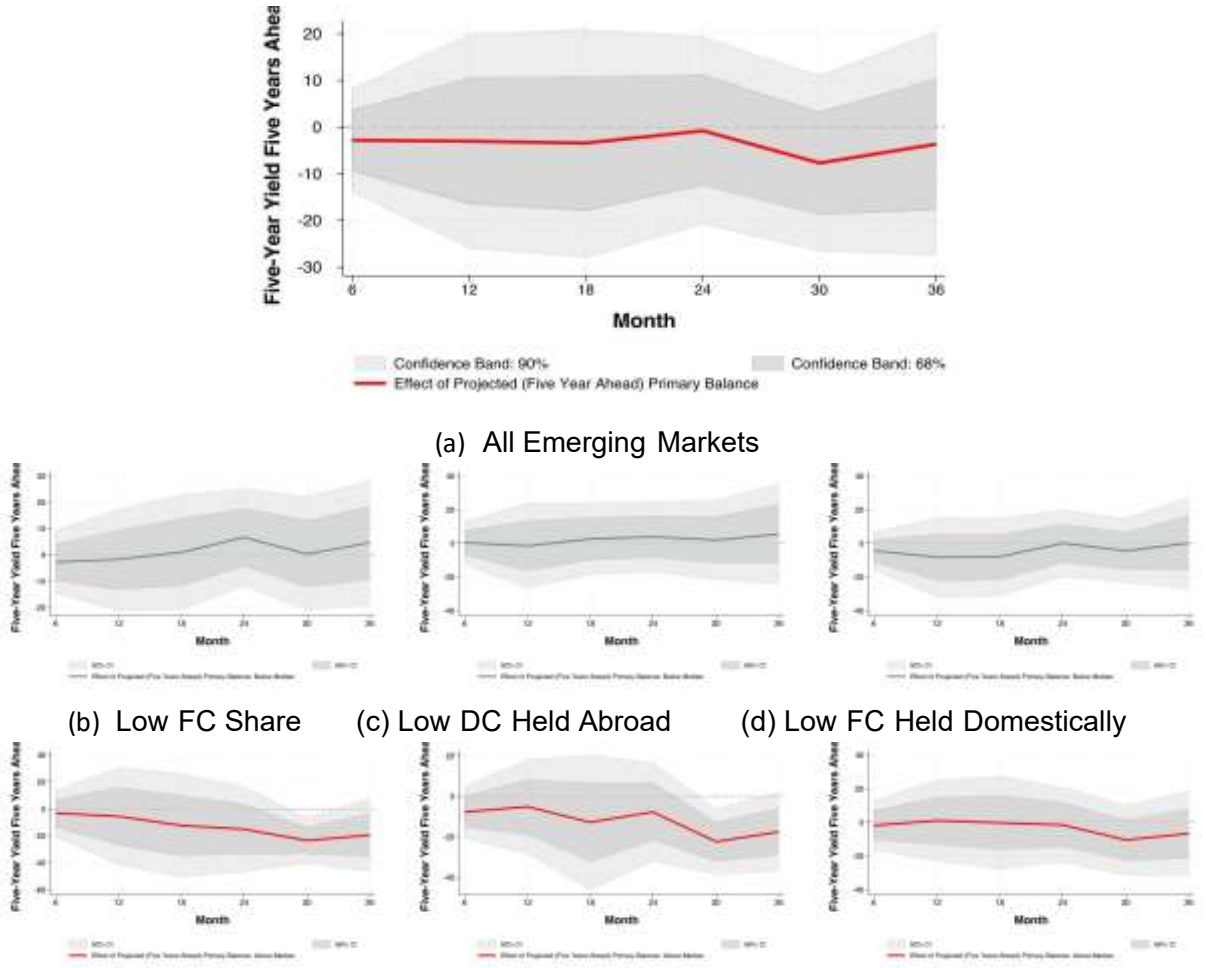
(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners and above-median proportion of foreign currency bonds held domestically, respectively. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

Five-Year Yield Five Years Ahead: Figure 15 shows the response of the five-year yield five years ahead. This is the cleanest measure of the yield, which is not expected to be confounded with the current business cycle, (Laubach, 2009; Plante et al., 2026).

Figure 15: Impulse Response of Five-Year Yield Five Years Ahead to a 1 pp Improvement in Primary Balance (5-Year-Ahead Projection)



(a) All Emerging Markets

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and an above-median proportion of foreign currency bonds held domestically, respectively. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

We find that the five-year yield five years ahead declines by approximately 5 basis points, as shown in Figure 15a, but the effect is not statistically significant. Comparing the heterogeneity across countries, we find that the decline in five-year yield five years ahead is not significant in countries that are not vulnerable, as shown in Figures 15b-15d. It is important to mention that these countries also do not experience a decline in term premium as shown in Figures 14b-14d. Interestingly, we find that in vulnerable countries the improvement in projected primary balance leads to a decline in five-year yield five years ahead as shown in Figures 15e-15f. Most importantly, we find these countries also experience a decline in term premium as shown in Figures 14e-14f. Although these economies experience a rise in expected short rates, as shown in Figures 13e-13g, the decline in term premium is larger

compared to the increase in the expected short rates and leads to a decline in the five-year yield five-years-ahead. Therefore, we conclude that countries with a high share of foreign currency debt (countries with "original sin") and countries with higher foreign participation in domestic currency debt (countries with "original sin redux") experience a decline of 20 basis points in five-year yield five years ahead, primarily due to a decline in term premium within three years of fiscal consolidation.

5. Discussion

A main concern with using the IMF World Economic Outlook five-year-ahead primary-balance forecast ($PB_{it}^{(5)}$, labelled PB_5 in the figures) as a measure of fiscal consolidation is that the improvement in the projected primary balance may not always come from discretionary fiscal tightening. If growth prospects improve, projected tax revenues can also improve, and this can raise the projected primary balance even when there is no deliberate change in fiscal policy. The same improvement in growth prospects can also increase expected short rates if monetary policy is expected to respond to stronger demand. In that case, the improvement in the projected primary balance and the increase in yields may partly reflect the same business cycle force.

This concern is important for the interpretation of the results. In the baseline local projection, we control for current and projected growth, inflation, lagged dependent variables, the gross-debt-to-GDP ratio, and the monetary policy rate. These controls help, but they cannot completely remove the possibility that projected fiscal improvements contain information about the business cycle. This can be seen in Figures 11b-11d and Figures 13b-13d. In less vulnerable countries, an improvement in the projected primary balance is associated with higher expected short rates and higher yields. However, these countries do not experience a significant decline in the five-year yield five years ahead, as shown in Figures 15b-15d. This suggests that, in less vulnerable economies, the projected improvement in the primary balance is more likely to be interpreted by markets as an improvement in macroeconomic conditions.

The pattern is different in vulnerable economies. Expected short rates also increase in these countries but by a smaller margin, and the decline in the term premium is larger than the increase in the expected rates. As a result, the five-year yield five-years-ahead declines, especially in countries with a high foreign-currency share in government debt and in countries with higher foreign participation in domestic-currency debt markets, as shown in Figures 15e-15f. This is important because the five-year yield five-years-ahead should be less affected by current and near-term business-cycle conditions than the ten-year yield. Therefore, the decline in this component provides stronger evidence that projected fiscal improvement works through a reduction in the term premium in vulnerable economies.

The delayed response of yields reflects the gradual market processing of projected improvements in fiscal conditions. Investors may not immediately price the full information contained in five-year-ahead primary-balance projections. These projections become credible only when they are supported by later government actions, such as budget implementation, fiscal reforms, or evidence that consolidation is politically and administratively feasible. As this

information arrives, markets may gradually revise expectations about debt sustainability, inflation risk, default risk, and future borrowing needs. The response may also take time because existing debt has to mature and be refinanced before the fiscal path becomes fully relevant for borrowing costs. Short-term monetary policy conditions can also offset the fiscal signal at the beginning. This helps explain why the effect on the yield curve appears gradually rather than immediately.

Appendix D compares the baseline five-year-ahead projection with the four-year-ahead primary-balance projection. These results move in the same direction as the baseline results, but the response is somewhat earlier and stronger on average. This is consistent with the idea that markets put more weight on fiscal information when the forecast horizon becomes shorter and the projection is more credible. We do not directly control for forecast revisions in the baseline model. However, the specification includes lagged projected primary balances. Since a forecast revision is related to changes in projected balances over time, controlling for lagged projected balances partly controls for forecast revision and suggests that the results are driven by projected improvements in the primary balance over the medium-term rather than by forecast revisions. Overall, the results show that the effect of projected fiscal improvement depends on the structure of government debt. Projected fiscal improvement reduces future yields mainly in countries with higher foreign-currency debt and higher foreign participation in domestic-currency debt markets. The main channel is the decline in the term premium in these vulnerable economies.

The other robustness exercises support this interpretation. First, Appendix E reports the direct statistical test for the significance of the interaction of primary balance and vulnerability measures. We find that the interaction is statistically significant for countries with higher foreign-currency debt and higher foreign participation in domestic-currency debt markets. Also, the results are not driven by global commodity-price movements or by the level of government debt. Appendix F reports the impulse responses after adding commodity-price shocks interacted with each country's commodity-export dependence. This is important because the experience of developing countries over 1990–2010 shows that commodity prices can have a significant effect on fiscal outcomes (Samaké and Spatafora, 2012). These controls allow commodity-price shocks to matter more for commodity-dependent economies, while still keeping time fixed effects in the model. The responses with commodity controls are close to the baseline responses. For the vulnerable groups, the decline in the ten-year term premium remains clear, and the five-year yield five-years-ahead also behaves very similarly to the baseline. Appendix G shows that adding gross debt to GDP as an additional control also leaves the main pattern unchanged. This robustness check is useful because higher government debt is associated with higher bond risk premia and lower risk-free rates (Liu, 2023). Further, Appendix H checks whether the median classification is driving the results. Some countries are close to the median cutoff and can move above and below the threshold over time. To address this, we use a top-versus-bottom-quartile classification and a continuous debt-composition specification. The quartile classification removes the middle of the distribution, where countries are more likely to switch groupings in the estimation sample, while the continuous specification avoids a discrete cutoff. Both exercises give similar qualitative results. This suggests that the main findings are not driven by countries close to the median cutoff. We also estimate leave-one-country-out local projections, which show that the term-premium

result is not driven by one particular country. All these additional results confirm that the decline in the term premium and in the five-year yield five-years-ahead remains concentrated in economies with higher foreign-currency debt and higher foreign participation in domestic-currency debt markets.

Emerging Asia: We also estimate the models for a subset of emerging Asian economies: China, India, Indonesia, Korea, Malaysia, the Philippines, and Thailand, as listed in Table A.3 in Appendix A. The results are reported in Figures I.1-I.5 in Appendix I. The results for emerging Asia are broadly consistent with the full emerging-market results and support three main findings. First, the country default-risk premium is largely unresponsive to projected fiscal improvements even in emerging Asia. This supports the main result of the paper that the fiscal stance is not the main driver of default risk in emerging markets. Second, the ten-year term premium declines after a projected fiscal improvement in countries that are vulnerable along the debt-composition dimensions. This is similar to the full emerging-market sample. Third, the five-year yield five-years-ahead declines in vulnerable Asian economies, especially in economies with higher foreign participation in domestic-currency debt markets and a higher share of foreign-currency debt held domestically.

There are also some differences. First, the ten-year yield response is negative and statistically significant in emerging Asia. A one-percentage-point improvement in the five-year-ahead primary balance lowers the ten-year yield by roughly 20–25 basis points after two years, while the response for the full sample is not statistically significant. Second, the expected short-rate response changes sign. Expected short rates fall by around five basis points over the same horizon, which is consistent with a more conventional monetary-policy reaction where credible fiscal consolidation creates room for monetary easing. Third, the decline in the term premium in vulnerable Asian economies is somewhat smaller than in the full sample. However, together with the decline in expected short rates, it is still sufficient to reduce yields. Appendix J further checks whether the Asian responses are statistically different from the rest of the emerging market sample by keeping all countries in the estimation and including an interaction with a categorical dummy for Asian economies. These results show that the Asia-specific difference is more visible for the five-year yield five-years-ahead, while the term-premium differences are less systematic and imprecisely estimated. Overall, the Asia results suggest that projected fiscal improvement has a more conventional transmission to sovereign yields in emerging Asia than in the broader emerging-market sample, but the transmission in vulnerable economies is qualitatively similar. Fiscal discipline lowers yields through a lower term premium, and the effect is stronger in economies exposed to original sin and original sin redux.[10]

6. Concluding Remarks

This paper explores the effect of improvements in the projected primary balance on sovereign yields and their components in emerging market economies. We construct three sources of debt-market vulnerabilities: a higher foreign currency share in government debt ("original sin"), a higher proportion of domestic currency government debt held by foreigners

[10] The emerging Asia estimates are based on only seven economies and a relatively small sample, given the data requirements of the local projection regressions.

("original sin redux"), and a higher proportion of foreign currency debt held domestically. All three measures of vulnerability are associated with higher yields, default-risk premia, and term premia in emerging markets. This provides direct evidence of the negative effect of these vulnerabilities on sovereign yields in emerging economies. We find that, on average across emerging markets, an improvement in the five-year-ahead projected primary balance does not lower the ten-year nominal yield, in contrast to the results typically documented for the United States. We also find that the improvement in the projected fiscal balance does not affect the country-specific default-risk premium, which is largely unresponsive to projected primary balances at all horizons; instead, it operates through a lower term premium in vulnerable countries. Results suggest that, in vulnerable countries, i.e., countries with a higher share of foreign currency debt and a higher share of domestic currency debt held abroad, a projected improvement in the primary balance reduces the five-year yield five years ahead by roughly 20 basis points within two years, which is relatively larger than the effect in the US (Plante et al., 2026).

There are important policy implications of these findings. The evidence supports the view that credible, pre-announced fiscal consolidation delivers a direct saving on sovereign borrowing costs, and that the saving is larger in the economies most exposed to currency and valuation risks. Because these vulnerabilities are priced in the sovereign yield curve, the corresponding policy responses are also different across vulnerabilities. They may include the development of local-currency debt markets, diversification of the investor base, and closer monitoring of sovereign exposures within the domestic financial system, especially where domestic financial dollarisation is high. In effect, these channels suggest the need for close coordination between fiscal policy, debt management, prudential supervision, and financial stability policy.

Importantly, countries that cannot quickly overcome "original sin" or "original sin redux" can nevertheless lower their cost of borrowing by improving their fiscal trajectory. This strengthens the case for credible medium-term fiscal frameworks, realistic implementation plans, and communication that makes the adjustment path believable. Since the default-risk premium is largely insensitive to projected fiscal improvements, while the term premium is highly responsive in vulnerable economies, active management of the maturity structure of sovereign debt could be very useful during fiscal consolidation.

The yield decomposition itself provides a useful policy message. An improvement in the projected fiscal position need not reduce every component of the sovereign yield. In less vulnerable economies, better fiscal projections can coexist with higher expected short rates, possibly reflecting a stronger macroeconomic outlook and the expected monetary policy response. A movement in the headline yield should therefore not be interpreted automatically as either a worsening or an improvement in fiscal conditions. Policymakers need to identify whether the movement is coming from expected policy rates, the term premium, or the measured sovereign-risk component. Debt-composition management can reduce vulnerabilities. However, it should be recognized as a complement to, rather than a substitute for, a credible fiscal trajectory.

These findings also have implications for central banks. Distinguishing between movements in sovereign yields driven by expected policy rates and those reflecting term premia and sovereign risk is important from a monetary policy transmission perspective. While fiscal consolidation could lower term premia in vulnerable economies, easing borrowing conditions, stronger growth prospects or anticipated monetary tightening could push expected short rates higher. Understanding these channels can help central banks to assess overall financial conditions and the interaction between fiscal adjustment and monetary policy, particularly in economies with significant foreign-currency exposures or foreign participation in domestic debt markets.

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Appendix

A. Country and Time-Period

Table A.1: Sample Period by Currency and Country Codes

Country (ISO3)	Currency (ISO4217)	Currency Name	Start Date	End Date
BRA	BRL	Brazilian Real	11-Feb-2000	30-Jun-2025
CHL	CLP	Chilean Peso	03-Jan-2000	30-Jun-2025
CHN	CNH	Chinese Yuan (Offshore)	26-Aug-2010	30-Jun-2025
COL	COP	Colombian Peso	03-Jan-2000	27-Jun-2025
HUN	HUF	Hungarian Forint	03-Jan-2000	30-Jun-2025
IDN	IDR	Indonesian Rupiah	14-Mar-2001	30-Jun-2025
ISR	ILS	Israeli Shekel	04-Jan-2000	30-Jun-2025
IND	INR	Indian Rupee	03-Jan-2000	30-Jun-2025
KOR	KRW	South Korean Won	03-Jan-2000	30-Jun-2025
MEX	MXN	Mexican Peso	03-Jan-2000	30-Jun-2025
MYS	MYR	Malaysian Ringgit	03-Jan-2000	30-Jun-2025
PER	PEN	Peruvian Sol	21-Jul-2000	30-Jun-2025
PHL	PHP	Philippine Peso	03-Jan-2000	30-Jun-2025
POL	PLN	Polish Zloty	03-Jan-2000	30-Jun-2025
RUS	RUB	Russian Ruble	09-Aug-2001	30-Jun-2025
THA	THB	Thai Baht	03-Jan-2000	30-Jun-2025
ZAF	ZAR	South African Rand	03-Jan-2000	30-Jun-2025

Table A.2: Emerging Markets

ISO	Country	FC Share	DC HA	FC HD
BRA	Brazil	0	0	1
CHL	Chile	1	0	0
CHN	China	0	0	0
COL	Colombia	1	1	0
HUN	Hungary	1	1	0
IDN	Indonesia	1	1	0
IND	India	0	0	0
ISR	Israel	0	0	1

KOR	Korea	0	0	1
MEX	Mexico	1	1	0
MYS	Malaysia	0	1	1
PER	Peru	1	1	0
PHL	Philippines	1	0	0
POL	Poland	1	1	0
RUS	Russia	1	1	1
THA	Thailand	0	0	1
ZAF	South Africa	0	1	1

Note: FC Share denotes the dummy for a higher-than-median share of foreign currency debt. DC Held Abroad denotes a dummy for a higher-than-median share of domestic currency debt held by foreign investors. FC Held Domestically denotes a dummy for a higher-than-median share of foreign currency debt held domestically.

Table A.3: Emerging Asia

ISO	Country	FC Share	DC Held Abroad	FC Held Domestically
CHN	China	0	0	0
IDN	Indonesia	1	1	0
IND	India	0	0	0
KOR	Korea	0	0	1
MYS	Malaysia	1	1	1
PHL	Philippines	1	0	0
THA	Thailand	0	1	1

Note: FC Share denotes the dummy for a higher-than-median share of foreign currency debt. DC Held Abroad denotes a dummy for a higher-than-median share of domestic currency debt held by foreign investors. FC Held Domestically denotes a dummy for a higher-than-median share of foreign currency debt held domestically.

B. Yield Curve Estimation

Using the affine term structure model of Adrian et al. (2013), we obtain the expected rate ($r_{t,n}$) and term premium ($\tau_{t,n}$) at different horizons. The decomposition of $\tilde{r}_{t,n}^{LC}$ the expected rate and term premium are given below:

$$\tilde{r}_{t,nLC} = r_{t,nE} + \tau_{t,n}$$

We use regression-based estimates of the yield curve from Adrian et al. (2013). This gives better estimates of the yield curve compared to Joslin et al. (2011), as argued in Adrian et al. (2013). Joslin et al. (2011) assumes that the yield pricing errors are conditionally independent of lagged values of yield pricing errors, which is an undesirable assumption. This is because it implicitly assumes return pricing errors to be serially correlated, as shown by Adrian et al. (2013) and discussed later in this paper. Adrian et al. (2013) find evidence of strong serial correlation in yield pricing errors, while the return pricing errors have essentially no autocorrelation, and hence the method used in this paper is empirically more credible than used in Kaminska et al. (2021). Also, the estimation in Joslin et al. (2011) uses linear combinations of only yields as pricing factors, whereas the regression-based framework used in this paper is flexible to allow for additional pricing factors, such as macroeconomic variables. Moreover, we extend the sample period to cover the unconventional monetary policy shocks, where the yield curve became an important aspect of monetary policy.

B.1 Yield Curve Model

Let $P_t^{(n)}$ denote the price at time t of a zero-coupon, default-free bond with maturity n. The continuously compounded yield on that bond is $y_t^{(n)} = -lnP_t^{(n)}/n$, so that the one-period continuously compounded risk-free rate is $r_t = y_t^{(1)} = -lnP_t^{(1)}$. We assume that $K\times1$ vector of pricing factors or state variable according to equation (1),

$$X_{t+1} = \mu + \Phi X_t + \nu_{t+1} \tag{1}$$

where the shock ν_{t+1} conditionally follow a Gaussian distribution with variance covariance matrix Σ as given by equation (2).

$$\nu_{t+1} | \{X_s\}_{s=0}^{t} \sim N(0, \Sigma) \tag{2}$$

As we can see $\{X_s\}_{s=0}^{t}$ denotes the history of X_t. Let $P_t^{(n)}$ denote the price of a zero-coupon bond having maturity n at time t. The assumption of no arbitrage implies that there exists a pricing kernel M_t such that the price is given by equation (3).

$$P_t^{(n)} = E_t\left[M_{t+1}P_{t+1}^{(n-1)}\right] \tag{3}$$

We assume that pricing kernel M_{t+1} is exponentially affine as given by equation (4).

$$M_{t+1} = exp\left(-r_t - \frac{1}{2}\lambda_t'\lambda_t - \lambda_t'\Sigma^{-\frac{1}{2}}\nu_{t+1}\right) \tag{4}$$

We further assume that market prices of risk are of the affine form of pricing factors as given by equation (5).

$$\lambda_t = \Sigma^{-\frac{1}{2}}\left(\lambda_0 + \lambda_1 X_t\right) \tag{5}$$

We define the excess return on a bond having maturity *n* at time *t* between time period *t* and *t* + 1 as given by equation (6).

$$rx_{t+1}^{(n-1)} = lnP_{t+1}^{(n-1)} - lnP_t^{(n)} - r_t \tag{6}$$

Below, we briefly explain the estimation, and detailed steps are available in Adrian et al. (2013). The estimation is done in three steps. First, we estimate equation (1) using ordinary least squares and obtain $\hat{\nu}_{t+1}$ and using these we obtain $\hat{\Sigma}$. Second, we regress the excess returns from equation (6) on lagged and contemporaneous pricing factor innovations. Residuals from this regression gives $\hat{\sigma}^2$. Third we estimate the price of risk parameters λ_0 and λ_1 using cross sectional regressions. From the above estimated model parameters, we can generate a zero-coupon yield curve at any time *t*. Under the assumptions made above, the bond prices are exponentially affine in the pricing factors as given by equation (7).

$$lnP_t^{(n)} = A_n + B_n' X_t + u_t^{(n)} \tag{7}$$

where we can show that:

$$A_n = A_{n-1} + B_{n-1}'\left(u - \lambda_0\right) + \frac{1}{2}\left(B_{n-1}'\Sigma B_{n-1} + \sigma^2\right) - \delta_0 \tag{8}$$

$$B_n' = B_{n-1}'\left(\Phi - \lambda_1\right) - \delta_1' \tag{9}$$

$$A_0 = 0, \quad B_0' = 0 \tag{10}$$

We obtain δ_0 and δ_1 by estimating a short rate equation of the form given by equation (11).

$$r_t - \delta_0 + \delta_1' X_t + \eta_t \tag{11}$$

since $lnP_t^{(1)} = A_1 + B_1' X_t + u_t^{(n)}$ gives $r_t = -A_1 - B_1' X_t - u_t^{(n)}$, we obtain $A_1 = -\delta_0$ and $B_1' = -\delta_1'$. This gives all the parameters to estimate the bond price across all maturities at all *t* using (8), (9), (10), and previously estimated parameters. We can also obtain the following expression for log bond pricing errors given by equation (12).

$$u_{t+1}^{(n-1)} - u_t^{(n)} + u_t^{(1)} = e_{t+1}^{(n-1)} \tag{12}$$

where $e_{t+1}^{(n-1)}$ is the conditionally orthogonal component of the unexpected excess return. Unexpected excess return is correlated with ν_{t+1}. Equation (12) implies that if bond pricing errors are i.i.d., then return pricing errors will be correlated both across assets and over time.

Likelihood-based estimation methods for affine term structure models typically assume that bond pricing errors are serially uncorrelated and therefore, implicitly allow return pricing errors to exhibit serial correlation. The above A_n, and B'_n are model implied considering risk and we call then $A_n(m)$ and $B'_n(m)$. We set $\lambda_0 = 0$ and $\lambda_1 = 0$ and obtain $A_n(c)$ and $B'_n(c)$. These $A_n(c)$ and $B'_n(c)$ gives risk neutral bond prices. Given $A_n(m)$ and $B'_n(m)$, the model-implied yield is given by equation (13).

$$y_t^{(n)}(m) = \frac{-1}{n}\left(A_n(m) + B'_n(m)X_t\right) \tag{13}$$

The counterfactual/risk-neutral yield is given by equation (14).

$$y_t^{(n)}(c) = \frac{-1}{n}\left(A_n(c) + B'_n(c)X_t\right) \tag{14}$$

The term premium $\tau_t^{(n)}$ is defined for any maturity n at time t as given by equation (15).

$$\tau_t^{(n)} = y_t^{(n)}(m) - y_t^{(n)}(c) = -\frac{1}{n}\left[\left(A_n(m) - A_n(c)\right) + \left(B'_n(m) - B'_n(c)\right)X_t\right] \tag{15}$$

B.2 Yield Curve Estimates

We estimate our baseline three-factor models using the zero-coupon synthetic yield and seven maturities 3 months, 1, 2,3, 5,7,10 year. These pricing factors Xt for equation (1) are obtained as principal components from the chosen yields. Using synthetic yield, we first estimate the yield for maturities 1 -120 months by fitting the Nelson-Siegel-Svensson (NSS) model. The zero-coupon yield for horizon n at time t is given by:

$$y_t^n = \beta_0 + \beta_1 \frac{1 - exp\left(-\frac{n}{\tau_1}\right)}{\frac{n}{\tau_1}} + \beta_2 \left\{ \frac{1 - exp\left(-\frac{n}{\tau_1}\right)}{\frac{n}{\tau_1}} - exp\left(-\frac{n}{\tau_1}\right) \right\}$$
$$+\beta_3 \left\{ \frac{1 - exp\left(-\frac{n}{\tau_2}\right)}{\frac{n}{\tau_2}} - exp\left(-\frac{n}{\tau_2}\right) \right\}$$

The six parameters are $\beta_0,\beta_1,\beta_2,\beta_3,\tau_1,\tau_2$. β_0 is the intercept or level. $\beta_1$determines slope and the instantaneous yield is $\beta_0 + \beta_1$. β_2, τ_1 and β_3, τ_2 give rise to two humps or local minima/maxima. pattern. For the 17 economies in this paper, we estimate these parameters and use them to recover the cross-section of yields for maturities up to 120 months, which is used for estimating the term structure model explained above. We use existing parameters for the US from https://www.federalreserve.gov/data/nominal-yield-curve.htm.

C. Ten-Year Synthetic Yield, Expected Short Rate, and Term Premium

Figure C.1: Yield, Expected Short Rate, and Term Premium

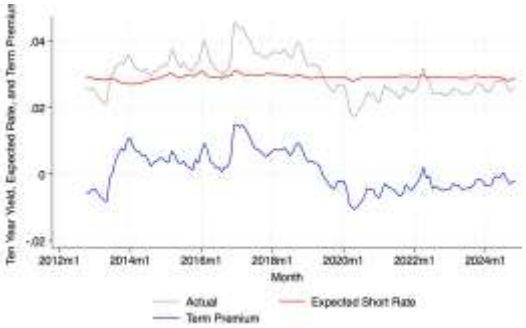


(a) Brazil

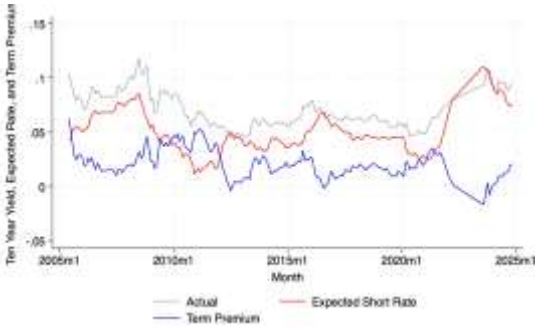


(b) Chile

Figure C.2: Yield, Expected Short Rate, and Term Premium

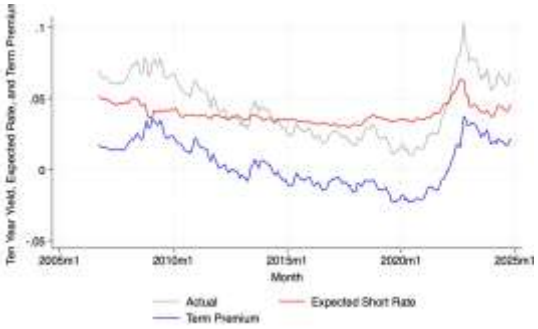


(a) China (Offshore)

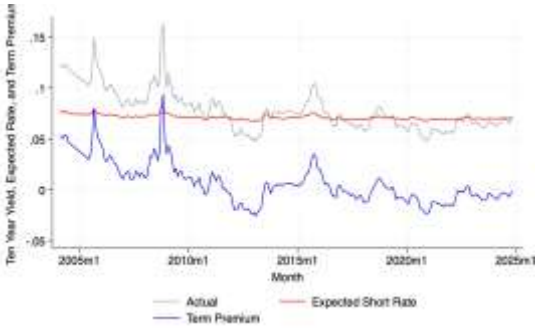


(b) Colombia

Figure C.3: Yield, Expected Short Rate, and Term Premium

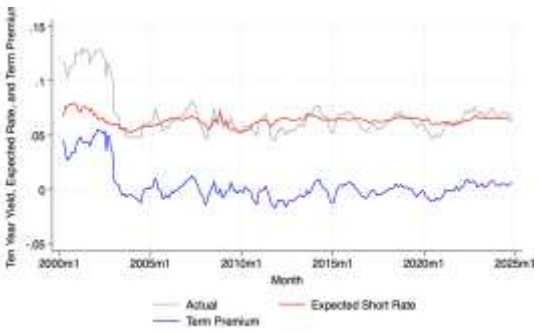


(a) Hungary



(b) Indonesia

Figure C.4: Yield, Expected Short Rate, and Term Premium



(a) India

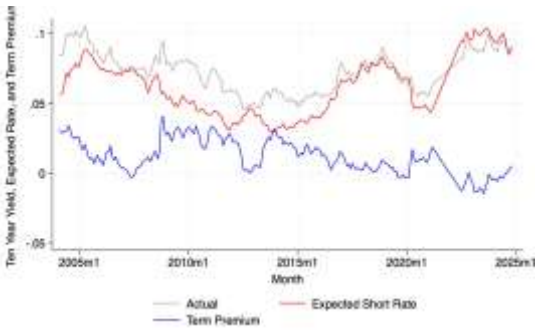


(b) Israel

Figure C.5: Yield, Expected Short Rate, and Term Premium

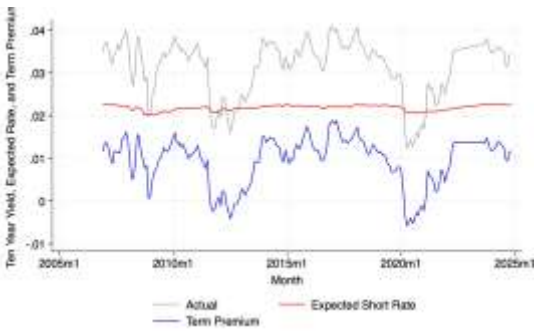


(a) South Korea

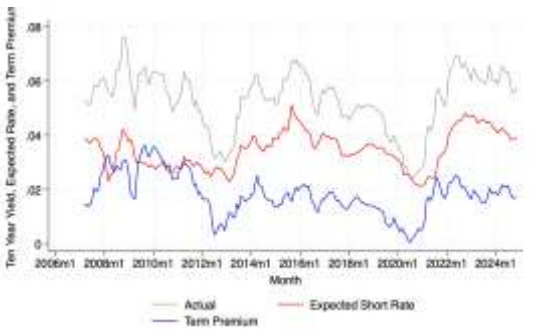


(b) Mexico

Figure C.6: Yield, Expected Short Rate, and Term Premium

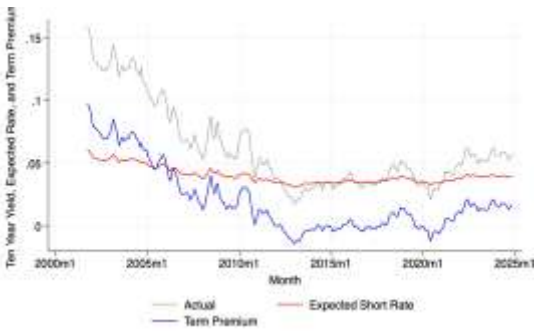


(a) Malaysia

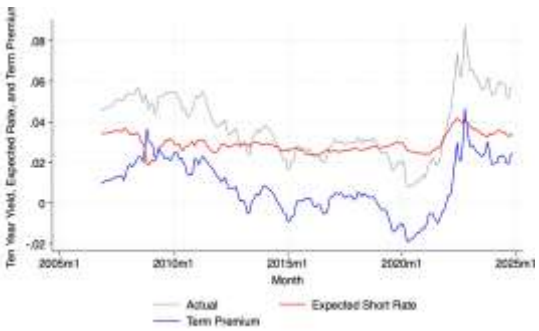


(b) Peru

Figure C.7: Yield, Expected Short Rate, and Term Premium

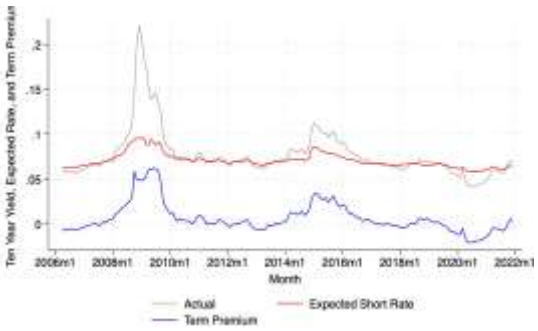


(a) Philippines

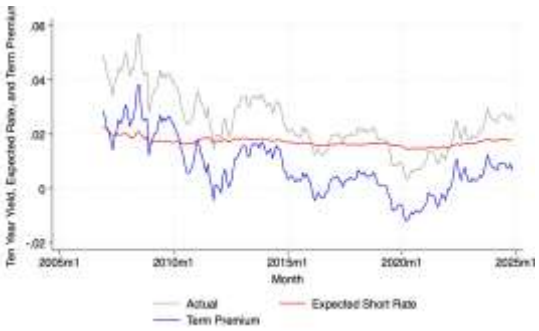


(b) Poland

Figure C.8: Yield, Expected Short Rate, and Term Premium



(a) Russia



(b) Thailand

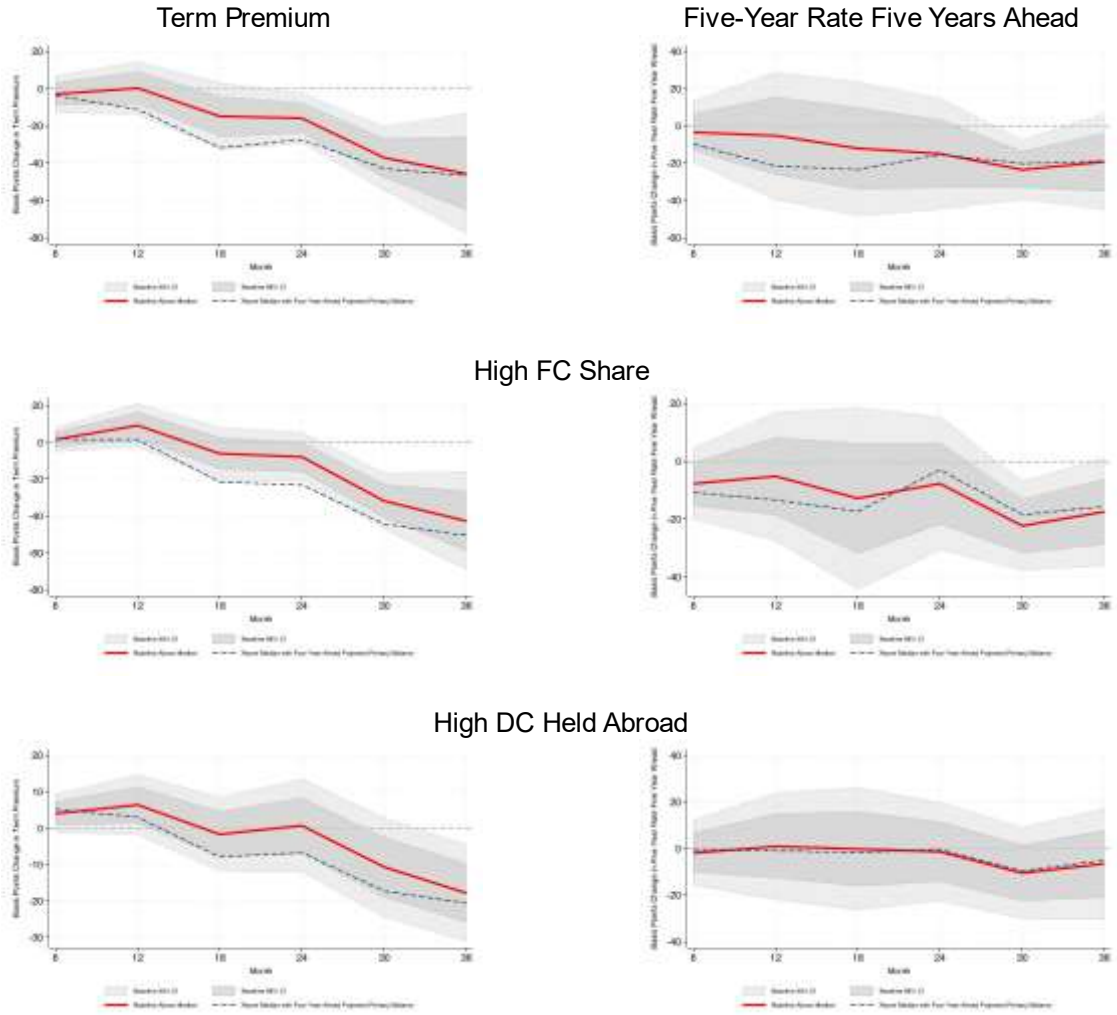
Figure C.9: Yield, Expected Short Rate, and Term Premium.



(a) South Africa

D. Robustness: Four-Year-Ahead Primary-Balance Projection

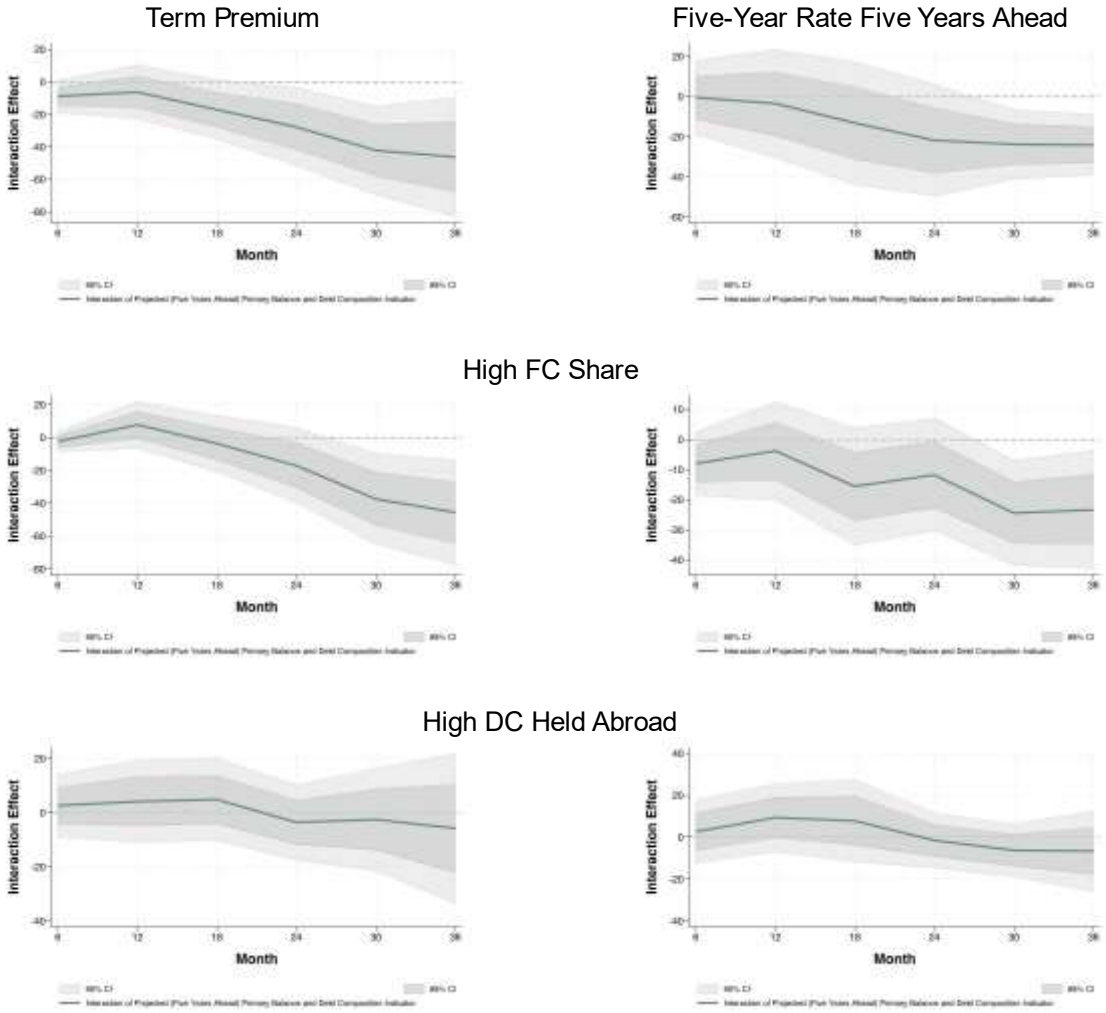
Figure D.1: Baseline Response due to Improvement in Primary Balance Five Year Ahead Compared with Improvement in Primary Balance Four Year Ahead



Note: The figure reports impulse responses to a one-percentage-point improvement in the projected primary balance for countries classified as vulnerable under each debt-composition measure. High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. First, second, and third rows are for High FC Share, High DC Held Abroad, and High FC Held Domestically countries, respectively. The solid line is the baseline response based on the five-year-ahead primary-balance projection, and the dashed line is the response based on the four-year-ahead primary-balance projection. The confidence bands belong to the baseline response. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

E. Robustness: Interaction Effects

Figure E.1: Interaction Effects in the Median-Split Specification, Using Equation 3.2



Note: The figure reports the interaction between the five-year-ahead projected primary balance and the above-median indicator for each debt-composition measure. High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. First, second, and third rows are for High FC Share, High DC Held Abroad, and High FC Held Domestically countries, respectively. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

F. Robustness: Commodity-Exposure Controls

This robustness check addresses the possibility that the baseline responses are confounded by global commodity-price shocks. A direct inclusion of the IMF commodity-price indices is not informative in our setting because the baseline specification includes time fixed effects, which absorb shocks that vary only over time. We therefore allow common commodity-price movements to affect countries differently depending on their commodity dependence.

Commodity dependence is constructed from World Bank WDI merchandise export shares. For each country, we sum food exports, agricultural raw material exports, fuel exports, and ores and metals exports, each measured as a share of merchandise exports. Let this annual share be:

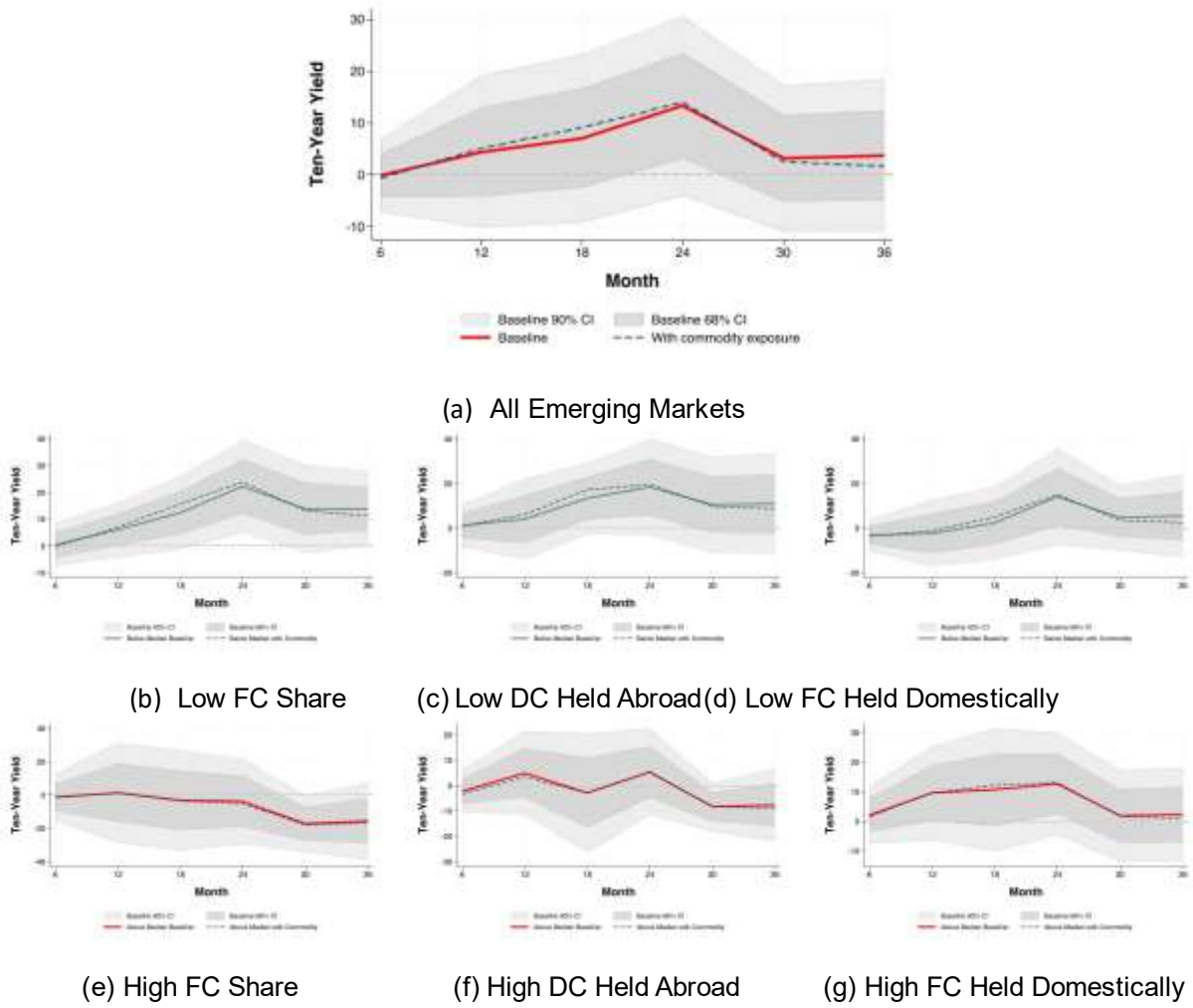
$$CD_{it} = Food_{it} + AgriRaw_{it} + Fuel_{it} + OresMetals_{it}.$$

The country-level exposure measure is the 2005–2009 average of CD_{it}. If the pre-sample average is unavailable, we use the 2010–2020 country average instead. We also construct a fuel-export dependence measure from fuel exports as a share of merchandise exports using the same averaging rule. Commodity-price shocks are measured as year-on-year log changes in the IMF all-commodity price index and oil price index. The robustness specification augments the baseline local projection with exposure-weighted commodity shocks:

$$\begin{aligned} y_{i,t+h} - y_{i,t-1} = {} & \beta_1^h PB_{it}^{(5)} + \beta_2^h PB_{it}^{(5)} \times \text{Debt Composition}_i \\ & + \sum_{j=1}^{2} \phi_j^h y_{i,t-j} + \sum_{j=1}^{2} \gamma_j^h PB_{i,t-j}^{(5)} + \sum_{j=0}^{2} \theta_j^{h\prime} X_{i,t-j} \\ & + \sum_{j=0}^{2} \eta_j^h \left(\Delta Commodity_{t-j} \times CD_i\right) + \sum_{j=0}^{2} \kappa_j^h \left(\Delta Oil_{t-j} \times FuelDep_i\right) \\ & + \Phi_i + \Phi_t + e_{it}. \end{aligned}$$

The plotted dashed line reports the implied response from this augmented specification, while the solid line and confidence bands report the baseline median-split response estimated on the same sample.

Figure F.1: Impulse Response of Ten-Year Nominal Yield



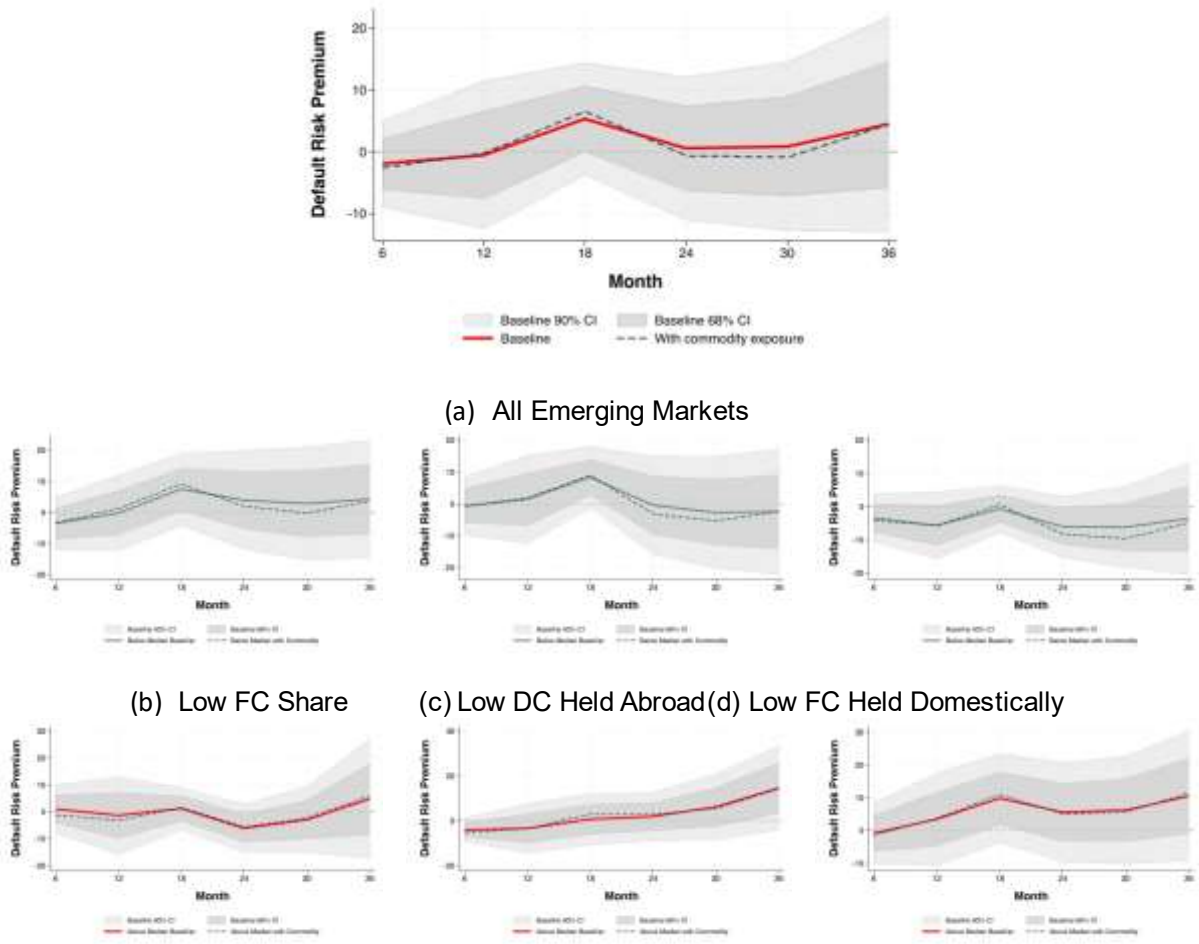
(a) All Emerging Markets

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure compares the baseline response with the response after adding exposure-weighted commodity-price controls. Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above median proportion of foreign currency bonds held domestically, respectively. The solid line is the baseline response, and the dashed line reports the specification with commodity-exposure controls. The confidence bands belong to the baseline response. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals for the baseline estimates.

Figure F.2: Impulse Response of Ten-Year Default Risk Premium



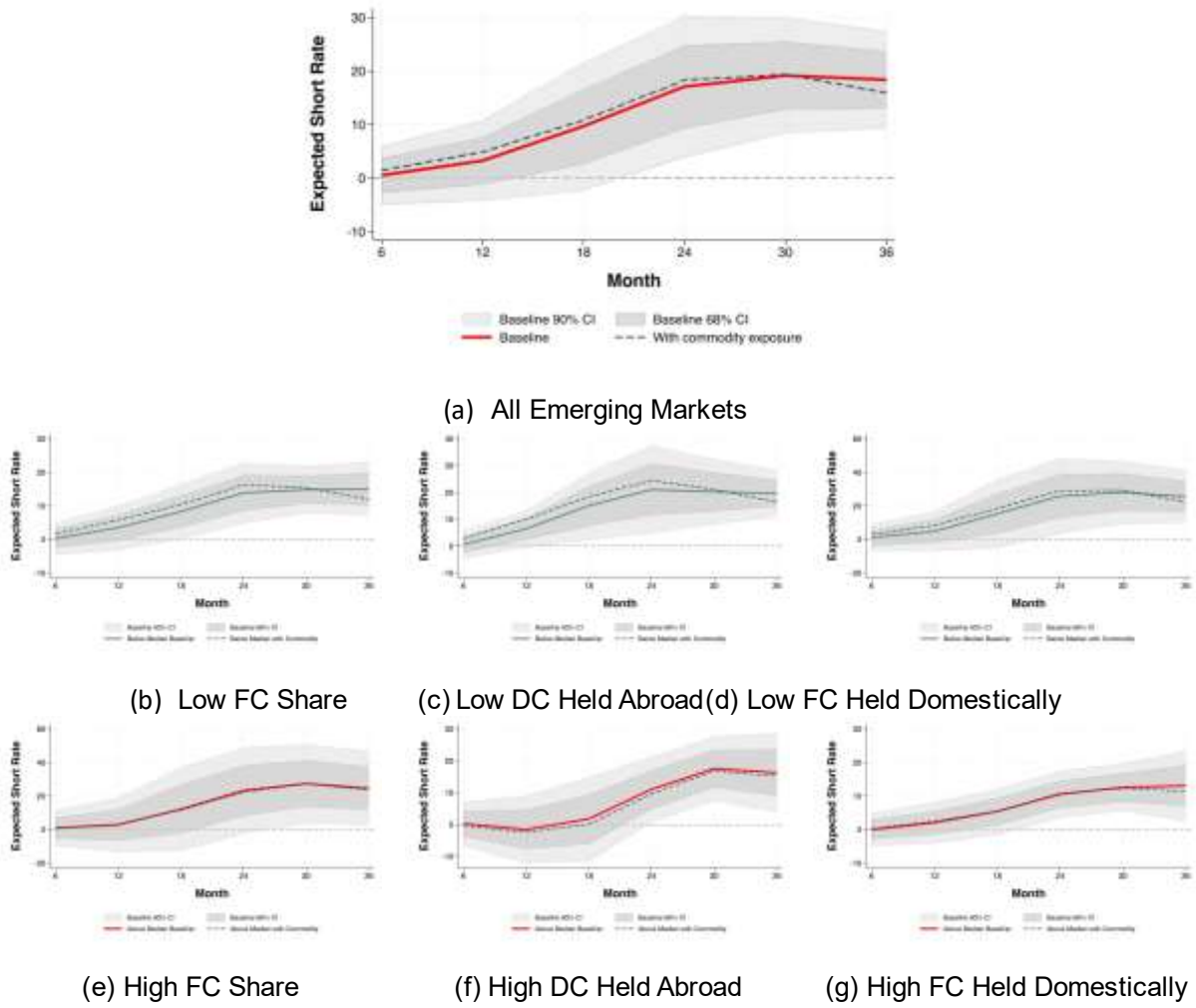
(a) All Emerging Markets

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure compares the baseline response with the response after adding exposure-weighted commodity-price controls. Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. The solid line is the baseline response, and the dashed line reports the specification with commodity-exposure controls. The confidence bands belong to the baseline response. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals for the baseline estimates.

Figure F.3: Impulse Response of Expected Short Rate.



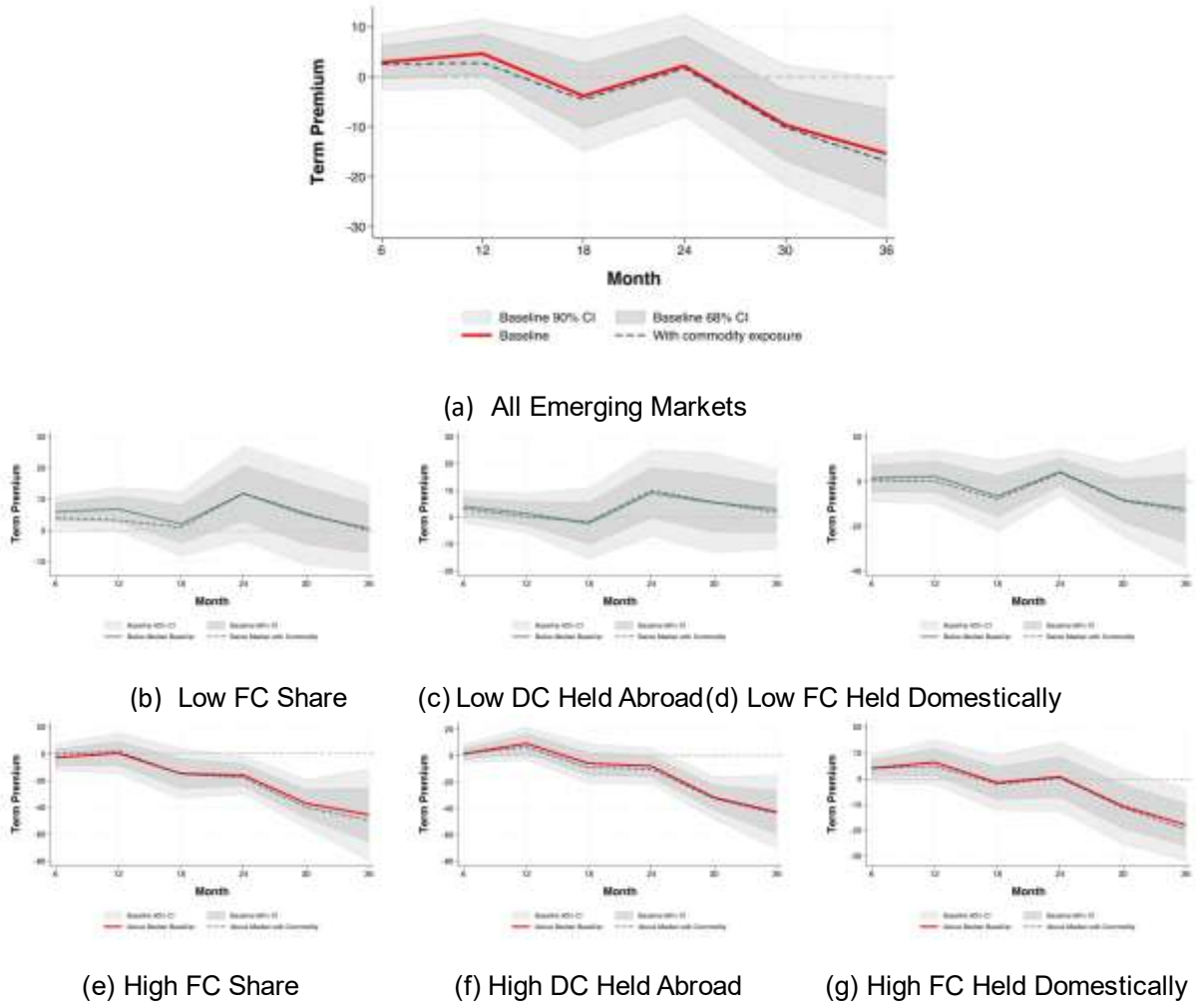
(a) All Emerging Markets

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure compares the baseline response with the response after adding exposure-weighted commodity-price controls. Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. The solid line is the baseline response, and the dashed line reports the specification with commodity-exposure controls. The confidence bands belong to the baseline response. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals for the baseline estimates.

Figure F.4: Impulse Response of Ten-Year Term Premium



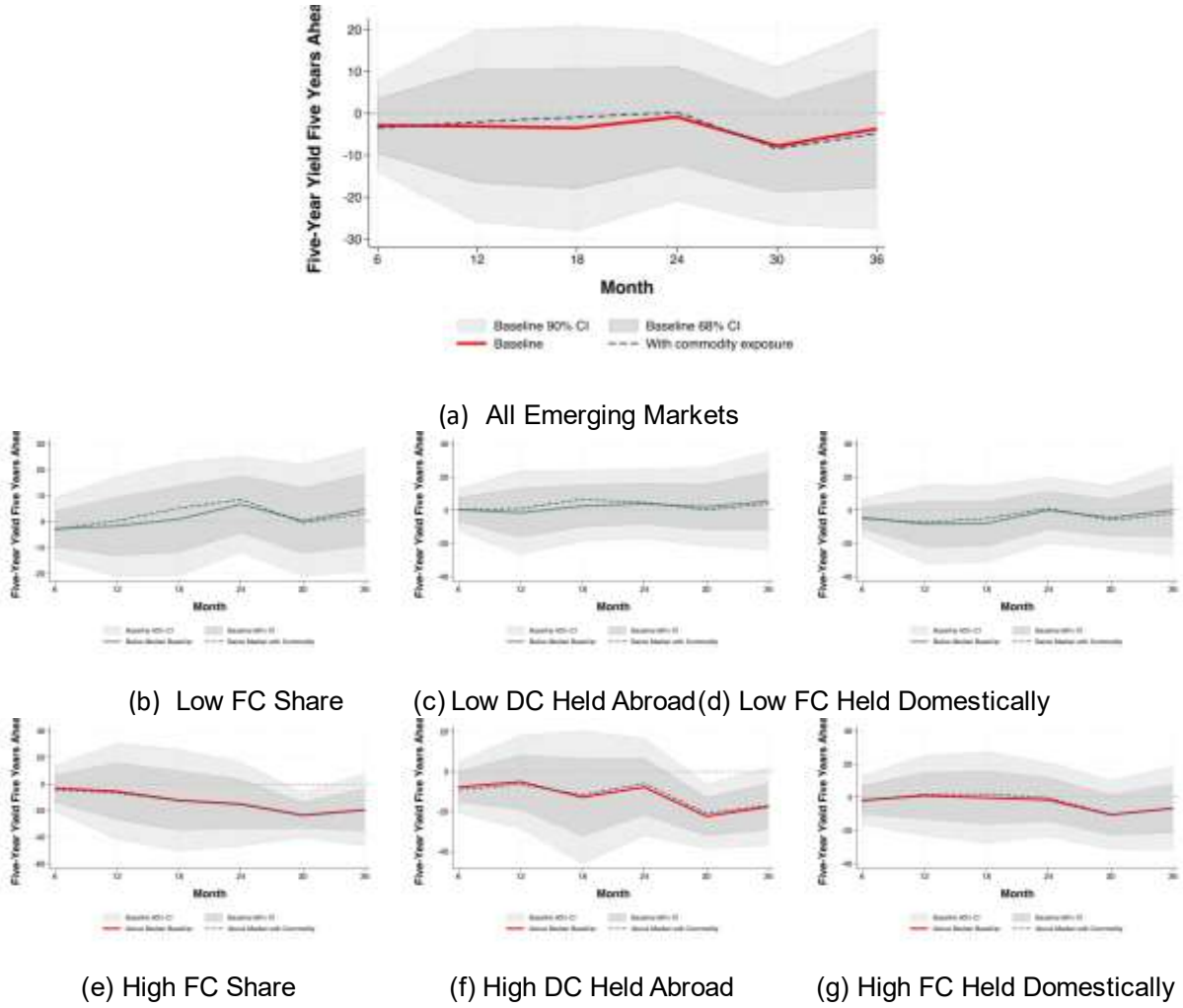
(a) All Emerging Markets

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure compares the baseline response with the response after adding exposure-weighted commodity-price controls. Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. The solid line is the baseline response, and the dashed line reports the specification with commodity-exposure controls. The confidence bands belong to the baseline response. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals for the baseline estimates.

Figure F.5: Impulse Response of Five-Year Yield Five-Years-Ahead



(a) All Emerging Markets

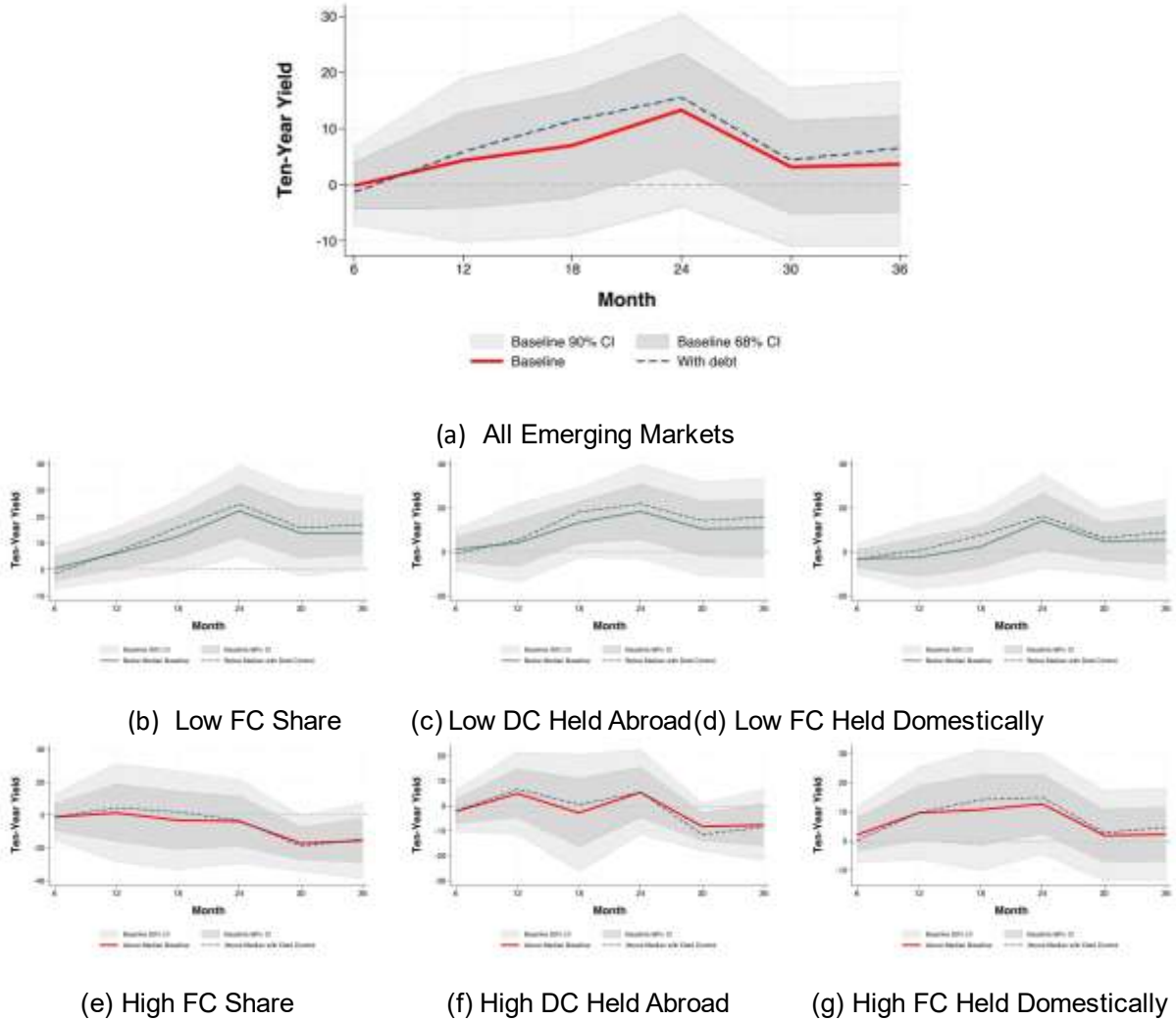
(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure compares the baseline response with the response after adding exposure-weighted commodity-price controls. Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. The solid line is the baseline response, and the dashed line reports the specification with commodity-exposure controls. The confidence bands belong to the baseline response. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals for the baseline estimates.

G. Robustness: Local Projection with Debt-to-GDP Ratio as Additional Control

Figure G.1: Impulse Response of Ten-Year Nominal Yield



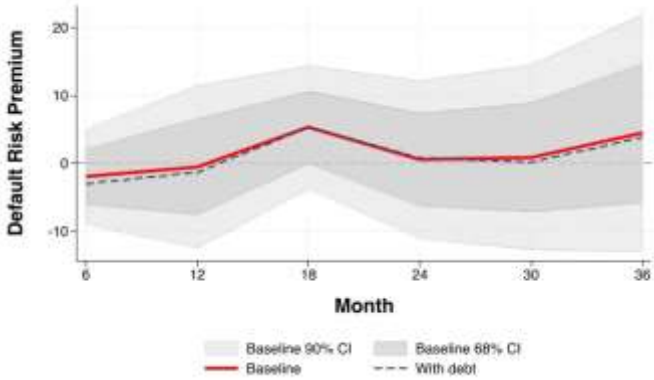
(a) All Emerging Markets

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

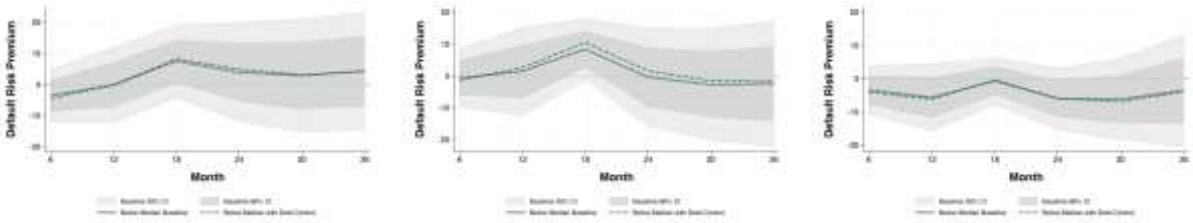
(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure compares the baseline response with the response after adding gross debt to GDP as an additional control. Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. The solid line is the baseline response, and the dashed line reports the specification with additional controls. Controls include the debt-to-GDP ratio. The confidence bands belong to the baseline response. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals for the baseline estimates.

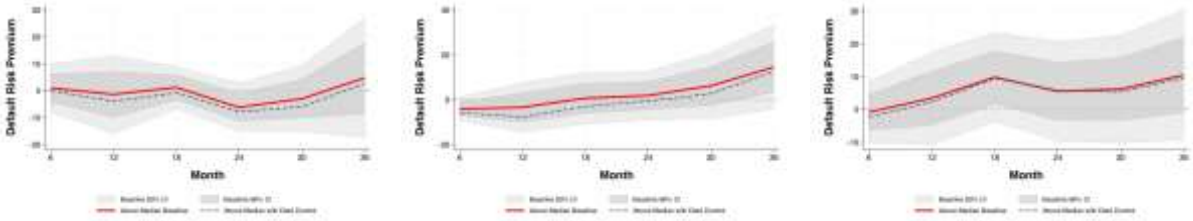
Figure G.2: Impulse Response of Ten-Year Default Risk Premium



(a) All Emerging Markets



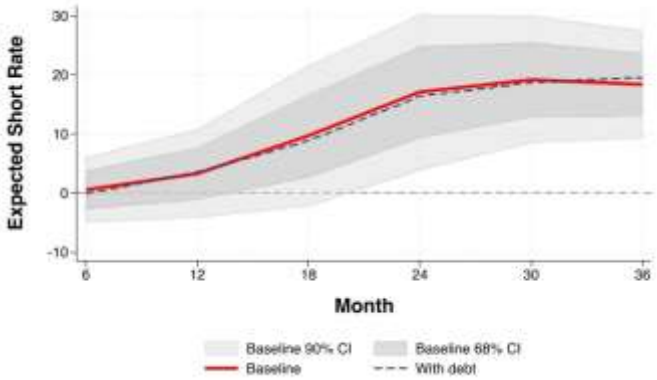
(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically



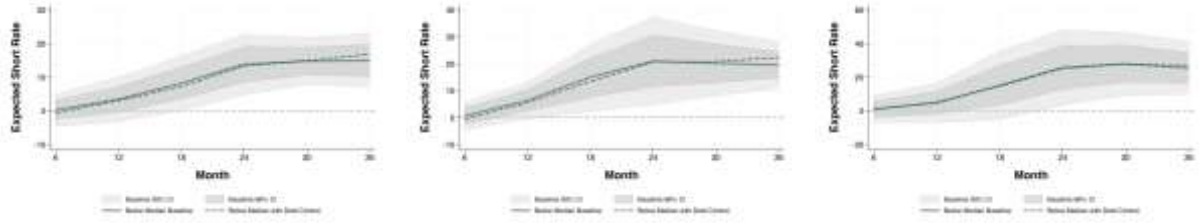
(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure compares the baseline response with the response after adding gross debt to GDP as an additional control. Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. The solid line is the baseline response, and the dashed line reports the specification with additional controls. Controls include the debt-to-GDP ratio. The confidence bands belong to the baseline response. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals for the baseline estimates.

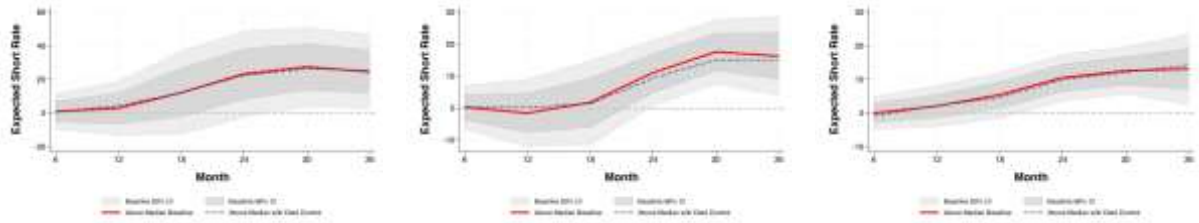
Figure G.3: Impulse Response of Expected Short Rate



(a) All Emerging Markets



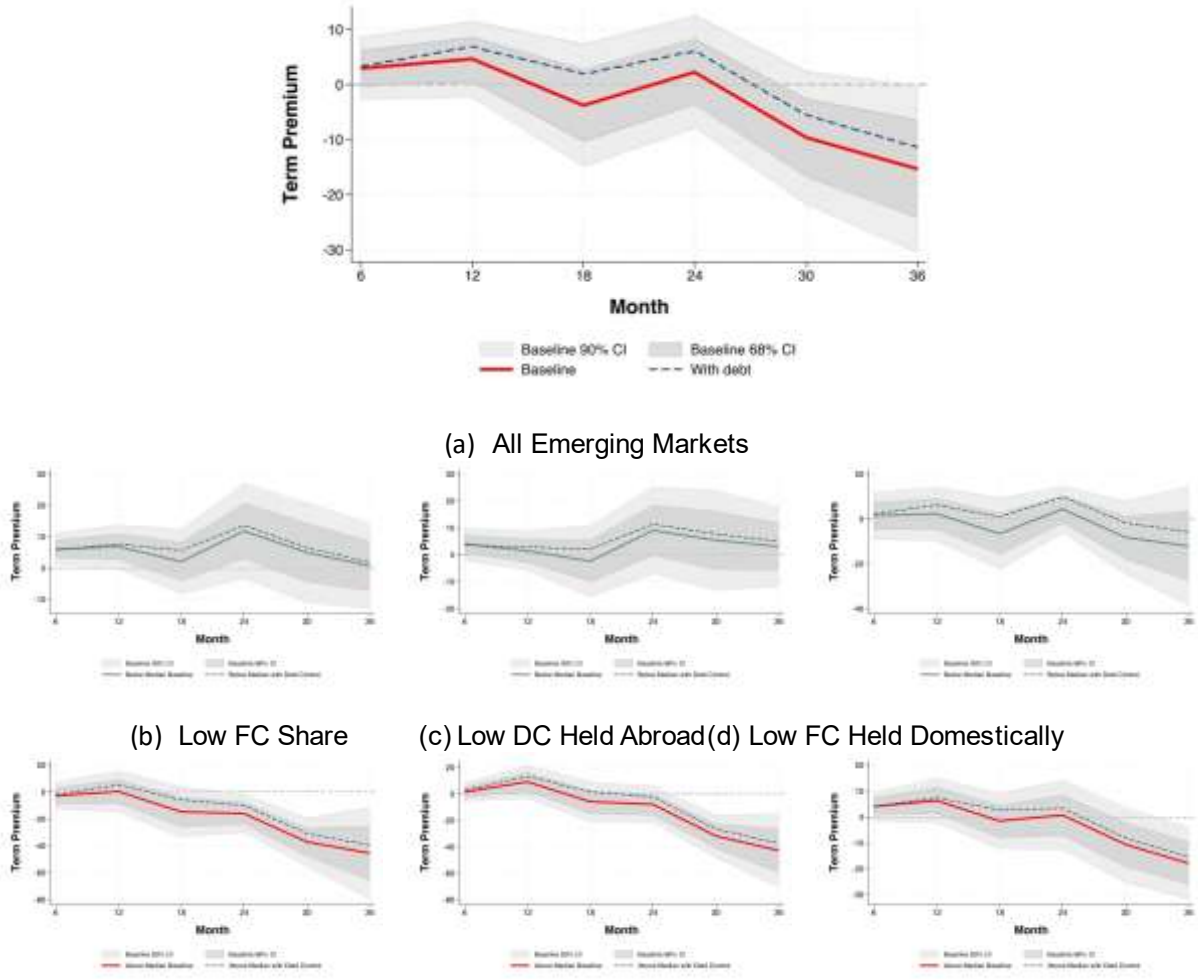
(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically



(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure compares the baseline response with the response after adding gross debt to GDP as an additional control. Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. The solid line is the baseline response, and the dashed line reports the specification with additional controls. Controls include the debt-to-GDP ratio. The confidence bands belong to the baseline response. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals for the baseline estimates.

Figure G.4: Impulse Response of Ten-Year Term Premium



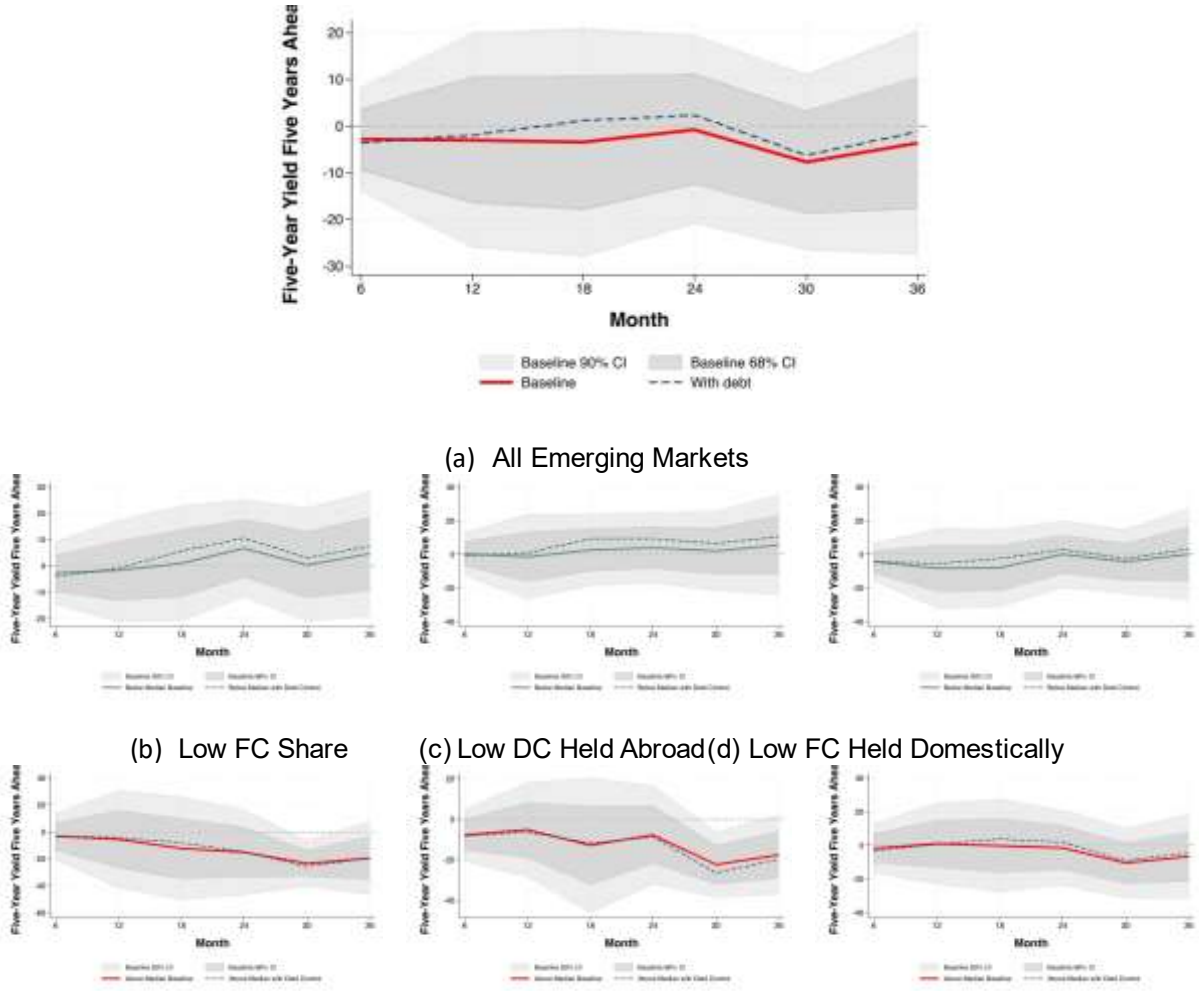
(a) All Emerging Markets

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure compares the baseline response with the response after adding gross debt to GDP as an additional control. Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. The solid line is the baseline response, and the dashed line reports the specification with additional controls. Controls include the debt-to-GDP ratio. The confidence bands belong to the baseline response. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals for the baseline estimates.

Figure G.5: Impulse Response of Five-Year Yield Five-Years-Ahead



(a) All Emerging Markets

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

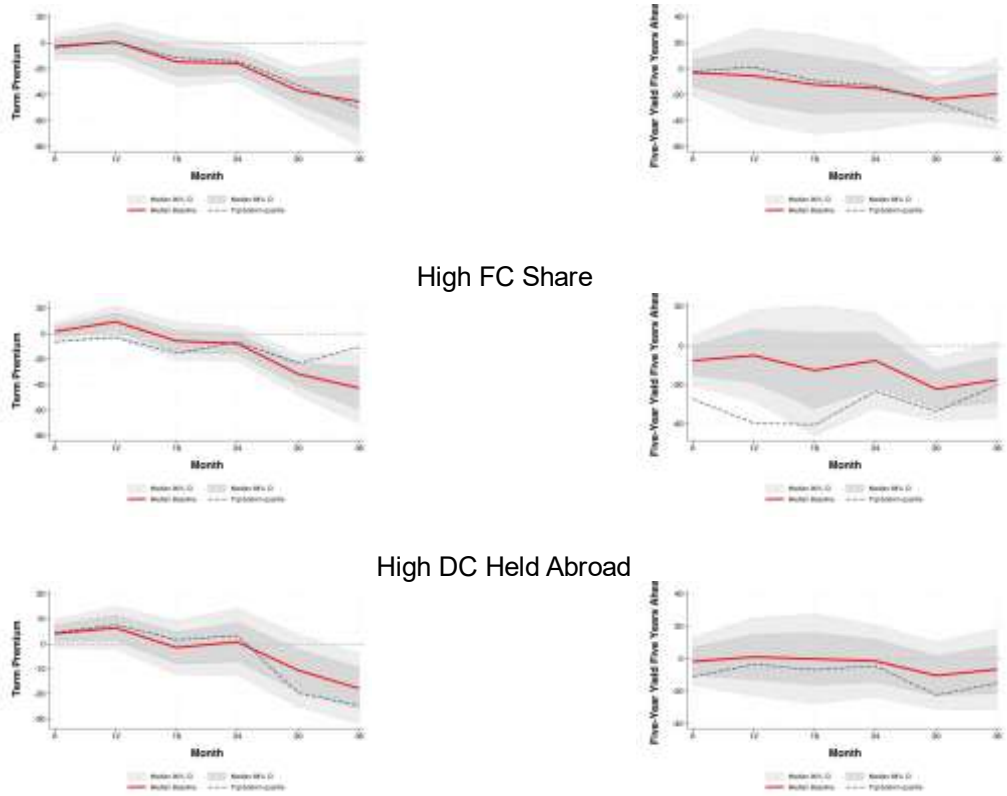
Note: The figure compares the baseline response with the response after adding gross debt to GDP as an additional control. Panel (a) shows the average response across all emerging market countries. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. The solid line is the baseline response, and the dashed line reports the specification with additional controls. Controls include the debt-to-GDP ratio. The confidence bands belong to the baseline response. Panel (a) only includes the confidence band from baseline estimates. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals for the baseline estimates.

H. Robustness: Median Cutoff and Continuous Measures

These exercises address the possibility that the median-split classification is sensitive to countries close to the vulnerability cutoff. The quartile classification leaves out the middle of the distribution, where classification is most fragile, while the continuous specification avoids a discrete cutoff.

H.1 Median versus Quartile Based Vulnerability Classification Term Premium Five-Year Rate Five-Years-Ahead

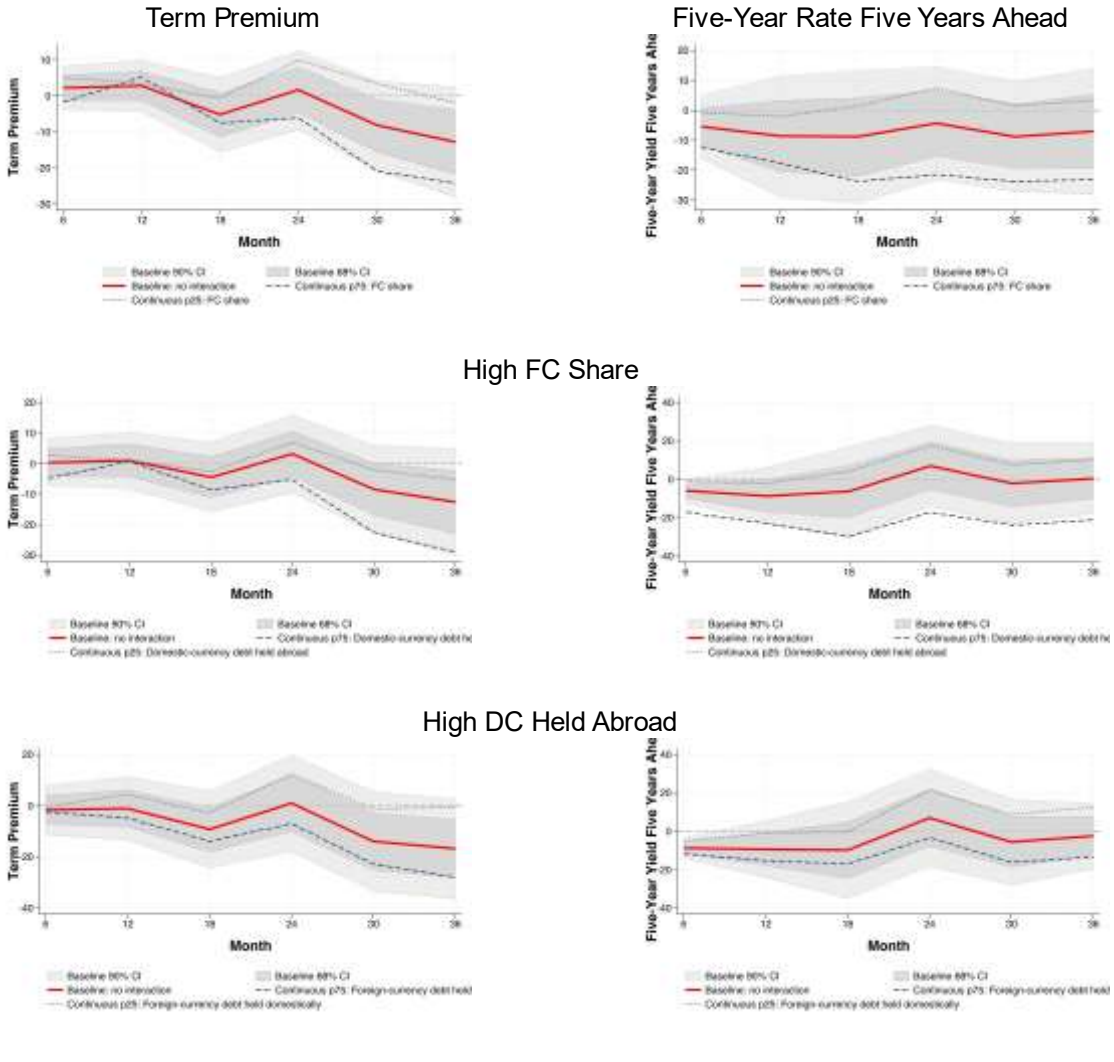
Figure H.1: Median versus Quartile Based Vulnerability Classification



Note: The figure reports impulse responses to a one-percentage-point improvement in the projected primary balance for countries classified as vulnerable under each debt-composition measure. High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. First, second, and third rows are for High FC Share, High DC Held Abroad, and High FC Held Domestically countries, respectively. The figure compares the median baseline vulnerability classification with the top-versus-bottom-quartile classification. The solid line is the median-baseline response, the dashed line is the quartile response, and the confidence bands belong to the median-baseline response. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

H.2 Continuous Debt-Composition Measures

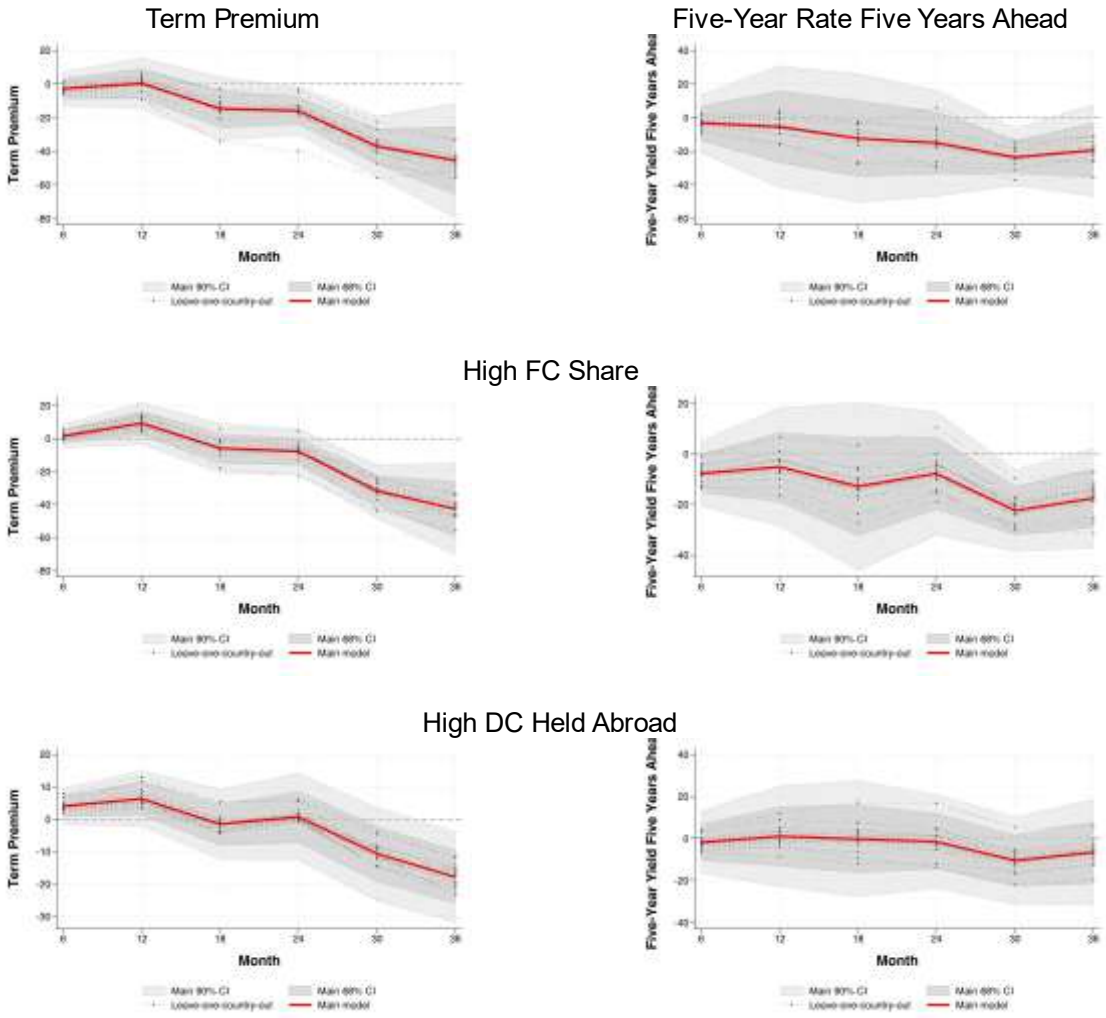
Figure H.2: Continuous Debt-Composition Measures



Note: The figure reports impulse responses to a one-percentage-point improvement in the projected primary balance for countries classified as vulnerable under each debt-composition measure. High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. First, second, and third rows are for High FC Share, High DC Held Abroad, and High FC Held Domestically countries, respectively. In the continuous specification, the debt-composition measure enters continuously and is interacted with the projected primary balance. The response at the 75th percentile is obtained by evaluating the marginal effect of the projected primary balance at p_{75}, $\beta_1^h + \beta_2^h p_{75}$; the response at the 25th percentile is obtained analogously as $\beta_1^h + \beta_2^h p_{25}$. The 25th and 75th percentiles are computed from the estimation sample for each debt-composition measure. The confidence bands belong to the baseline response. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

H.3 Leave-One-Country-Out Robustness

Figure H.3: Leave-One-Country-Out Responses

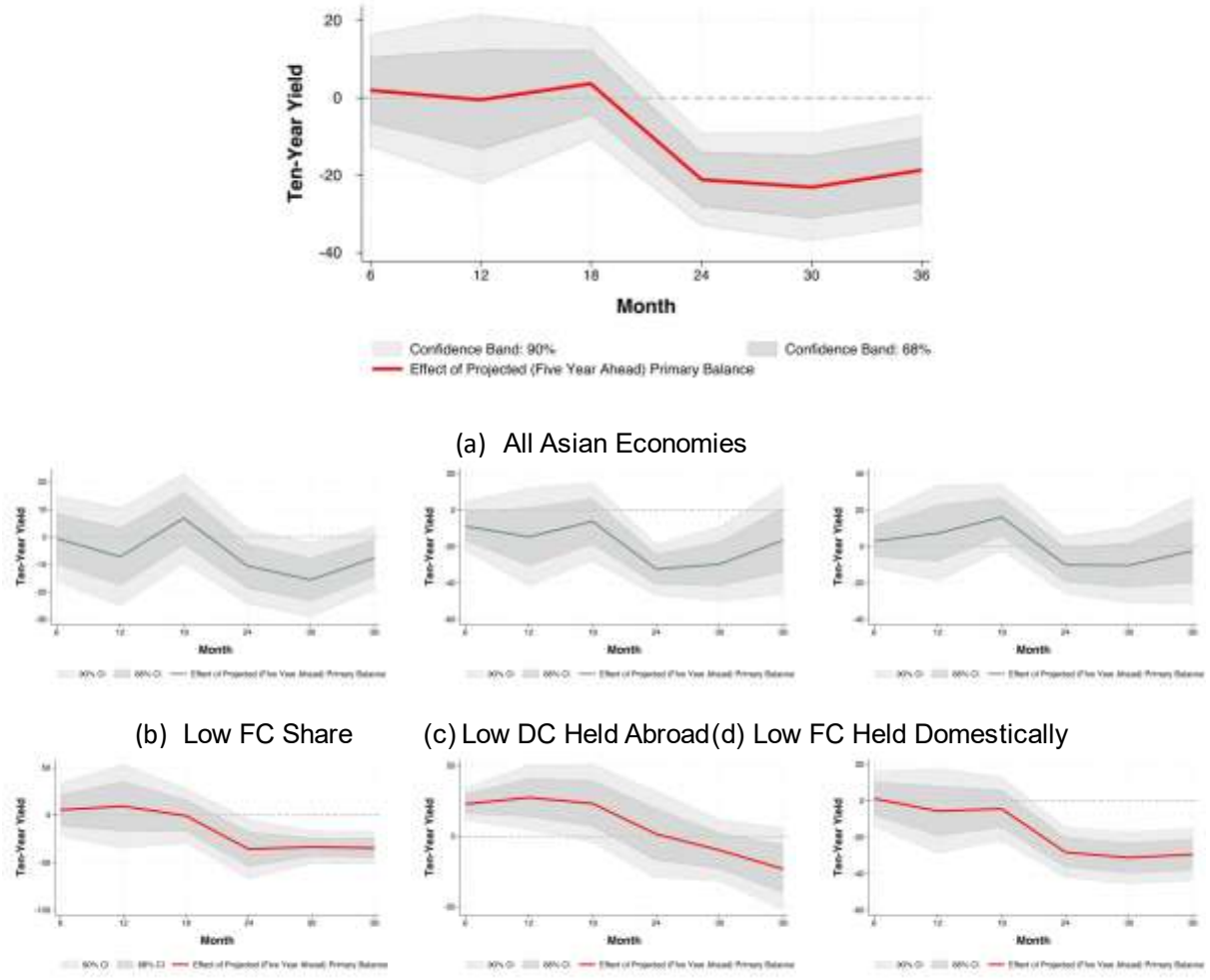


Note: The figure reports impulse responses to a one-percentage-point improvement in the projected primary balance for countries classified as vulnerable under each debt-composition measure. High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. First, second, and third rows are for High FC Share, High DC Held Abroad, and High FC Held Domestically countries, respectively. The solid line is the baseline response, and the dotted lines are estimates obtained after excluding one country at a time. The confidence bands belong to the baseline response. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

I. Robustness: Local Projection with Debt-to-GDP Ratio as an Additional Control for Emerging Asia

This robustness exercise estimates the debt-control local projection in Appendix G after restricting the sample to emerging Asia.

Figure I.1: Impulse Response of Ten-Year Nominal Yield



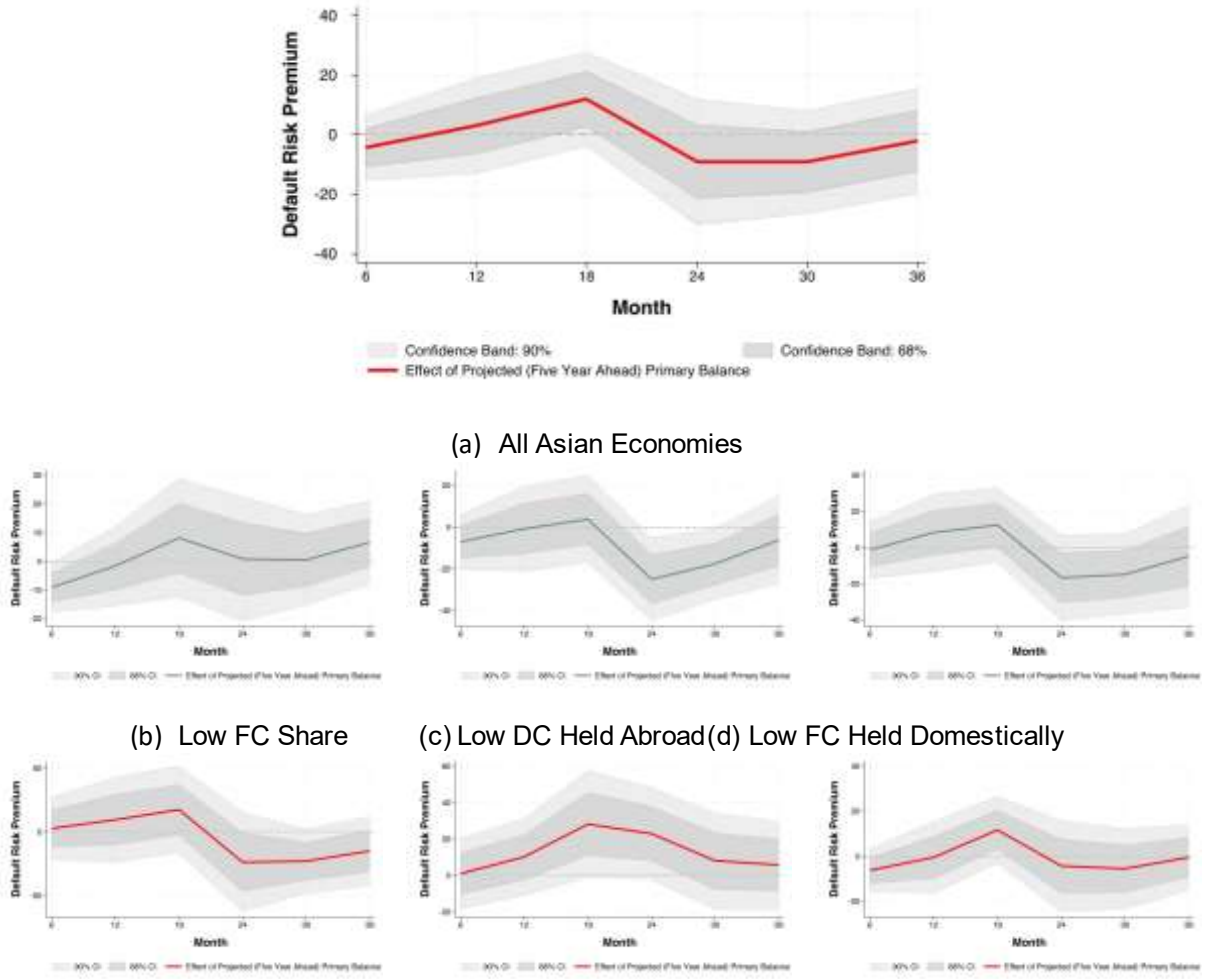
(a) All Asian Economies

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure reports impulse responses to a one-percentage-point improvement in the projected primary balance, controlling for debt-to-GDP. These estimates are obtained from Asian economies in the sample. Panel (a) shows the average response across all Asian economies. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

Figure I.2: Impulse Response of Ten-Year Default Risk Premium



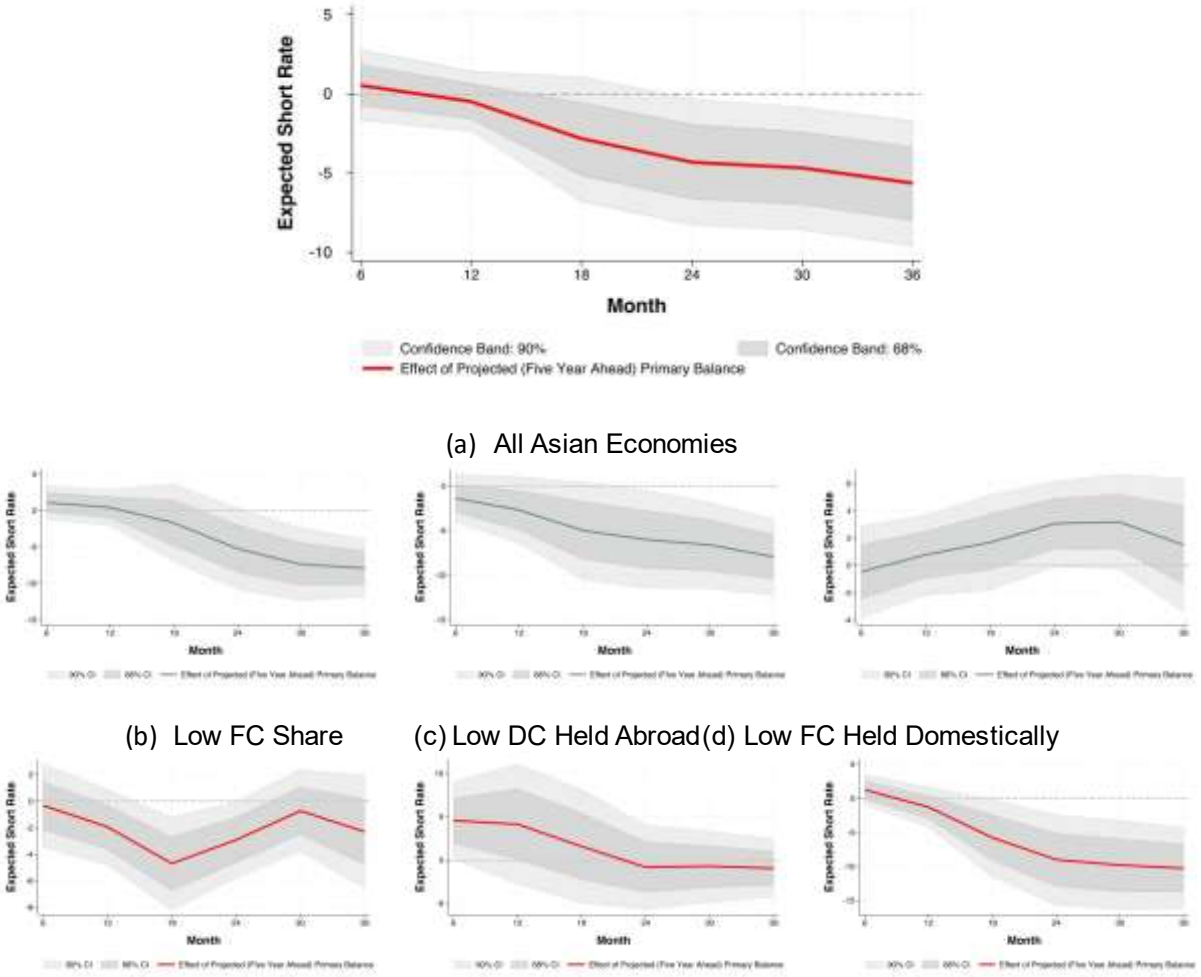
(a) All Asian Economies

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure reports impulse responses to a one-percentage-point improvement in the projected primary balance, controlling for debt-to-GDP. These estimates are obtained from Asian economies in the sample. Panel (a) shows the average response across all Asian economies. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

Figure I.3: Impulse Response of Expected Short Rate



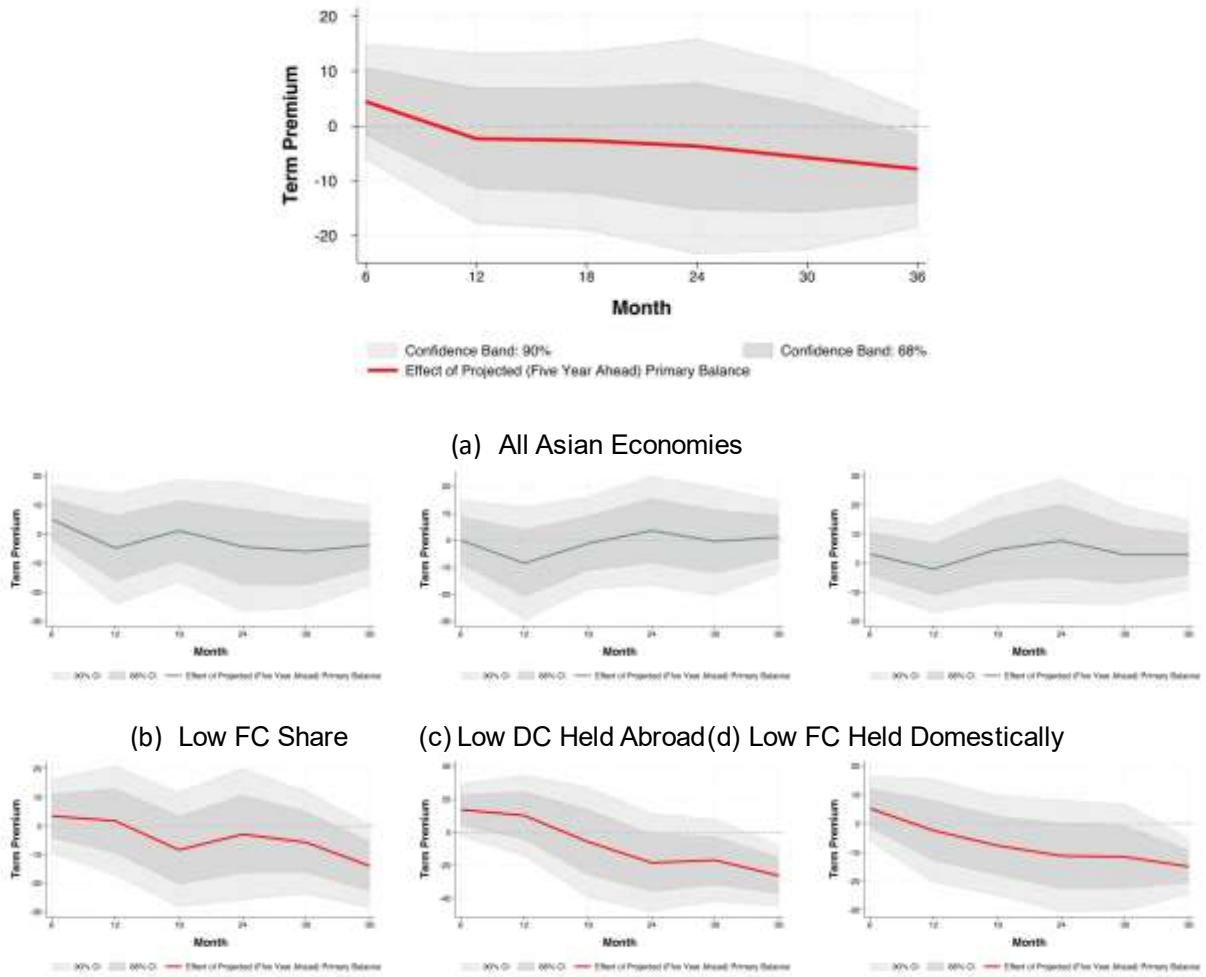
(a) All Asian Economies

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure reports impulse responses to a one-percentage-point improvement in the projected primary balance, controlling for debt-to-GDP. These estimates are obtained from Asian economies in the sample. Panel (a) shows the average response across all Asian economies. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

Figure I.4: Impulse Response of Ten-Year Term Premium



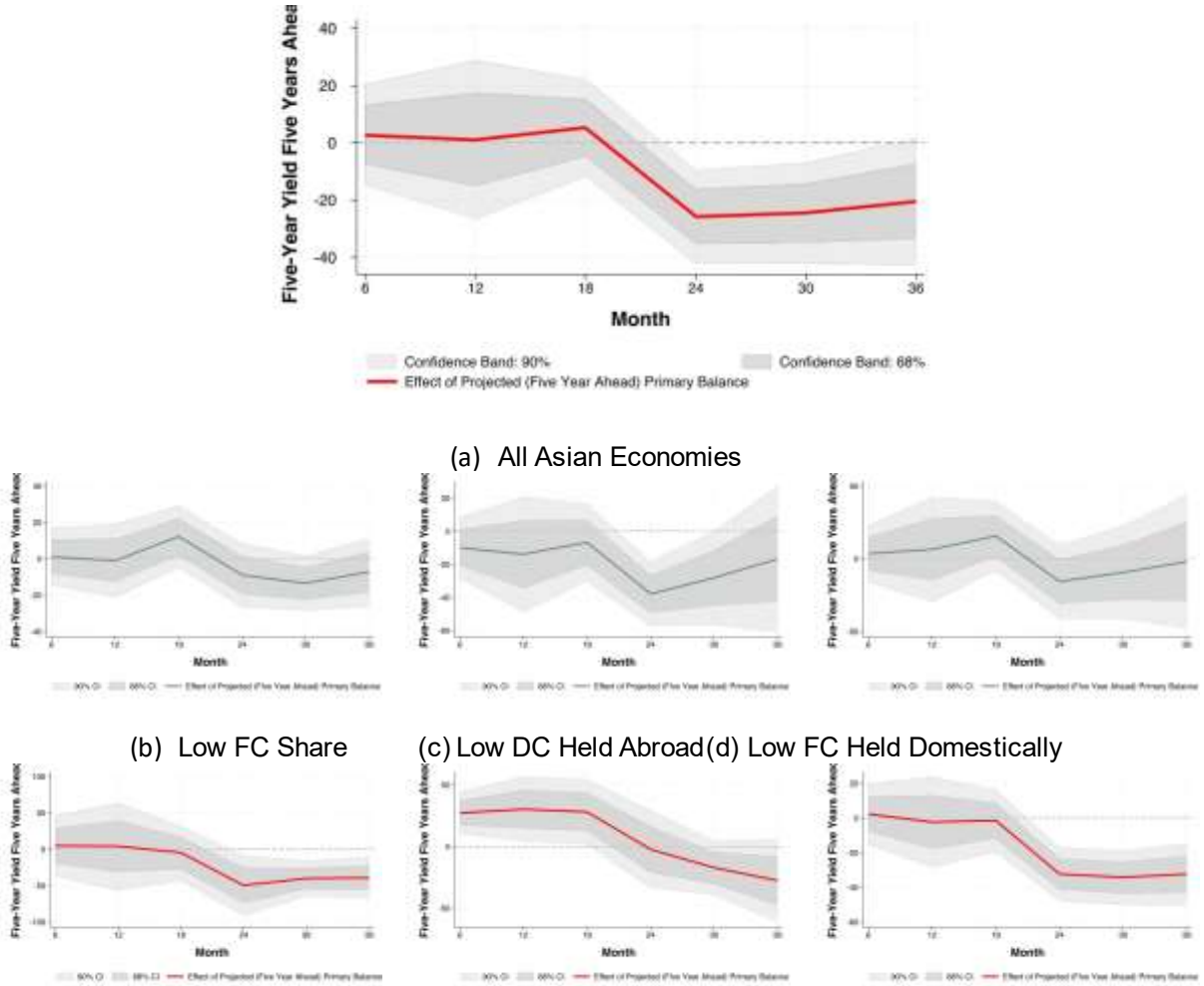
(a) All Asian Economies

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure reports impulse responses to a one-percentage-point improvement in the projected primary balance, controlling for debt-to-GDP. These estimates are obtained from Asian economies in the sample. Panel (a) shows the average response across all Asian economies. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

Figure I.5: Impulse Response of Five-Year Yield Five-Years-Ahead



(a) All Asian Economies

(b) Low FC Share (c) Low DC Held Abroad (d) Low FC Held Domestically

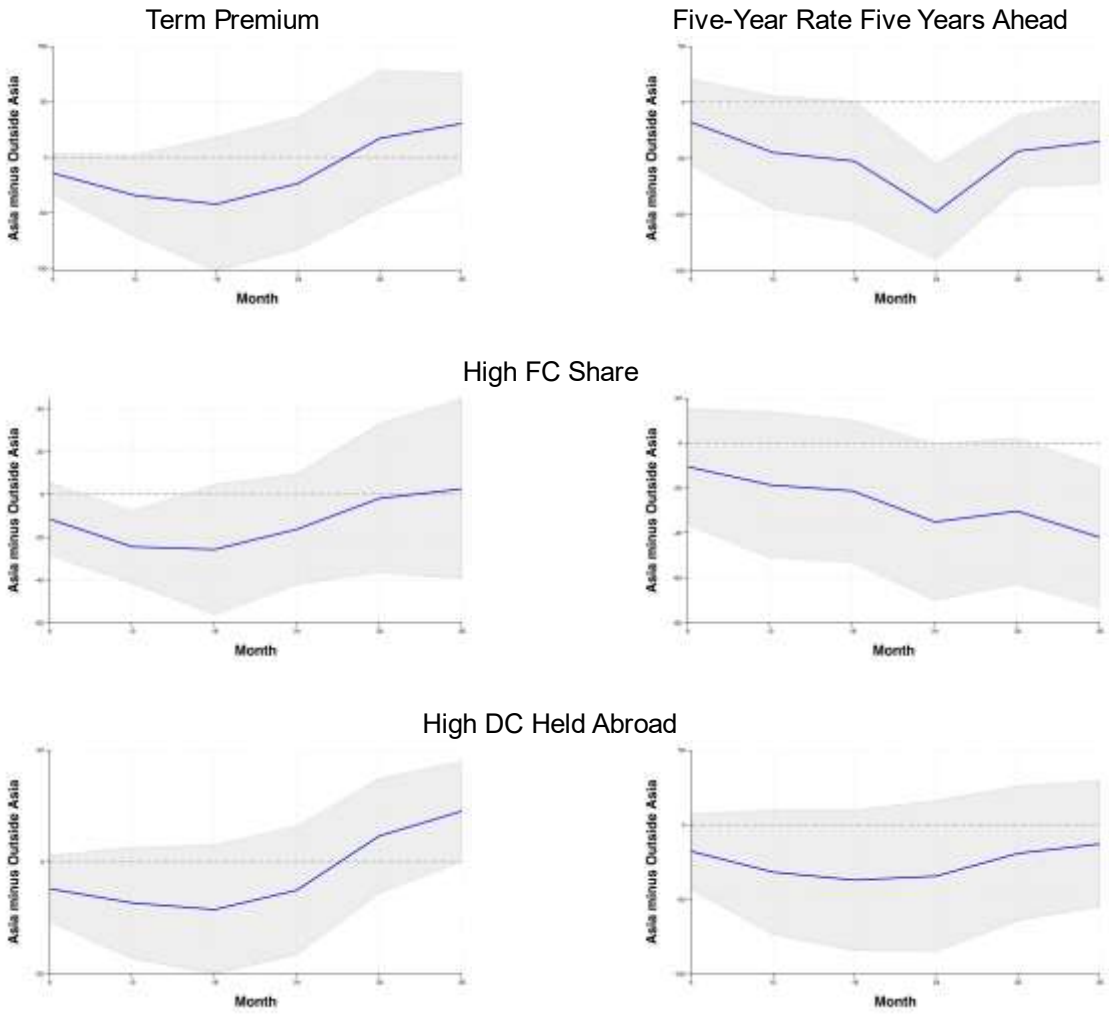
(e) High FC Share (f) High DC Held Abroad (g) High FC Held Domestically

Note: The figure reports impulse responses to a one-percentage-point improvement in the projected primary balance, controlling for debt-to-GDP. These estimates are obtained from Asian economies in the sample. Panel (a) shows the average response across all Asian economies. Panels (b)–(g) split the sample by debt structure: High FC Share, High DC Held Abroad, and High FC Held Domestically denote countries with above-median foreign currency share in domestic bonds, above-median proportion of domestic currency bonds held by foreigners, and above-median proportion of foreign currency bonds held domestically, respectively. Responses are basis-point changes. Shaded bands denote 68% and 90% confidence intervals.

J. Robustness: Comparing Emerging Asia with Rest of the Emerging Economies

This appendix reports the Asia interaction coefficient for vulnerable economies in the full emerging-market sample.

Figure J.1: Asia Interaction in Vulnerable Economies



Note: The left column reports the response of the term premium and the right column reports the response of the five-year rate five years ahead. The first, second, and third rows are for High FC Share, High DC Held Abroad, and High FC Held Domestically countries, respectively, where the vulnerable groups are defined using the baseline full-sample median classification. Asia minus Outside Asia is the estimated difference between the response of vulnerable Asian economies and the response of vulnerable non-Asian emerging economies. Responses are basis-point changes. The shaded band denotes the 90% confidence interval for the Asia interaction coefficient.