A Model of Portfolio Flows to Türkiye

Determining the Impact of Push and Pull Factors

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BBVA Research

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Introduction

Portfolio flows to emerging markets, including Türkiye, are a crucial component of financial integration and can significantly impact a country's economic stability and growth. Understanding the determinants of these flows is essential for policy makers, investors, and academics alike. Türkiye, with its dynamic economy, strategic location, and evolving financial markets, have the potential to attract a substantial share of portfolio investments. However, the portfolio inflows to Türkiye are affected by various macroeconomic conditions, encompassing both domestic factors such as activity, real interest rates, risk premium, and global factors such as economic uncertainty, political landscape and the risk appetite for the investments to the emerging markets. This paper seeks to investigate the key determinants of portfolio flows to Türkiye and decomposes the impact of these macroeconomic conditions across pull and push factors. By examining these factors, this study aims to provide valuable insights into the drivers of portfolio investors and the broader implications for Türkiye's financial markets.

Our paper follows these sections: First, we provide a brief overview of the literature on the determinants of portfolio inflows to the emerging markets and Türkiye. In the second section, we introduce our data and methodology. The third section discusses the main findings of our VAR estimation, while the final section defines the assumptions of our scenarios on which we produce and compare forecasts.

Determinants of Portfolio Flows in the Emerging Markets

Several studies have rigorously explored the economic determinants influencing portfolio inflows to emerging markets, with varying frameworks and explanatory variables. One of the foundational models comes from Devereux and Sutherland (2009), who developed a theoretical portfolio model that focuses on risk-sharing between emerging and developed economies. Their model incorporates country-specific productivity shocks, risk aversion, and financial integration levels to understand capital flow dynamics. They concluded that international diversification motives and relative risk premiums drive flows, with increased openness heightening both inflows and volatility. A more empirical angle is offered by Lo Duca (2012), who study time-varying determinants of portfolio inflows. His findings reveal that in times of elevated market tensions, investors tend to pay more attention to regional developments within emerging markets. However, during extreme tensions, such as financial crises, changes in global uncertainty and risk aversion become the predominant factors influencing flows, overshadowing regional considerations. Koepke (2019) synthesizes a broad set of empirical studies and confirms the importance of U.S. monetary policy, global risk appetite (often proxied by the VIX), and local economic indicators such as fiscal balance and inflation. Meanwhile, Ahmed and Zlate (2014) emphasize the post-crisis surge in inflows and argue that unconventional monetary policies in advanced economies pushed investors toward higher-yielding emerging markets. Finally, Ullah et al. (2021) used econometric techniques to identify the impact of inflation, interest rate differentials, GDP growth, and exchange rate stability. Their results underscore that macroeconomic stability is critical for sustaining foreign portfolio investment, with volatile inflation or currency depreciation deterring investors. Together, these works show that while global push factors dominate in the short run, domestic pull factors are crucial for longer-term inflow sustainability.

Empirical studies since the early 2000s have employed a range of econometric approaches to assess the macroeconomic drivers of Türkiye's portfolio capital inflows, covering both equity and bond components. A prominent methodological approach involves vector autoregression (VAR) models, especially structural VARs, that capture dynamic interactions and help disentangle global "push" versus domestic "pull" influences. Çulha (2006) employs a structural VAR and finds that while global factors were dominant in the 1990s, domestic macroeconomic improvements after the 2001 crisis increased the role of country-specific pull factors. Similarly, Korap (2010) applies a SVAR framework and concludes that global conditions exert a stronger influence on portfolio flows to Türkiye, with a notable negative relationship between real interest rates and capital inflows. Several studies also use cointegration techniques, such as Johansen and ARDL models, to identify long-run relationships between macroeconomic fundamentals and portfolio flows. For instance, Pala and Orgun (2015) find that interest rates, gross national income, and the current account balance are positively associated with portfolio inflows, though the role of interest rates shifts after Türkiye's 2003 policy transition. Other studies rely on regression-based approaches using monthly or quarterly time-series data. Kaya and Öndeş (2013) identify domestic stock market performance, economic growth, and foreign investor momentum as key drivers of inflows. Commonly tested macroeconomic variables across the literature include GDP growth, inflation, domestic interest rates, exchange rates, and current account balances. Most findings suggest that strong fundamentals, such as robust growth and macroeconomic stability, positively influence inflows,

whereas volatility or deficits act as deterrents. At the same time, external factors like global interest rates and risk sentiment (often proxied by the VIX index) are also significant. For example, Güneş et al. (2024) show that both media-based sentiment indices and global risk aversion significantly affect Turkish portfolio inflows. Likewise, Çepni et al. (2021) demonstrate that global economic uncertainty shocks are associated with episodic outflows from Turkish assets, particularly during post-crisis periods. Finally, Aktaş & Ekşi (2020) employ a Bayesian VAR methodology and goes further in categorizing pull and push factors as cyclical factors vs. structural factors. In their study, the cyclical push factors correspond to global risk apetite, advanced economy PMI and US shadow rate, while cyclical pull factors were defined as country risk, Turkiye PMI and domestic real interest rate. As for the structural factors, push variables are defined as the share of institutional investors in advanced economies and global economic policy uncertainty, whereas political conditions and financial vulnerability are introduced as structural pull factors. Their findings point that while global factors like investor risk appetite were the dominant drivers of portfolio flows to Türkiye during the global financial crisis, domestic factors, particularly growth prospects, real interest rates, and country risk, gained greater importance in the post-crisis period. Overall, the literature highlights the joint importance of domestic macroeconomic performance and global financial conditions in shaping the dynamics of portfolio investment in Türkiye.

Although there is a vast body of literature on the determinants of portfolio inflows to emerging economies, studies that focus specifically on Türkiye remain relatively limited. Moreover, existing research largely emphasizes identifying these determinants, often overlooking their forecasting performance. Our study contributes to the literature by incorporating scenario analysis and generating forecasts, addressing this gap. In most previous studies, the real interest rates in Türkiye and the U.S. are treated separately, classified as pull and push factors, respectively. In contrast, our study integrates these two variables to more accurately capture the motivations of foreign investors when making portfolio investment decisions in Türkiye. In this context, we extend the methodology of Aktaş and Ekşi (2020) not only by including emerging market flows among global variables but also by enhancing the calculation of real returns from the perspective of the investor.

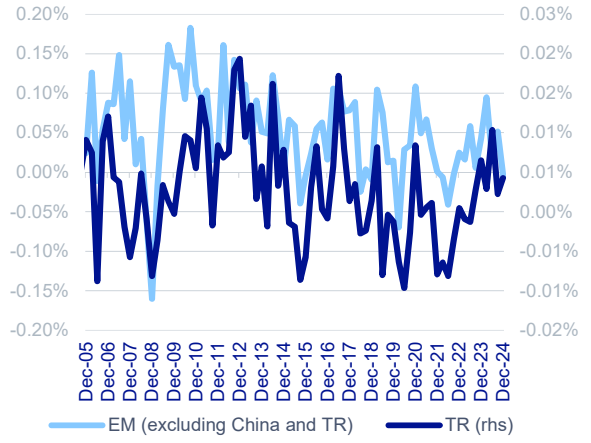
Data & Methodology

We start our studies by defining the dependent variable. Since we are interested in the determinants of portfolio inflows we restrict our attention to the net incurrence of liabilities under the balance of payments statistics. Our dependent variable for the model is the share of the portfolio investment to the annualized nominal global GDP in US dollars (Figure 1). We prefer to divide it with the global GDP instead of Türkiye's GDP because the size of investment to EMs could be affected by the global liquidity conditions including but not limited to global activity. As for the explanatory variables, we study the portfolio inflows to Türkiye in the context of the pull and push factors. Push factors refer to the conditions in the advanced economies and the global financial environment that essentially push investors to move the capital into the emerging markets. In our study, these variables are defined as the VIX index, global economic policy uncertainty index published by Baker, Bloom and Davis (2016) and portfolio inflows to the emerging countries

excluding China and Türkiye published in IIF. Pull factors, on the other hand, refer to the domestic conditions in Türkiye that attract portfolio inflows, reflecting to the extent to which the economic conditions in Türkiye are favorable for investment. In our study, these variables are our own calculation of the Financial Conditions Index (FCI)[1], the arbitrage, the manufacturing PMI and 5 year CDS of Türkiye. The arbitrage variable (see Equation 1) is calculated as the difference between the weighted average funding rate in Türkiye ($i_{TR,t}$) and the difference between the realized and the expected exchange rate of Turkish lira against US dollar ($\epsilon_{TR,t}$ and $\hat{\epsilon}_{TR,t}$ respectively) and the US shadow rate ($i_{US,t}$), which is obtained from Wu & Xia (2016). The interest rates for both Türkiye and US are converted to monthly terms in order to calculate the arbitrage in monthly frequency. Then, we compounded the monthly arbitrage into quarterly terms (Figure 2). We also studied the model with the US rate and Turkish real rates seperately, but observed that both the impulse responses and forecast variance decomposition of pull and push factors remained almost the same (Appendix 1). The explanatory power of US shadow rate was rather limited, hence we continued working with the arbitrage variable which captures the investing motivation from the investor perspective.

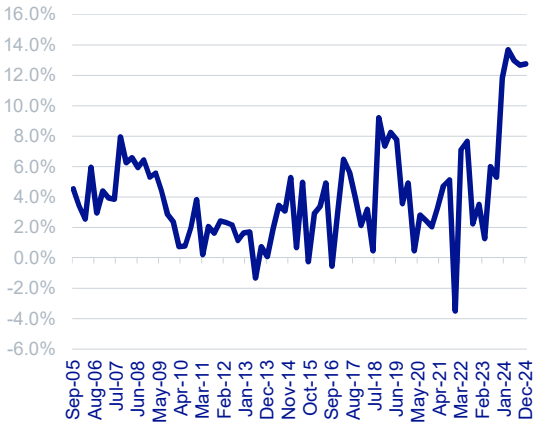
$$\sigma_t = i_{TR,t} - (\epsilon_{TR,t} / \hat{\epsilon}_{TR,t} - 1) - i_{US,t} \qquad \text{(Equation 1)}$$

Figure 1. PORTFOLIO INFLOWS TO TURKIYE AND EMERGING MARKETS
(% OF ANNUALIZED GLOBAL GDP, NET INCURRENCE OF LIABILITIES)



Source: CBRT, IIF, Oxford Economics

Figure 2. ARBITRAGE
(% RETURN)



Source: CBRT, Wu & Xia (2016), BBVA Research calculations

We estimate the relationship between these variables in a Bayesian VAR on a quarterly basis for the time period of 2006Q4 - 2019Q4. Since we include the variables in the quarterly terms, the sample size is relatively small and the number of variables included is large. Given these conditions, we prefer the Bayesian estimation of VAR in order to ensure the unbiasedness of the

[1] Based on the study published by Bahçeşehir University Financial Research and Implementation Center (BFRC), we calculate the financial conditions index. The following variables are included; CDS, ex-ante 2 year yield (real), real exchange rate, real stock price, portfoli inflows, yield curve slope(10y-2y), real loans rate.

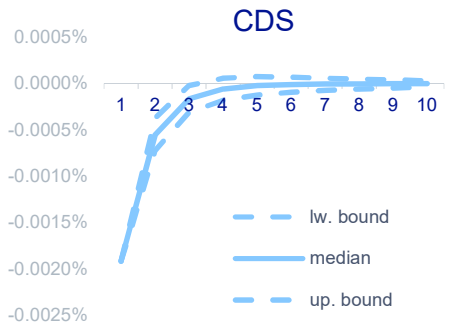
parameters, avoid overfitting and help stabilize the model. All variables are introduced as endogenous variables in order to aggregate the impact of the pull and push factors on the portfolio flows. We introduce 1 lag to the model which we consider that it yields the best forecast performance in comparison to higher order of lags. We selected full Minnesota prior which imposes structured shrinkage toward random walk processes, allowing for flexible covariance structures and computational efficiency. Furthermore, we assumed block exogeneity for global push variables, under the assumption that Türkiye is a small economy where the movements in domestic economy can not affect the global economy. Finally the variables are introduced to the Bayesian VAR structure in the following order:

$$\{VIX,\ Policy\ Uncertainty, EM\ Flows,\ Financial\ Conditions\ Index,\ Arbitrage, PMI, CDS,\ Flows_{TR}\}$$

Main Findings

The impulse responses of each variable to a one-standard-deviation shock is in line with the economic theory (Figure 3): A shock to the VIX initially reduces portfolio flows by around 0.002% of global GDP and the impact gradually diminishes in 4 quarters. Similarly, increasing global economic policy uncertainty reduces portfolio inflows, but the effect dissipates much faster compared to VIX. Conversely, a shock to EM flows results in an immediate increase in the portfolio inflows to Türkiye, which could be a direct result of the fact that the historical movements in portfolio flows of Türkiye was in line with that of EMs.

Figure 3: IMPULSE RESPONSES OF THE MODEL

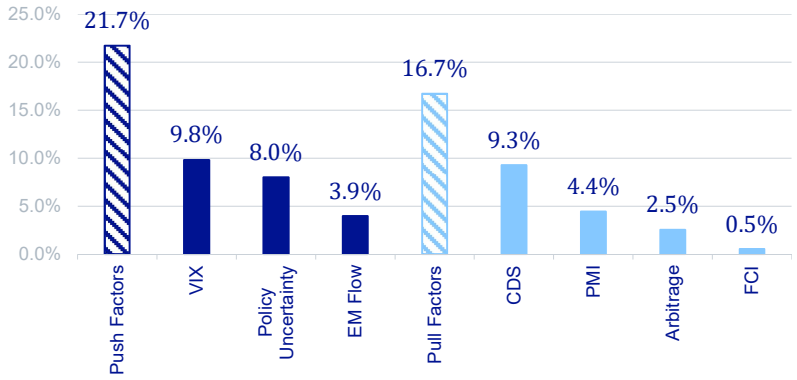


Source: BBVA Research

Regarding the domestic factors, tighter financial conditions reduce portfolio flows with mild persistence, although confidence bands show wide uncertainty. Arbitrage may initially attract flows, but this is very short-lived, suggesting a rapid correction after 3 quarters. Higher manufacturing PMI signalling stronger economic activity boosts flows in the short term (~0.015% of GDP), but the effect fades fast—likely reflecting that investors quickly price in this information. Finally increased sovereign credit risk reduces flows by about 0.002% of GDP. The effect is persistent but diminishing, consistent with the retreat from perceived credit threats. Overall, our impulse responses confirm the results of Aktaş & Ekşi (2020).

Forecast error variance decomposition confirms the importance of market volatility, economic policy uncertainty and risk appetite determining the portfolio flows to Türkiye. Among global variables, the VIX is dominant: It consistently explains around 9.8% of forecast error variance across all horizons, making it the most influential factor aside from the portfolio flows themselves. Among domestic variables CDS has the highest degree (9.3%) of explanatory power, followed by PMI, arbitrage and the financial conditions index. Overall, push factors (21.7%) have somewhat higher explanatory power in total, compared to pull factors (around 16.7%). Still, the variance of portfolio flows seems to be mostly due to its own shocks, around 62%, which is actually an improvement over Aktaş & Ekşi (2020) study since their variance decomposition reveals 16.3% of explanatory power for push factors and 14.5% explanatory power for pull factors.

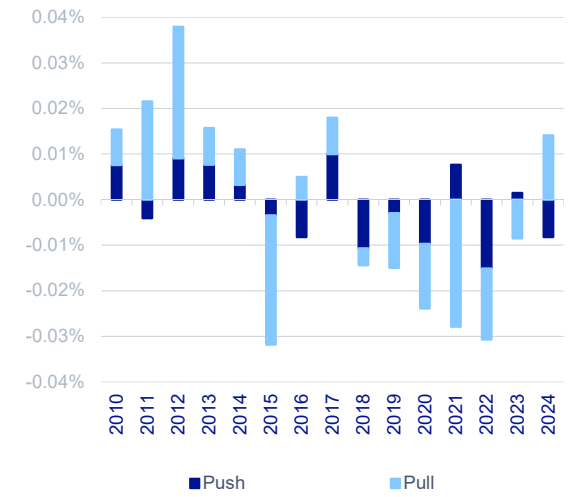
Figure 4: FORECAST ERROR VARIANCE DECOMPOSITION



Source: BBVA Research

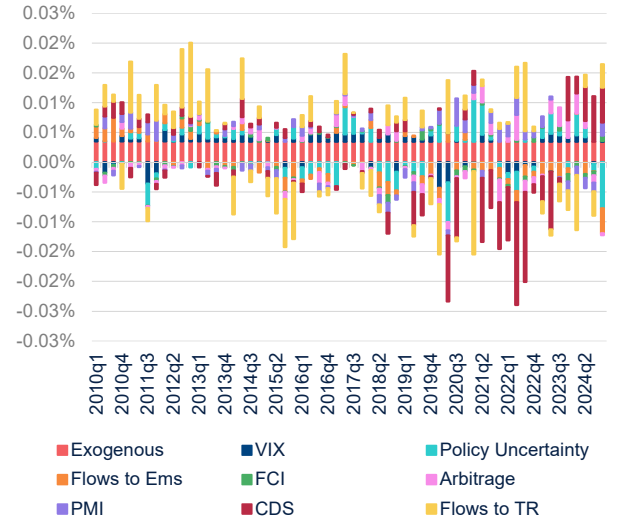
Bayesian VAR model enables us to decompose the historical portfolio flows across the determinants (Figure 5). We observe an apparent divergence of trends in pre-2015 and post-2015 periods. Both push and pull factors seem to have supported portfolio inflows prior to 2015. However, the pull factors resulted in outflows starting from 2018 with the exception of 2024, where economic normalization policies may have improved the risk profile of the country and better yields in the presence of the tightening in monetary policy may have attracted portfolio investments. This observation could be confirmed with the negative impact from CDS and arbitrage especially more visible starting from 2019 (Figure 6).

Figure 5. HISTORICAL DECOMPOSITION OF FLOWS ACROSS AGGREGATED FACTORS
(Annual Sum)



Source: BBVA Research calculations

Figure 6. HISTORICAL DECOMPOSITION OF PORTFOLIO FLOWS ACROSS DETERMINANTS



Source: BBVA Research calculations

Scenario Analysis

After the estimation of the flows with push and pull factors and determining the composition of flows explained by them, we employed a forecasting exercise around 4 different retrospective scenarios in order to understand how the flows are likely to be affected from global and domestic developments. We further employ the decomposition analysis to show how the push and pull factors lead to the different outcomes under different scenarios.

Scenario Definitions

We define our scenarios according to recent macroeconomic and political developments. The first scenario, referred as the “November scenario” dates back to mid-November. The November scenario was marked by the uncertainty on the global side revolving around President Trump's cabinet decisions and the increasing probability of protectionist policies around the world triggered by potential trade tariffs. In the domestic economy, the Central Bank (CBRT) communication signaled the start of an easing cycle, while inflationary risks were in place on the back of unanchored inflation expectations, high services inflation inertia and stronger demand conditions than supply.

Coming to the beginning of March 2025, the degree of the policy uncertainty on the global side increases considerably, triggered by the heightened trade wars following President Trump’s order on import tariffs for Canada, Mexico and China. In parallel to these events, the market volatility increases and the appetite for emerging economies loses some momentum, though there is still portfolio inflows to EMs overall. Considering the domestic side, the ongoing easing in the monetary stance was accompanied with very limited improvement in the inflation trend, whereas economic activity conditions signaled only a slight deceleration.

The “April scenario”, on the other hand, incorporates both the tariff shock on the global side following Trump’s “Liberation Day” orders and the confidence shock that happened on March 19th following political developments on the domestic side. This period is marked by higher volatility, tightening financial conditions on the back of the global liquidity conditions and the CBRT’s strengthening restrictive stance in order to contain the inflationary pressures from the currency depreciation.

Finally, June scenario presents a slightly worsened version of March scenario, where the risk sentiment regarding the impact of US tariffs on the global economy have eased compared to April scenario. As a result, the global economic policy uncertainty is slightly below both March and April scenarios. Furthermore, the EM flows recovered back to positive territory after the fast deterioration expectations in April scenario. Meanwhile, on the domestic economy front, the easing signals from the CBRT after the pressure over the currency and exchange rate have alleviated resulted in a less tighter financial conditions and less arbitrage.

Overall, the paths of the variables under different scenarios could be seen more clearly in Figure 7.

November Scenario

- ✓Policy uncertainty related to Trump's cabinet and other protective policies
- ✓Central Bank of TR (CBRT) signals "an easing cycle"
- ✓Increasing challenges on the inflation outlook

March Scenario

- ✓ The degree of the policy uncertainty on the global side increases.
- ✓ Slightly higher VIX & slightly less EM flows
- ✓ Slight deceleration expectations going ahead in activity of TR economy

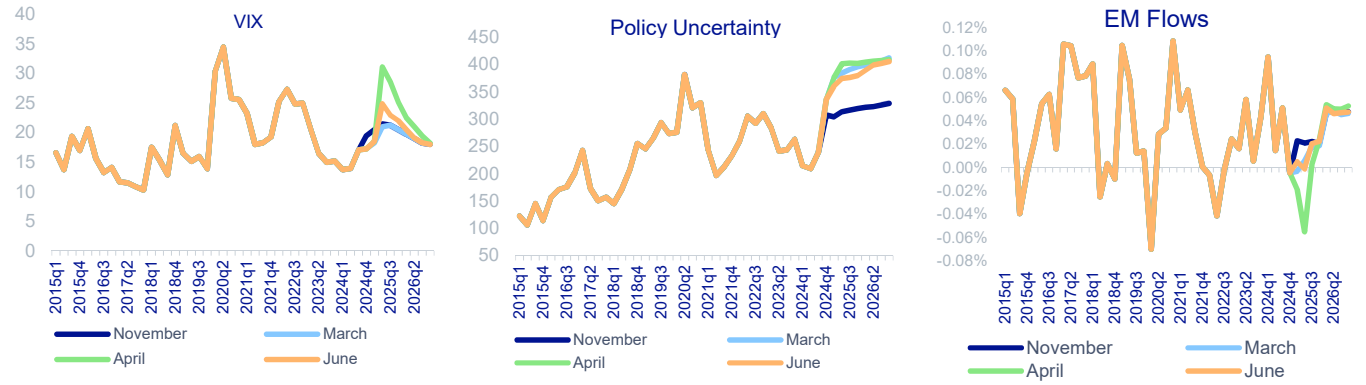
April Scenario

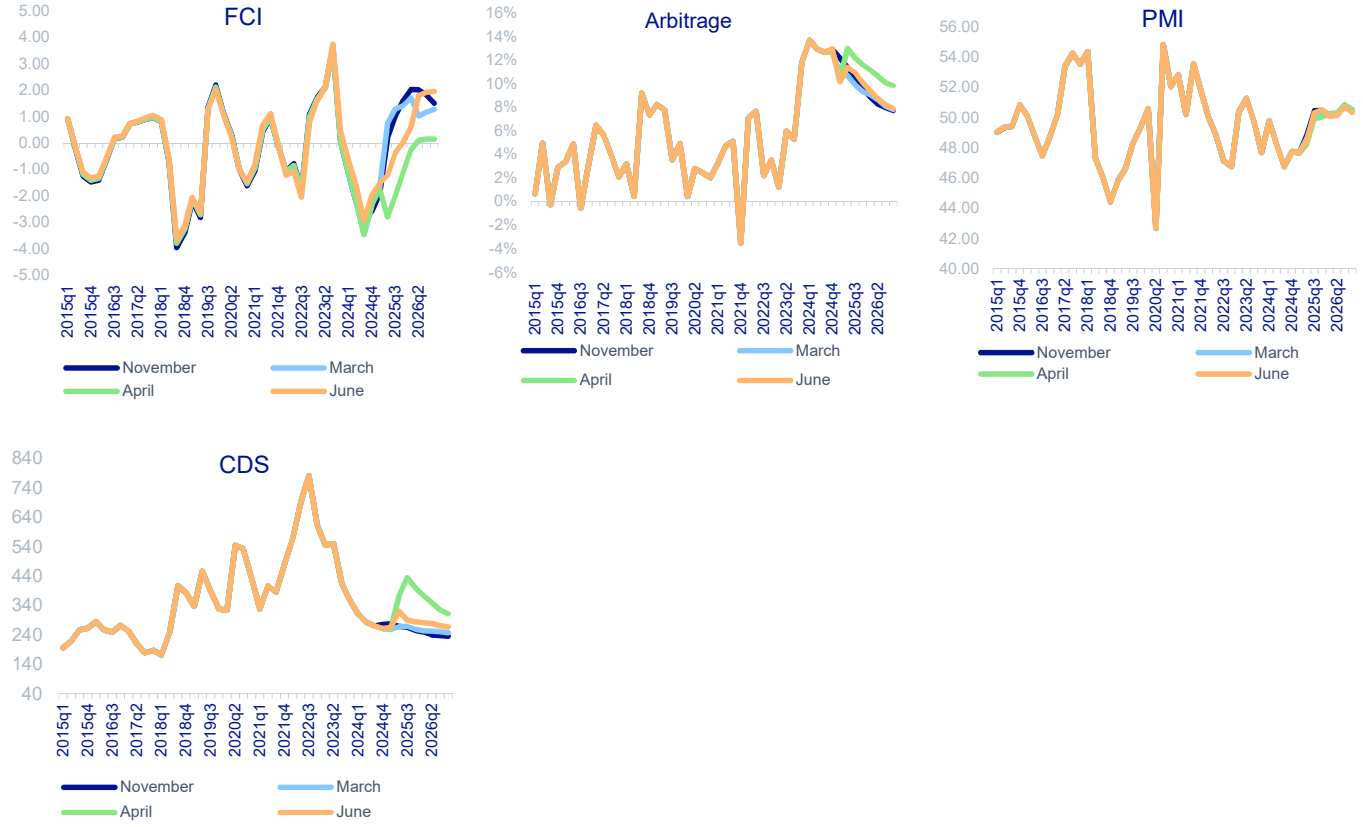
- ✓ Increased uncertainty
- ✓ Considerably higher VIX
- ✓ Shock from the currency depreciation
- ✓ Higher CDS & tightening in financial conditions

June Scenario

- ✓ The economic policy uncertainty alleviates
- ✓ Slightly less volatility and improved EM flows
- ✓ Easing signals in the CB communication

Figure 7: SCENARIOS





Source: BBVA Research

Results of the Scenario Analysis

November, March and June scenario forecasts still point to inflows in 2025, though slightly lower in March. On the other hand, April scenario points to significant outflows reaching as low as -0.005% of global GDP in 2025Q3 and near -$11.2 billion USD for the total of 2025 (Figure 9 & 10). The outflows in 2025 under April scenario are corrected in 2026 with $12 billion USD in the presence of much faster correction in the volatility on the global side and risk premium on the domestic side followed by the timely actions of the CBRT. All 4 scenarios forecast much lower portfolio flow levels in 2025 compared to the long term average of annualized flows ($11.3 billion USD for 2005-2019 period). Meanwhile, the portfolio inflow forecasts barely reach the long term average level in 2026, which overall corresponds to a much worse performance considering the $21.5 billion USD recorded in 2024.

Across 4 different scenarios, the pull factors seem to likely pin down flows more in comparison to push factors starting from the second quarter of 2025 (Figure 11). In the November scenario, both pull & push factors impose downward impact on the flows in 25Q1, on the back of easing expectations in the monetary stance of Türkiye. Meanwhile, additional tightening in the monetary stance as a response to the currency depreciation shock in March has resulted in significant support from pull factors on the flows, which is observed clearly in 1Q25. Starting from the second quarter of 2025, however, both pull and push factors pin the portfolio flows downward, which gradually diminishes in magnitude despite still pointing to outflows. The downward impact from the

pull factors is more dramatic in April scenario especially starting from 25Q2. However, in 2026, the negative effect of pull factors on portfolio flows corrects much faster compared to other scenarios which results in a much higher flow forecast for 2026 under April scenario. One explanation could be that faster correction in CDS and volatility, together with higher returns to investment signal a relatively more suitable environment for portfolio inflows.

Figure 9. THE FORECASTS OF PORTFOLIO FLOWS TO TÜRKIYE (% of Annualized Global GDP)

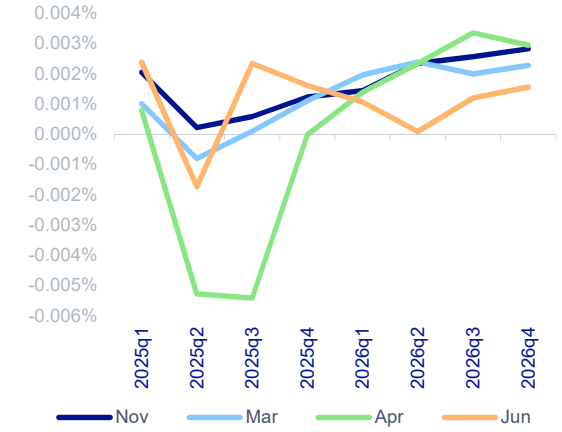


Figure 10. IMPLIED ANNUAL PORTFOLIO FLOWS ACROSS SCENARIOS ($USbn)

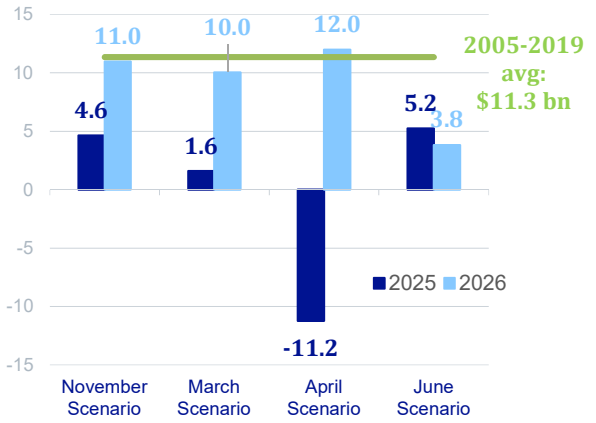
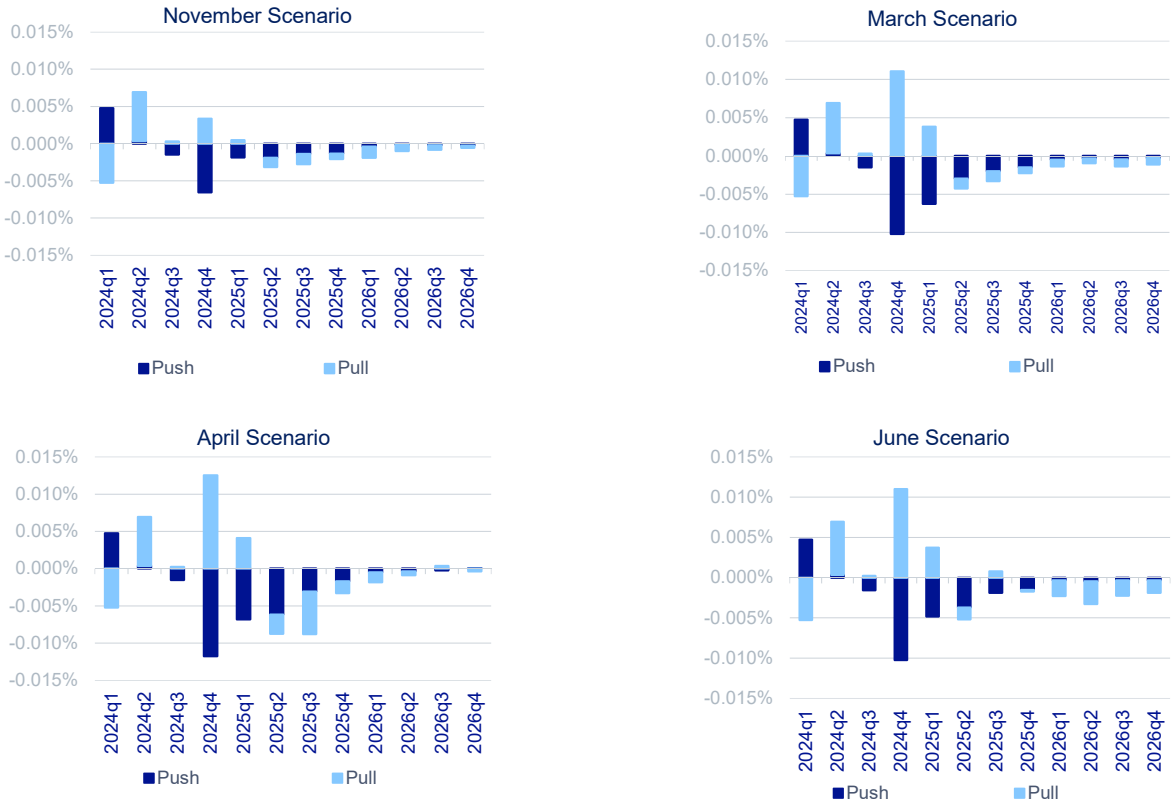


Figure 11: FORECAST ERROR VARIANCE DECOMPOSITION ACROSS PULL AND PUSH FACTORS



Source: BBVA Research

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Conclusion

Our Bayesian VAR modeling exercise confirms that global "push factors" -such as uncertainty around economic policies and volatility in international markets that influence investor sentiment toward emerging markets are key drivers of portfolio inflows to Türkiye, which serves as a representative case among emerging economies. At the same time, domestic economic developments -shaping Türkiye's risk profile, investor returns, and overall economic activity- also play a significant role in influencing portfolio flows.

Our scenario analysis, which incorporates recent global and domestic shocks -including post-election developments in the U.S., the imposition of trade tariffs, and currency depreciation in Türkiye- shows substantial portfolio outflows from Türkiye during the second and third quarters of the year. It is important to emphasize, however, that the validity of these projections heavily depends on the underlying scenario assumptions in an increasingly dynamic economic and political environment. While global uncertainties, such as trade tensions and political shifts, may reduce investor appetite for emerging markets like Türkiye, emerging opportunities—including nearshoring driven by shifts in global trade routes and new investments tied to green and technological innovations—could support future portfolio inflows to the country.

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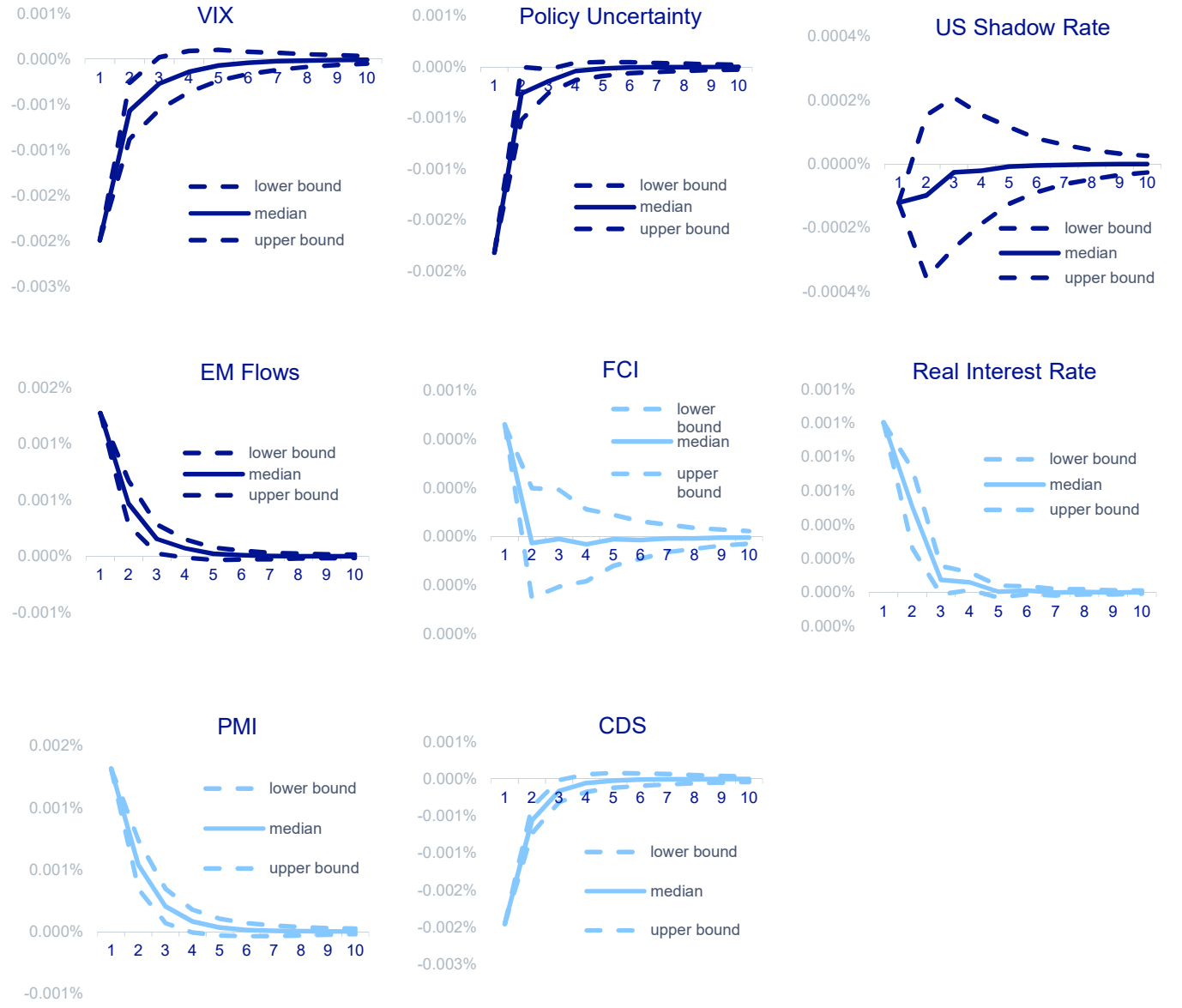
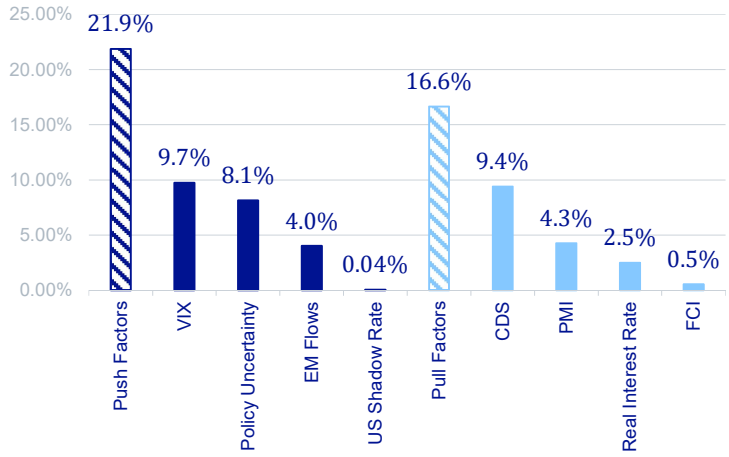
Appendix

Figure A1: Impulse Responses of the Model with US and TR real rates



Source: BBVA Research

Figure A2: Forecast Error Variance Decomposition of the Model with US and TR real rates



Source: BBVA Research

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