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RESEARCH ARTICLE

International Investment Income: Patterns, Drivers, and Heterogeneous Sensitivities

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Abstract
While financial globalization significantly expanded cross-border holdings, this has not been mirrored in primary investment income flows until recently. We analyze the drivers of investment yields and link our estimates to countries' balance sheets to get the impact on investment income flows. We find that exchange rates, interest rates, and macroeconomic conditions matter, with considerable variation across asset classes. For instance, a strong dollar reduces FDI yields, while higher US long-term rates raise yield on debt and banking positions. We combine our econometric results with the evolution of key drivers since 2021 and show how the recent surge in inflation and interest rates affected income flows. Advanced economies generally experienced worsening income balances, while emerging markets saw improvements, though with substantial variation within each group. Although the decline among advanced economies is larger for those with initial current account deficits, this is not the case in emerging economies.

JEL Classification F32 · F36 · F40

1 Introduction

Financial globalization has significantly expanded the value of countries' external assets and liabilities since the mid-1990s (Lane and Milesi-Ferretti 2018; Milesi-Ferretti 2024a; Milesi-Ferretti 2022a). The dotted lines in Figure 1 presents the sum of external holdings relative to GDP in advanced and emerging economies from

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1980 to 2023 (for the median country of each group, left and right panels).[1] While we would expect the associated streams of primary investment income (dividends and interests) to increase in step, this has not been the case. The solid lines in Fig. 1 show the sum of primary investment income receipts and payments, relative to GDP. Although income flows in advanced economies have tracked the values of holdings fairly well until the Global Financial Crisis, the two have since drifted apart until 2021, followed by a rapid increase. While income flows have increased among emerging economies since 2010, this follows a long period of stability despite rising holdings and lags behind the pace of financial integration.

As income flows are the product of external holdings and the associated yields (the ratio of annual investment income flows in a year to the corresponding position at the end of the previous year), Fig. 1 indicates that yields have materially changed. Figure 2 indeed shows a large drop in yields from 1999 until recently for advanced economies' assets and liabilities (left panel), as well as for emerging economies (right panel) but to a smaller extent.[2][3]

The significant increase in policy interest rates since 2021 represents a turnaround, with yields now rising. Can we then expect a worsening of the investment income balance for some countries, putting strain on the current account? This is especially a concern for emerging economies, which are more sensitive to global financial conditions. We assess this issue in several steps. We first perform an econometric analysis of the drivers of yields on countries' external assets and liabilities, using a panel of 42 advanced and emerging market economies from 1999 to 2023, and allowing for different effects across investment categories. We then combine these estimates with the structure of individual countries' balance sheets to compute the impact on investment flows. Finally, we illustrate how the main drivers have impacted yields and income streams since 2021.

A broad appreciation of the dollar reduces FDI yields, especially in advanced economies. Movements between the dollar (in which positions and income streams are measured) and the currency basket in which positions are denominated impact yields, as expected. An increase in US long-term interest rates raises yields on portfolio debt, other investment (banking), and reserves, as well as yields on FDI and equity liabilities in emerging economies. Higher US short-term interest rates increase yields on other investment. GDP growth raises the yields on FDI positions, while inflation raises the ones on other investment, especially in advanced economies. An unexpected result is that tighter global financial conditions do not translate into higher yields, with an increase in the VIX actually lowering them.

In contrast with the drivers of trade driving exports and imports in an amplifying way, the drivers of yields tend to similarly affect those on assets and liabilities and

[1] Appendix Fig. 8 shows the pattern for a wider number of countries since 1999.

[2] A more detailed discussion across asset categories is given in Sect. 3.2.

[3] Appendix Fig. 9 illustrates the sum of gross investment income flows for the median advanced and emerging economies, comparing the actual trajectory (as shown in Appendix Fig. 8) with two counterfactual scenarios: one where the yields remained constant at 2000 levels and the other where the asset and liability holdings were fixed at their 2000 values. Although growth in investment positions has contributed greatly to higher income flows, this effect has been counterbalanced by declining yields.

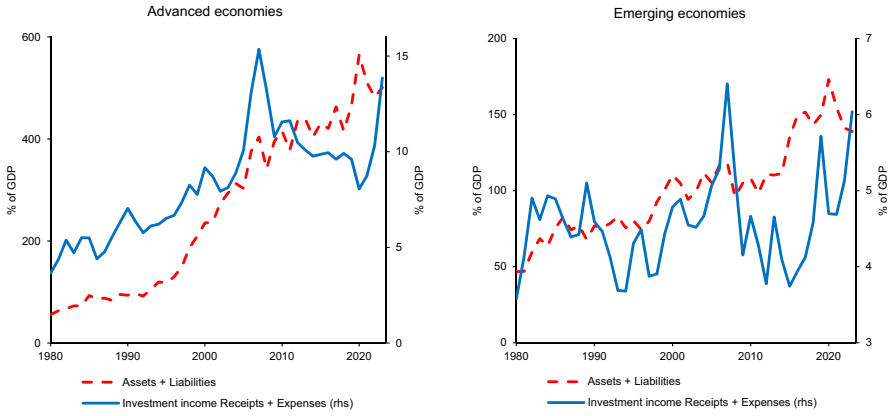

Fig. 1 Gross investment position and primary income flows (median values, % GDP)
Note: The figure shows the median value across countries of the sum of international assets and liabilities (dotted line, left scale) and the median value of the sum of primary investment income receipt and payment flows (solid line, right scale). (Color figure online)

leave the net effect uncertain. We therefore combine our panel estimates for yields with countries' previous income flows (taking the 2018–2022 average) to compute the impact on the investment income balance. A stronger dollar tends to improve emerging economies' income balances, with the opposite effect in advanced economies. A higher US short-term rate does not deteriorate the income balance, but a higher long-term rate does, especially among emerging economies. A worsening of the global financial cycle, proxied by an increase in the VIX index, does not adversely affect the income balance, to the contrary. A puzzling aspect of our results is that the impact of a variable on income balances does not sum to zero across countries. This can reflect the exclusion of financial centers from our sample (as is standard in panel analyses of the balance of payments), which are countries playing a role in investment income flows well beyond their size.

Focusing on the impact of inflation, interest rates, exchange rates, and the VIX since 2021, we find that they have increased gross investment income flows, especially for advanced economies. These drivers have tended to deteriorate investment income balances in advanced economies and improve them among emerging ones, with considerable heterogeneity within each group. In addition, advanced economies with a worsening of the investment balance are also the ones with a current account deficit in 2021, whereas we do not see a similar connection among emerging countries.

Our work shows that the increase in inflation and interest rates since 2021 can be expected to translate into a larger role for income flows in the current account in gross terms. Therefore, external sustainability analyses must pay increasing attention to this component of the balance of payments. In terms of net investment income, we do not find evidence that emerging economies, as a group, are adversely affected. The rest of the paper is organized as follows. We review the literature in Sect. 2. Section 3 presents the econometric framework, data sources and stylized

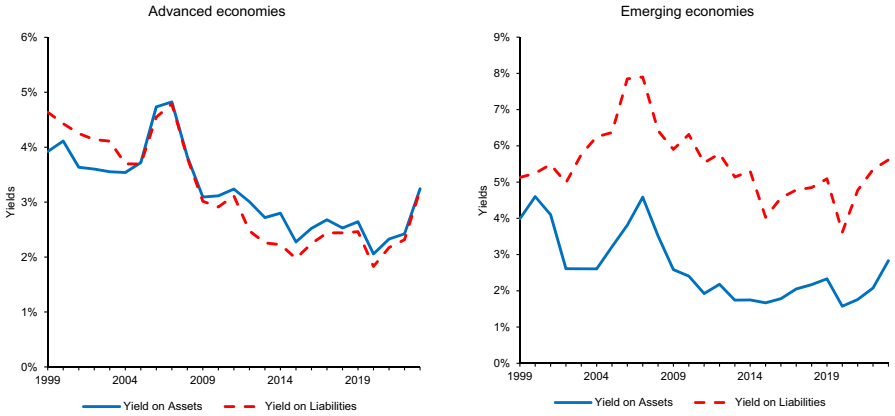

Fig. 2 Yield on asset and liabilities, total (%) *Note:* The figure shows the median value of the yield on assets (solid line) and liabilities (dotted line). (Color figure online)

facts of yields on external assets and liabilities. The econometric analysis of yields is undertaken in Sect. 4, and 5 presents the impact in terms of investment income flows. Section 6 discusses the phase of higher inflation and interest rates since 2021, and Sect. 7 concludes.

2 Literature Review

Our work relates to several branches of the literature on external accounts. The first examines the determinants of "global imbalances," with a special focus on the persistent US current account deficit. Early studies highlighted the roles of public deficits, financial development, and past financial crises in shaping current account balances (Chinn and Prasad 2003 and Gruber and Kamin 2007), while asymmetries in financial market development were identified as a driver of the persistent US deficit (Caballero et al. 2008). Although interest in global imbalances waned post-2008 (IMF 2014), recent work focused on evolving patterns. For instance, Chinn and Ito (2022) document shifts in the importance of China and oil exporters, increased importance of fiscal factors, and heterogeneous effects of financial development. Others explore portfolio choice determinants (Devereux et al. 2020 and Jiang et al. 2022). A broader perspective includes stock imbalances. While flow imbalances (current accounts) have remained steady, stock imbalances (net international investment positions) remain on the rise (Alberola et al. 2020, Lane and Milesi-Ferretti 2014, and Milesi-Ferretti 2022b).

The second branch of literature covers the impact of major shocks on the current account. The exchange rate has received a lot of attention, as models indicate that narrowing imbalances (especially through trade) rely on exchange rate movements. Obstfeld and Rogoff (2007) find that the US imbalances call for a dollar weakening. The empirical evidence on the impact of the exchange rate is however contrasted.

Devereux and Genberg (2007) point that exchange rate movements are unlikely to play a sizable role in emerging Asian economies. Taking a medium-run perspective, Chinn and Prasad (2003) find that exchange rates only play a smaller role for industrial countries. Gruber and Kamin (2007), Chinn and Ito (2007) and Chinn and Lee (2009) also find mixed results, and Beckmann and Czudaj (2017) show that the link between exchange rates and current accounts is ambiguous, especially at shorter horizons. Cubeddu et al. (2019) estimate the REER-elasticity of the Current Account as part of the IMF's External Sector Report using the so-called CGER-inspired approach and find a moderate average elasticity with substantial heterogeneity. The limited impact of the exchange rate can be explained by a moderate transmission to import prices when these are set in currencies that are not the one of the importing countries, as in the "dominant currency pricing" (Boz et al. 2022; Georgiadis et al. 2021; Gopinath et al. 2020). Behar and Hassan (2022) and Colacelli et al. (2021), which we discuss below, assess the impact of exchange rate movements in primary income flows.

Interest rates are another important driver. Antràs (2023) develops a framework where lower rates raise investment in longer but more productive production processes, leading to larger trade flows. Schuler and Sun (2022) look at the current account and interest rates in Euro area countries. They show that shocks to consumption and investment financial frictions (i.e. to domestic demand) move interest rates and the current account in the same direction, whereas shocks to foreign demand and TFP have the opposite effect.

Finally, we contribute to the literature on the determinants of primary income, especially investment income. The analysis of primary income flows remains at a relatively early stage, compared to the extensive one on trade. Behar and Hassan (2022) show that primary income flows matter, with the income balance amounting to at least half the trade balance for half the countries in their sample. Joyce (2021) analyzes the primary income flows in a sample of 26 emerging economies between 1990 and 2015. These countries show persistent deficits, that largely reflect the increase in their FDI and portfolio liabilities, characterized by higher yields than assets invested in safer bonds, in a "long debt—short equity" pattern. Higher openness to trade and financial flows is associated with larger income payments on FDI and portfolio liabilities, while deeper financial markets reduce portfolio payments.

Movements in the primary income balance are quite different from fluctuations in net trade flows. Behar and Hassan (2022) use a broad sample of countries and show that overall the trade and income balances are negatively correlated, so the income stabilizes the current account. However, this pattern does not translate into the primary income balance being a source of adjustment in crises, or of narrowing of imbalances. Using an event study approach, Behar and Hassan (2022) find that while the trade balance improves in crises, this is not the case for the primary income balance. If anything, the latter worsens in such times for advanced and emerging economies, possibly reflecting higher risk premia, and moderately improves in low-income countries. Alberola et al. (2020) assess which components of the current account help narrow imbalances in the net investment positions, in a sample of 39 countries between 1980 and 2015. While they find that the trade balance does so, albeit solely for debtor countries that tend to see their trade balance improve later on,

it is not so for the primary income balance. Instead, the net primary income tends to amplify the net position, with deficit countries facing net payments on their higher liabilities. Based on a sample of 92 countries from 1998 to 2015, Adler and Garcia-Macia (2018) find that the primary income flows do not stabilize imbalances, while the valuation changes on the international investments stemming from exchange rate and asset price movements do, primarily through a reduction of the value of liabilities for debtor countries.

Recent contributions assess the impact of exchange rates on the primary income. Behar and Hassan (2022) find a significant effect in gross terms, with a depreciation of the domestic currency increasing income flows on both assets and liabilities. This positive correlation between receipts and payments leads to a small impact in net terms, in contrast to trade flows where a depreciation that raises exports tends to lower imports. Colacelli et al. (2021) consider the drivers of the primary income between 1999 and 2018 for a sample of over 40 countries. They confirm the pattern that while a depreciation of the domestic currency clearly raises flows of receipts and payments, these two offset and leave a much smaller effect on the primary income balance.

An important element in the impact of exchange rates in Behar and Hassan (2022) and Colacelli et al. (2021) is a "mechanical" effect. As a country's assets and liabilities are often denominated in foreign currency, exchange rate movement affects the domestic currency value of the associated flow of earnings, even when the yield in terms of the currency of denomination is unchanged.[4] Behar and Hassan (2022) and Colacelli et al. (2021) show that this mechanical effect is a major aspect of the impact of exchange rates, and the residual "economic" effect is small and heterogeneous. Eugster and Donato (2025) document the impact of exchange rate movements on the Swiss current account, focusing on movements that reflect the Swiss safe haven property. They confirm the offsetting movements of trade and primary income balances of Behar and Hassan (2022), with a stronger Swiss franc reducing the trade surplus and raising the primary income surplus through higher FDI earnings.

While the previous studies focus on the impact of the exchange rate, Auer (2019) assesses the impact of monetary policy shocks in the USA and Canada. A tightening of monetary policy appreciates the currency and leads to a reduction of both investment income receipts and payments, as well as the income balance. The effect gradually builds up and reaches a peak after 1–2 years. A finer assessment shows that the higher interest rates temporarily raise the income flows for the "other" investment category (which are mostly banking holdings), leading to a positive net effect, but lower the income flows on FDI holdings, leading to a negative net effect.

[4] This effect is similar to the well-known valuation effect of exchange rate movements on the international investment position, with the difference that these valuation effects are capital gains that do not enter the current account (Bénétrix et al. 2015; Bénétrix et al. 2020; Gourinchas and Rey 2007; Lane and Milesi- Ferretti, 2004; Tille 2008).

3 Empirical Framework and Stylized Facts

3.1 Specification

We rely on a framework, presented in the appendix, linking yields and investment income flows, and combining investment in fixed-income securities (such as bonds) and securities with variable income. An important element is to distinguish between the currency in which holdings are denominated and the currency in which they are measured (the US dollar), as a movement of the exchange rate between these two currencies translates into valuation effects identified in Colacelli et al. (2021). We estimate the following specification for overall holdings, FDI, portfolio equity, portfolio debt, other investment excluding reserves (mostly banking), and foreign exchange reserves, doing so separately for assets and liabilities:

$$\begin{aligned}\ln\left(r_{i,t}^{\$}\right) = \alpha + \beta_{\text{lag}} \ln\left(r_{i,t-1}^{\$}\right) + \beta_{\text{val}S}\Delta \ln\left(S_{i,t}^{\$/D}\right) \\ + \beta_{\text{val}SL}\Delta \ln\left(S_{i,t-1}^{\$/D}\right) + \beta_{\text{val}QL}\Delta \ln\left(Q_{i,t-1}^{D}\right) \\ + \delta_{\text{glob}} X_t^{\text{global}} + \delta_{\text{local}} Z_{i,t}^{\text{local}} + \eta_i + \in_{i,t}\end{aligned} \tag{1}$$

where $r_{i,t}^{\$}$ is the (log of) yield, measured in dollar, $\Delta \ln\left(S_{i,t}^{\$/D}\right)$ is the first difference of the log of the exchange rate between the dollar and the currency of denomination of assets (with an increase representing a depreciation of the dollar), $\Delta \ln\left(Q_{i,t-1}^{D}\right)$ is the first difference between the log of the asset price in the currency of denomination[5]. X_t^{global} and $Z_{i,t}^{\text{local}}$ are vectors of global controls and local controls respectively. These two vectors include variables that can affect the yields on the currency of denomination. The global controls X_t^{global} include:[6]

- First difference of the log of the US dollar broad trade-weighted exchange rate index, to capture the dollar strength against all other currencies. A positive value denotes an appreciation of the US dollar.
- US short-term interest rate (3 months money market) to capture the short maturity funding cost (affected by monetary policy) in the major economy.
- US long-term interest rate (10 years Treasury yield) to capture the long maturity fund- ing cost in the major economy.
- VIX index (normalized), to capture changing global risk perceptions and appetite.
- Excess Bond Premium (normalized) from Scheubel et al. (2024) and Gilchrist and Zakrajsek (2012) to capture the global risk premium on fixed income assets.

[5] $\Delta \ln\left(S_{i,t-1}^{\$/D}\right) + \Delta \ln\left(Q_{i,t-1}^{D}\right)$ drive the valuation effect on the asset position, expressed in dollars.

[6] We also considered specifications with the first difference of the log of the SP500 index, and the dividend yield on that index, but they proved statistically non-significant.

- Global stock market factor (inverted so that an increase represents a tightening of global financial conditions, and normalized) from Scheubel et al. (2024) and Habib et al. (2019) to capture global stock market risk.
- World inflation (first difference of the log CPI), for regressions of income receipts.
- World real GDP growth, for regressions of income receipts.

We include the broad dollar exchange rate for three reasons. First, it is a global factor because of the dominant role of the dollar in international financial markets (Avdjiev et al. 2019), with a strong dollar leading to tighter funding conditions. This is a different channel from the revaluation of income flows in dollar-denominated financial holdings, which are captured by $\Delta \ln \left(S_{i,t}^{\$/D} \right)$. Second, the dominant use of the dollar in the invoicing of international trade (Boz et al. 2022; Gopinath et al. 2020) implies that a stronger dollar reduces all international trade activity. We can expect this to translate into lower profits and dividends for exporting firms. Third, movements in the dollar exchange rate can reflect fluctuations of risk appetite (switch from "risk on" and "risk off" periods) that also impact real investment activity.

The US interest rates proxy for interest rates in major economies, which we expect to directly impact earnings on countries' assets, and possibly on their liabilities to the extent that they are dollar-denominated, or that US interest rates affect yields in other currencies. We consider several standard measures of global risk conditions (VIX, excess bond premium, global stock market factor), all normalized and signed such that an increase represents a tightening of financial conditions. World real growth and inflation differences are expected to impact the yield on assets abroad especially for investment categories that are state-contingent.

The local controls $Z_{i,t}^{\text{local}}$ include (for regressions of income payments):

- Inflation (first difference of the log CPI).
- Real GDP growth.
- Domestic short-term interest rate (for advanced economies).
- Domestic long-term interest rate (for advanced economies).

Domestic inflation and real growth are expected to affect the yield of the country's liabilities, especially for contingent investments. The short- and long-term interest rates affect the yield on the liabilities, to the extent that they are denominated in domestic currency.

In terms of the estimation method for (1), we compute panel OLS estimates for all countries, as well as for advanced and emerging economies separately. Errors are clustered at the country level, and we include country fixed-effects.

3.2 Data Sources and Stylized Facts

3.2.1 Data Sources

Our sample covers a broad range of 42 countries, listed in Appendix Table 6, from 1999 to 2023. We exclude financial centers, very small countries, and countries for

which the data on the currency composition of assets and liabilities is missing. We split countries between an advanced group (20 countries) and an emerging economies group (22 countries), using the WEO classification.[7]

The data are from standard sources, listed in Appendix Table 7. Investment income from the balance of payments (in US dollars), exchange rates, interest rates, GDP, and inflation are from the IMF International Financial Statistics and World Economic Outlook.[8] Countries' external assets and liabilities (in US dollars) are taken from the External Wealth of Nations database (Milesi-Ferretti 2024b). The income flows and position data for each country include the overall and the usual categories (FDI, portfolio equity and debt, other (banking) investment, and reserves). The US broad dollar exchange rate is from the Board of Governors. Complementary sources are used as needed, as described in Appendix Table 7.

The computation of the exchange rate between the currency of denomination and the dollar, $\Delta \ln \left(S_{i,t}^{\$/D} \right)$, follows Colacelli et al. (2021), based on the currency composition data of Bénétrix et al. (2020). As detailed in the appendix, the data provide us with the weights of the US dollar, Euro, Pound, Yen, Renminbi, and domestic currency for assets and liabilities. They include the currency weights for the overall assets (liabilities), as well as for "debt" positions (portfolio debt and other investments). Based on these weights and the investment position data, we consider three sets of currency weights: one for the total (from the data), one for portfolio debt and other (also from the data), and one for FDI, portfolio equity and reserves (computed based on the previous two).[9] As the data of Bénétrix et al. (2020) end in 2017, we keep the 2017 composition for the debt and total positions in subsequent years.

We compute the price valuation effect ($\Delta \ln \left(Q_{i,t-1}^{D} \right)$ in 1) by taking the first difference in the dollar value of positions from Milesi-Ferretti (2024b), removing the associated capital flows to get a residual valuation adjustment, and express it in percentage of the corresponding position to get a rate of capital gain.[10]

[7] The coverage for some categories of assets is narrower among emerging economies.

[8] The balance of payment data includes the investment income streams converted into dollars, without any correction for the valuation effect stemming from exchange rate movements between the dollar and the currencies in which the assets are denominated. A well-known feature of the data is the presence of a global discrepancy. As our sample does not include all the countries, we compute the total discrepancy in our sample by summing the investment income balances. This sum moves from -0.4% of GDP in 1980 to +0.2% in recent years. The discrepancy is positive for FDI and negative for portfolio debt, which is consistent with the growing FDI flows to financial centers that are not in our sample.

[9] While our approach of computing the non-debt yields as a residual likely overlooks heterogeneous currency composition of FDI and equity, for instance, the Bénétrix et al. (2020) are the standard references on the issue, and computing an additional detailed currency composition would go beyond the scope of this paper.

[10] Two key points merit attention. First, our measure of residual valuation encompasses "other" valuation effects beyond exchange rate and asset price changes. While this limits its precision, more detailed decompositions are unavailable for a broad set of countries. Second, the computed dollar valuation change includes both exchange rate and asset prices, represented as $\ln \left(S_{i,t}^{\$/D} \right) + \Delta \ln \left(Q_{i,t-1}^{D} \right)$. Since $\Delta \ln \left(S_{i,t}^{\$/D} \right)$ is directly controlled for in our regressions, the coefficient on residual valuation reflects asset price movements orthogonal to the exchange rate.

3.2.2 Stylized Facts

We present stylized facts for the yields on external assets and liabilities. Figures 3

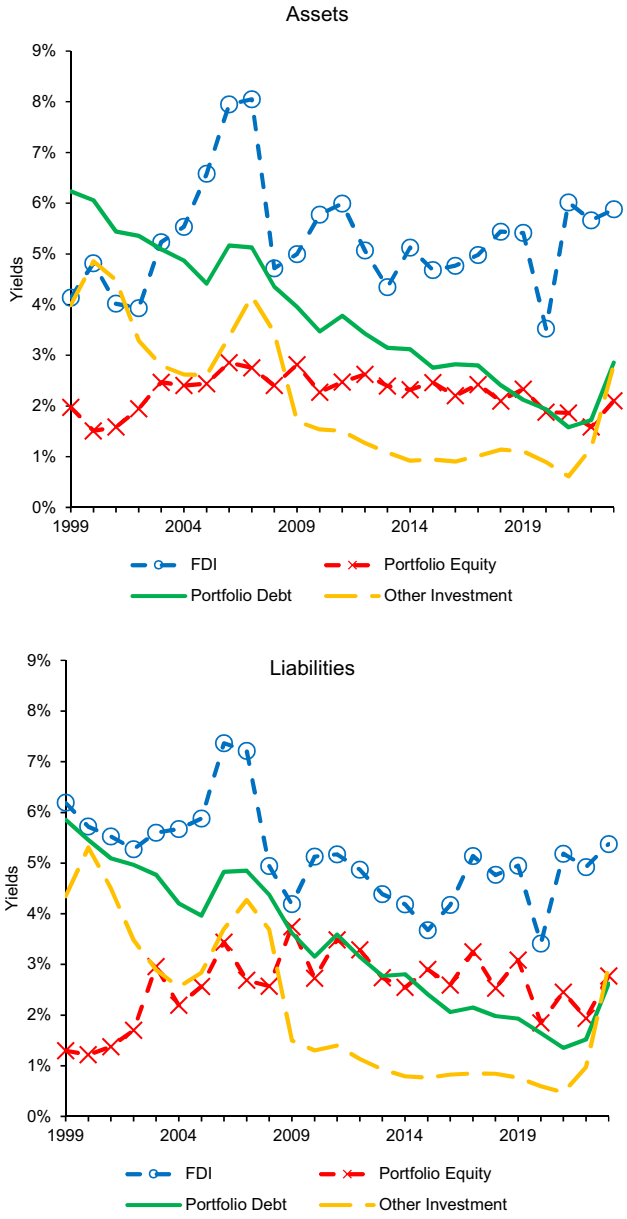

Fig. 3 Yields by investment category (%), Advanced Economies
Note: The figure shows the median value of the yield on assets and liabilities by category for Advanced Economies

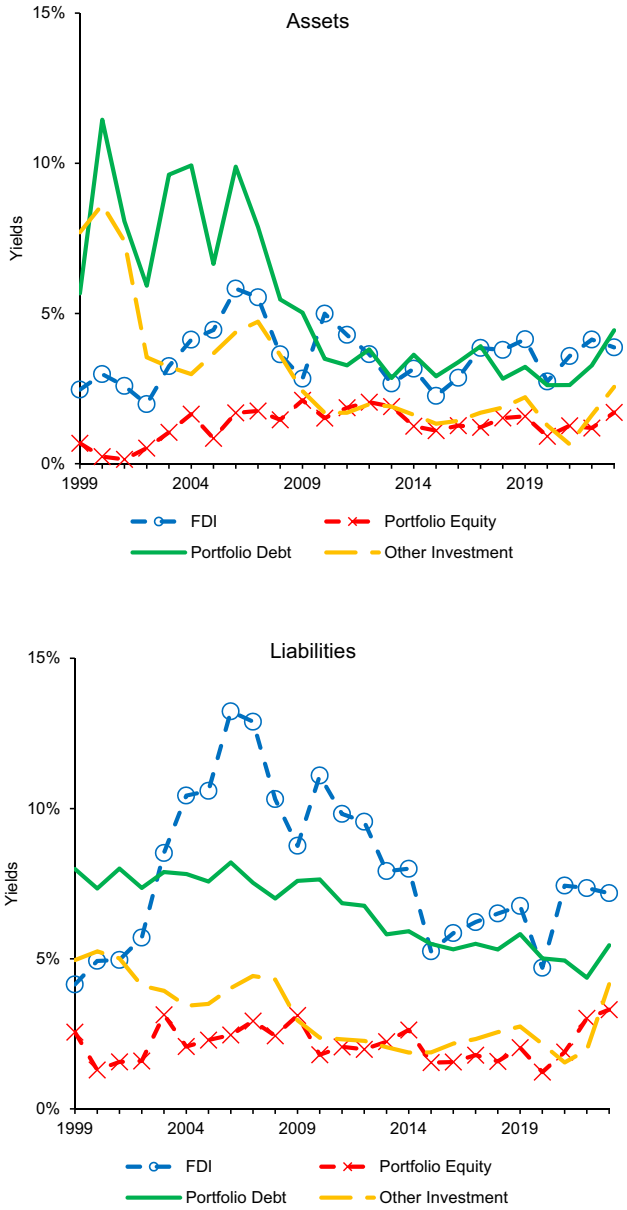

Fig. 4 Yields by Investment category (%), Emerging Economies
Note: The figure shows the median value of the yields on assets and liabilities by category for Emerging Economies

and 4 show the yields on assets (top panels) and liabilities (bottom panels) by investment category for the median advanced country and emerging economy, respectively.

The decreasing trend seen in Fig. 2 is not evenly spread. In advanced economies, the trend is primarily for portfolio debt (solid lines) and other investment (dashed lines), consistent with the broad declines in interest rates and inflation. The situation has markedly changed recently, as the global tightening of monetary policy pushed yields upwards. Yields on FDI (circled lines) and portfolio equity (crossed lines) are more stable throughout the sample. While yields on FDI experienced a sharp increase in the mid-2000s, they have since come down and remained steady (except for the COVID-19 period).

In emerging economies, yields on portfolio debt and other investment also display downward trends. The pattern is most pronounced for assets, which consist to a large extent of claims on advanced economies' markets, and less so for liabilities, likely reflecting the riskier nature of investing in emerging markets. Yields on FDI and portfolio equity also remained broadly stable for that country group, except for the yields on FDI liabilities that showed an increase before the global financial crisis that has since been reverted.[11]

4 Econometric Analysis of the Drivers of Yields

4.1 Baseline Results

We now turn to the panel estimation of (1), for the entire sample (Table 1), advanced economies (Table 2) and emerging economies (Table 3).[12] Columns (1) and (2) of each table present the estimates for the (log) yields on receipts and payments for the aggregate holdings of assets and liabilities, and the remaining columns report results for the individual investment categories.

Yields display substantial inertia, with a consistently significant coefficient on the lagged dependent variable. While this finding reflects in part the presence of fixed-income assets with set yields on face value, it can also indicate a smoothing of dividends paid to investors or the parent company for a firm part of a multinational group.

Turning to the various drivers, the main message is that exchange rates, interest rates, and macroeconomic conditions matter, albeit differently across categories. A stronger dollar weighs on FDI yields, while higher US short-term and (especially) long-term interest rates translate into higher yields on portfolio debt, other investment, and reserves. Higher growth boosts FDI yields. Indicators of global financial stress have little (or even unexpected) effects. Furthermore, the various drivers tend to have similar impacts on yields on assets and liabilities. We now turn to the results in more details.

[11] Our description of stylized facts focuses on yields, these are the dependent variables in our econometric analysis. The pattern for the investment income streams, in percent of GDP, are presented for the various categories and countries groups in the appendix Figs. 19, 20, 21, 22, 23, 24.

[12] In an earlier version, we also considered country-specific estimates. As expected, these were less precise than the results from the panel analysis.

Table 1 Drivers of (ln) yields—all countries

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L.ln Yield	0.640***	0.727***	0.505***	0.615***	0.592***	0.563***	0.658***	0.742***	0.834***	0.660***	0.635***
	(0.0468)	(0.0338)	(0.0443)	(0.0538)	(0.0818)	(0.0621)	(0.0851)	(0.0526)	(0.0528)	(0.0306)	(0.0377)
Δln $-Denomination XR (increase = $ depreciation)	0.747***	0.252	0.437	−0.583**	1.125	0.967**	0.463	1.340***	0.735**	1.028***	−0.163
	(0.236)	(0.171)	(0.615)	(0.245)	(0.815)	(0.391)	(0.357)	(0.361)	(0.353)	(0.319)	(0.484)
L.Δln $-Denomination XR (increase = $ depreciation)	−0.145	−0.105	−0.0905	0.125	−0.168	0.110	−0.268	0.00921	−0.210	−0.231	−0.103
	(0.114)	(0.0633)	(0.160)	(0.141)	(0.154)	(0.203)	(0.243)	(0.138)	(0.143)	(0.157)	(0.0904)
Δln $ Broad Index (increase = $ appreciation)	−0.396	−1.083***	−0.190	−2.045***	−0.451	−0.0409	−0.0426	0.178	0.193	0.258	0.333
	(0.329)	(0.207)	(0.727)	(0.332)	(0.826)	(0.795)	(0.517)	(0.204)	(0.335)	(0.333)	(0.675)
US 3-month interest rate	0.0537***	0.00605	0.0631***	−0.0269***	0.0625**	−0.0295	0.00716	−0.00408	0.0235	0.106***	0.143***
	(0.00962)	(0.00496)	(0.0216)	(0.00924)	(0.0240)	(0.0187)	(0.0170)	(0.0105)	(0.0163)	(0.00812)	(0.0254)
US 10-year treasury yield	0.00919	0.0403***	0.00589	0.0417***	0.0621*	0.114***	0.107***	0.0841***	0.0832***	0.117***	0.138***
	(0.0102)	(0.00779)	(0.0197)	(0.0125)	(0.0330)	(0.0310)	(0.0216)	(0.0164)	(0.0190)	(0.0251)	(0.0300)
VIX (normalized)	−0.0173	−0.0242***	0.0787**	−0.0329***	0.0487	−0.0622**	−0.0310	−0.0307***	−0.167***	−0.0338**	−0.0933***
	(0.0144)	(0.00576)	(0.0321)	(0.00923)	(0.0464)	(0.0247)	(0.0259)	(0.0106)	(0.0305)	(0.0133)	(0.0269)
Global Stock Market Factor (normalized)	0.000835	0.00454	0.107***	−0.00406	0.165***	0.0920*	−0.0296	0.0245	−0.0225	0.0970***	0.0778**
	(0.0167)	(0.0106)	(0.0291)	(0.0165)	(0.0522)	(0.0492)	(0.0262)	(0.0166)	(0.0368)	(0.0234)	(0.0332)
Excess Bond Premium (normalized)	−0.00796	−0.0137*	−0.0539**	−0.0217**	−0.0110	0.0175	−0.0430*	0.0126	0.00669	−0.0171	0.0255
	(0.00803)	(0.00680)	(0.0219)	(0.0102)	(0.0276)	(0.0232)	(0.0255)	(0.0139)	(0.0197)	(0.0130)	(0.0234)

Table 1 (continued)

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Inflation(Δln CPI)	−0.0485	0.710***	−4.343**	1.110***	−5.476**	1.214***	0.841	−0.0118	13.35***	0.257	4.034*
	(0.886)	(0.242)	(1.704)	(0.343)	(2.632)	(0.305)	(1.442)	(0.205)	(2.157)	(0.225)	(2.082)
Real GDP Growth	0.0313***	1.047***	0.0928***	1.622***	0.0351	1.228**	−0.0183*	0.132	−0.0457***	0.147	−0.0167
	(0.00780)	(0.249)	(0.0190)	(0.357)	(0.0235)	(0.541)	(0.0104)	(0.210)	(0.0167)	(0.225)	(0.0110)
L. Capital Gains	−0.00346***	−0.00571***	−0.000103	−0.00389***	−0.000893**	−0.00373***	−0.000292***	−0.00400***	−0.00218	−0.00674***	0.00346
	(0.000770)	(0.000796)	(0.0000933)	(0.000892)	(0.000399)	(0.000727)	(0.0000265)	(0.00115)	(0.00200)	(0.00143)	(0.00381)
Constant	−1.520***	−1.070***	−1.810***	−1.240***	−1.893***	−1.981***	−1.381***	−1.085***	−1.305***	−1.918***	−2.377***
	(0.165)	(0.112)	(0.154)	(0.160)	(0.362)	(0.302)	(0.263)	(0.175)	(0.216)	(0.177)	(0.204)
Country Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	984	987	944	977	791	819	850	909	953	952	494
Countries	42	42	42	42	39	38	40	41	41	41	28
Adjusted R^2	0.716	0.747	0.372	0.553	0.377	0.378	0.578	0.738	0.820	0.787	0.785

OLS panel estimates, errors clustered at the country level. *, **, *** indicates significance at the 10, 5 and 1% level respectively. Inflation and real GDP growth are values for the rest of the world in the Receipt regressions, and values for the country in the Payment regressions

Table 2 Drivers of (ln) yields—advanced economies

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L.ln Yield	0.598***	0.654***	0.442***	0.414***	0.653***	0.611***	0.758***	0.806***	0.752***	0.610***	0.688***
	(0.0546)	(0.0402)	(0.0365)	(0.0641)	(0.0738)	(0.0801)	(0.0491)	(0.0261)	(0.0298)	(0.0438)	(0.0329)
Δln $-Denomination XR (increase = $ depreciation)	0.747***	0.429**	0.122	−0.303	0.439	0.220	0.705**	1.567***	1.106***	1.277***	−1.246*
	(0.220)	(0.159)	(0.448)	(0.371)	(0.465)	(0.335)	(0.271)	(0.474)	(0.356)	(0.267)	(0.618)
L.Δln $-Denomination XR (increase = $ depreciation)	0.0875	−0.0950	−0.0816	0.0283	−0.0275	0.0980	−0.280	−0.256**	−0.127	−0.284*	−0.106
	(0.102)	(0.0688)	(0.132)	(0.148)	(0.0886)	(0.242)	(0.242)	(0.112)	(0.137)	(0.136)	(0.0814)
Δln $ Broad Index (increase = $ appreciation)	−0.667**	−1.049***	−1.348*	−2.139***	−1.318***	−1.157**	−0.218	0.300	−0.00486	0.709*	−1.221
	(0.267)	(0.217)	(0.718)	(0.509)	(0.347)	(0.435)	(0.394)	(0.291)	(0.460)	(0.409)	(1.085)
US 3-month interest rate	0.0263***	−0.00122	0.0577**	0.0167	0.0170	−0.00803	−0.00821	0.0120	0.0211	0.0752***	0.123***
	(0.00866)	(0.00748)	(0.0226)	(0.0183)	(0.0153)	(0.0121)	(0.0167)	(0.0121)	(0.0183)	(0.0139)	(0.0368)
US 10-year treasury yield	0.0302**	0.0550***	−0.0131	0.000886	0.00925	0.00317	0.0941***	0.0691***	0.109***	0.128**	0.145***
	(0.0110)	(0.0147)	(0.0214)	(0.0275)	(0.0187)	(0.0226)	(0.0182)	(0.0230)	(0.0239)	(0.0460)	(0.0320)
VIX (normalized)	−0.00755	−0.0290***	0.0550	−0.0263	−0.0367*	−0.0843***	−0.0432*	−0.0176	−0.125***	−0.0542**	−0.104**
	(0.0171)	(0.00990)	(0.0331)	(0.0209)	(0.0201)	(0.0200)	(0.0214)	(0.0126)	(0.0282)	(0.0237)	(0.0433)
Global Stock Market Factor (normalized)	0.00517	0.00473	0.0746*	0.0244	0.0309	0.0926***	0.0158	0.0456**	−0.0225	0.0484*	0.109*
	(0.0179)	(0.00906)	(0.0370)	(0.0225)	(0.0219)	(0.0252)	(0.0332)	(0.0197)	(0.0336)	(0.0262)	(0.0532)
Excess Bond Premium (normalized)	−0.0132	−0.00838	−0.0846***	−0.0153	−0.0150	0.0274	−0.00119	−0.0183	0.0107	−0.0253	0.0313
	(0.0118)	(0.00790)	(0.0285)	(0.0139)	(0.0284)	(0.0178)	(0.0119)	(0.0138)	(0.0180)	(0.0212)	(0.0390)

Table 2 (continued)

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Inflation(Δln CPI)	−0.521	1.208**	−3.211	0.967	−1.957	−0.518	1.196	0.893	12.96***	5.181***	4.188
	(0.910)	(0.438)	(2.067)	(0.755)	(1.204)	(0.897)	(1.342)	(0.925)	(2.458)	(1.200)	(3.397)
Real GDP growth	0.0269***	1.832***	0.0691***	3.498***	0.00463	1.996***	−0.0140	0.545	−0.0378**	−0.433	−0.0154
	(0.00754)	(0.296)	(0.0171)	(0.548)	(0.00750)	(0.551)	(0.00994)	(0.622)	(0.0137)	(0.812)	(0.0167)
L. Capital Gains	−0.00484***	−0.00638***	−0.00479**	−0.00496***	−0.00583***	−0.00459***	−0.00281*	−0.00730***	−0.00503***	−0.00579***	−0.0000466
	(0.00127)	(0.000556)	(0.00196)	(0.00140)	(0.000570)	(0.00112)	(0.00142)	(0.000818)	(0.00134)	(0.00183)	(0.00320)
Domestic Long-term IR		−0.00694		0.0294*		0.00764		0.0187**		0.0140**	
		(0.00601)		(0.0141)		(0.00581)		(0.00862)		(0.00659)	
Domestic Short-term IR		0.0218***		−0.0144		0.0410**		0.00342		0.0418**	
		(0.00403)		(0.0176)		(0.0187)		(0.0121)		(0.0184)	
Constant	−1.603***	−1.451***	−1.800***	−1.900***	−1.305***	−1.499***	−1.127***	−1.043***	−1.708***	−2.404***	−2.159***
	(0.196)	(0.144)	(0.124)	(0.213)	(0.271)	(0.272)	(0.178)	(0.107)	(0.174)	(0.305)	(0.185)
Country Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	470	469	460	464	454	448	457	457	470	469	258
Countries	20	20	20	20	20	20	20	20	20	20	14
Adjusted R^2	0.787	0.860	0.381	0.406	0.516	0.549	0.787	0.862	0.874	0.856	0.810

OLS panel estimates, errors clustered at the country level. *, **, *** indicates significance at the 10, 5 and 1% level respectively. Inflation and real GDP growth are values for the rest of the world in the Receipt regressions, and values for the country in the Payment regressions

The exchange rate manifests itself in several ways.[13] First, there is the valuation effect of movements of the dollar against the currency of denomination. While we'd expect a coefficient of +1, this is only the case for other investment, and payments on portfolio equity and debt.[14] The lack of significance for FDI could be due to the fact that our estimate for the currency composition of FDI and equity is a residual, possibly masking additional heterogeneity within this broad category. Emerging economies also exhibit a large positive effect for portfolio equity (columns (5) and (6) in Table 3), although this is imprecisely estimated. The weaker evidence for emerging economies, especially in debt investment, could reflect the greater dominance of the dollar for this country group as exchange rate movements are then driven by currencies that play a marginal role in the composition of the investment basket.

The second channel of the exchange rate is through the broad US dollar index, which impacts primarily advanced economies. Specifically, a stronger dollar reduces yields on FDI and portfolio equity. This can follow from the dampening effect of a dollar appreciation on international trade activity due to its dominance in trade invoicing (Boz et al. 2022). As firms engaged in international trade are to a large extent large multinationals, the return on FDI is reduced. Second, a strong dollar can signal "risk-off" periods, where heightened risk aversion constrains real investment and economic activity, further impacting multinationals reliant on trade. Third, multinationals may adjust internal profit allocations in response to exchange rate shifts, with parent companies possibly limiting payments to support foreign operations during dollar appreciations. Among emerging economies, the reduction in FDI yields on the payment side suggests that parent firms in advanced economies demand less from subsidiaries during challenging economic conditions. Conversely, the absence of an impact on FDI receipts may reflect the relatively stable activity of subsidiaries in advanced economies, particularly those serving the US market. The magnitude of the exchange rate impact is notable, with coefficients for the broad dollar exchange rate ranging from −1.2 to −2.2 for FDI and equity in advanced economies. This implies a 10% dollar appreciation reduces yields by 12–22%, equivalent to a drop from 4 to 3.52% or 3.12%.

An increase in the US 10-year interest rate raises yields for fixed-income assets, such as portfolio debt, other investments, and reserves. This effect is seen in both country groups and aligns with the prominent role of the dollar in international bonds and loans. In emerging economies, higher US interest rates also increase FDI and portfolio equity liability yields, indicating that foreign investors demand higher returns on riskier assets when US Treasury yields rise. An increase in the 3-month US interest rate also raises yields, but primarily on reserves and other investments (on the payment side). It has contrasting effects on FDI yields, raising receipt yields in advanced economies while reducing payment yields in emerging markets. This could reflect banks' investments in foreign affiliates, with parents in advanced economies demanding higher returns during periods of rising interest rates. The transmission of US interest rates is substantial. A 1 percentage point

[13] As exchange rates are measured as the first difference in logs, a 10% movement of the exchange rate is read as a change of 0.1 of the explanatory variables.

[14] The coefficient is close to 1 for equity receipts, but not significant.

Table 3 Drivers of (ln) yields—emerging economies

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L.ln Yield	0.634***	0.736***	0.527***	0.690***	0.586***	0.530***	0.624***	0.660***	0.855***	0.660***	0.567***
	(0.0579)	(0.0438)	(0.0519)	(0.0595)	(0.101)	(0.0780)	(0.103)	(0.107)	(0.0626)	(0.0489)	(0.0440)
Δln $-Denomination XR (increase = $ depreciation)	0.812	−0.184	1.001	−0.602	4.783*	2.432**	1.373	1.393**	0.547	0.728*	1.348
	(0.581)	(0.253)	(1.371)	(0.401)	(2.539)	(1.127)	(1.778)	(0.496)	(1.254)	(0.411)	(1.549)
L.Δln $-Denomination XR (increase = $ depreciation)	−0.495**	−0.0733	0.888	0.394**	0.448	0.552	0.327	0.751**	−0.0295	−0.0516	−0.188
	(0.237)	(0.126)	(0.589)	(0.172)	(1.083)	(0.458)	(1.192)	(0.319)	(0.385)	(0.295)	(1.499)
Δln $ Broad Index (increase = $ appreciation)	−0.327	−1.228***	0.179	−1.956***	0.873	1.576	0.412	0.129	0.240	0.0544	1.291
	(0.463)	(0.308)	(1.147)	(0.468)	(1.499)	(1.599)	(0.891)	(0.277)	(0.548)	(0.391)	(0.795)
US 3-month interest rate	0.0767***	−0.00108	0.0526	−0.0404***	0.108*	−0.0475	0.0362	−0.0169	0.0210	0.0931***	0.168***
	(0.0146)	(0.00674)	(0.0387)	(0.0137)	(0.0536)	(0.0415)	(0.0360)	(0.0154)	(0.0272)	(0.0107)	(0.0417)
US 10-year treasury yield	−0.00643	0.0290***	0.0181	0.0544***	0.0880	0.214***	0.104**	0.0547**	0.0755**	0.0579***	0.133**
	(0.0166)	(0.00945)	(0.0321)	(0.0186)	(0.0773)	(0.0606)	(0.0403)	(0.0235)	(0.0282)	(0.0194)	(0.0539)
VIX (normalized)	−0.0267	−0.0200**	0.0767	−0.0226*	0.158	−0.0144	−0.00116	−0.0453**	−0.194***	−0.0594***	−0.0831
	(0.0250)	(0.00936)	(0.0519)	(0.0116)	(0.106)	(0.0445)	(0.0500)	(0.0171)	(0.0543)	(0.0145)	(0.0480)

Table 3 (continued)

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Global Stock Market Factor (normalized)	−0.0113	0.00270	0.110**	−0.0116	0.235*	0.124	−0.0752	0.00425	−0.0323	0.0785**	0.0419
	(0.0263)	(0.0137)	(0.0467)	(0.0233)	(0.119)	(0.0963)	(0.0523)	(0.0241)	(0.0630)	(0.0351)	(0.0484)
Bond Premium (normalized)	−0.00238	−0.0144	−0.0171	−0.0239	−0.0253	−0.0234	−0.112**	0.0405*	0.00136	0.0104	0.0296
	(0.0115)	(0.0110)	(0.0329)	(0.0165)	(0.0551)	(0.0410)	(0.0499)	(0.0223)	(0.0358)	(0.0172)	(0.0303)
Inflation(ΔlnCPI)	0.512	0.515**	−3.828	0.818***	−7.502	1.096**	0.676	0.00704	12.82***	0.147	3.478
	(1.470)	(0.206)	(2.723)	(0.277)	(5.977)	(0.454)	(2.710)	(0.231)	(3.660)	(0.181)	(2.809)
Real GDP growth	0.0324**	0.792***	0.102***	1.186***	0.0703	1.147	−0.0180	0.188	−0.0535*	0.116	−0.0212
	(0.0127)	(0.226)	(0.0339)	(0.321)	(0.0521)	(0.821)	(0.0176)	(0.285)	(0.0304)	(0.169)	(0.0186)
L. Capital Gains	−0.00334***	−0.00518***	−0.000102	−0.00358***	−0.000730	−0.00329***	−0.000292***	−0.00356***	−0.00189	−0.00663***	0.00920
	(0.000938)	(0.00123)	(0.0000931)	(0.00101)	(0.000449)	(0.000860)	(0.0000331)	(0.000954)	(0.00212)	(0.00158)	(0.0121)
Constant	−1.602***	−0.924***	−1.889***	−1.001***	−2.269***	−2.470***	−1.356***	−1.090***	−1.160***	−1.619***	−2.629***
	(0.215)	(0.126)	(0.217)	(0.168)	(0.562)	(0.482)	(0.292)	(0.313)	(0.245)	(0.205)	(0.292)
Country Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	514	517	484	512	337	370	393	451	483	482	236
Countries	22	22	22	22	19	18	20	21	21	21	14
Adjusted R^2	0.709	0.656	0.378	0.642	0.364	0.351	0.536	0.572	0.796	0.703	0.757

OLS panel estimates, errors clustered at the country level. *, **, *** indicates significance at the 10, 5 and 1% level respectively. Inflation and real GDP growth are values for the rest of the world in the Receipt regressions, and values for the country in the Payment regressions. We do not include domestic interest rates for the Payments regressions due to data availability issues in EMEs

increase in the US 10-year interest rate corresponds to a 10% rise in yields in advanced economies, such as an increase from 4 to 4.4%. The effect is smaller but still important in emerging economies. Splitting the sample to include domestic interest rates for advanced economies reveals similar yield increases for portfolio debt and other investments, particularly for long-term rates.

The global financial cycle influences yields to a moderate and unexpected extent. While we would expect tighter financial conditions generally to raise yields, a higher VIX index instead lowers them, especially for portfolio debt, other investment, and reserves. As discussed below, this result is robust to a series of robustness tests. The puzzling result could be due to our exclusion of financial centers, if these highly leveraged countries are the ones that are most sensitive to the risk appetite of international financial markets. The result may also reflect shifts in the investor base, where risk-averse investors retreat to domestic markets, leaving more risk-tolerant investors willing to accept lower yields. While other measures of the global financial cycle (the Global Stock Market Factor, excess bond premium) raise some yields, the coefficients are mostly non-significant.

Business cycle indicators play a role. GDP growth primarily affects FDI yields, particularly on the payment side, reflecting the link between economic growth and multinational profits. Higher inflation raises yields on other investment in advanced economies, suggesting that international banks demand compensation beyond short-term rate movements. In emerging economies, inflation predominantly increases payment yields on FDI and portfolio equity, as foreign investors demand higher risk premiums.

Finally, capital gains exhibit the expected negative effects, as higher asset prices raise the value of the denominator of yields. These effects are more pronounced in advanced economies, reflecting the greater reliability of indirect estimates for this group.

4.2 Robustness Analysis

We conduct a series of robustness checks, with the main message proving robust. We discuss the main points, with specifics provided in appendix tables.

The most surprising element of our results is the negative impact of the VIX index on yields, which we subject to several robustness tests. First, we examine whether the US interest rates included in our analysis adequately capture the expansionary stance of US monetary policy since 2008 by incorporating the growth rate of the Federal Reserve's monetary base into the analysis. This leaves the results broadly unchanged (Appendix Tables 8 and 9). We then test for potential nonlinear effects by interacting the main drivers with the lag of the relevant investment position (over GDP). Appendix Table 10 shows that while the VIX retains its negative effect, the interaction with the lagged position is positive and significant for portfolio debt, suggesting that countries with more exposure pay a premium when global risk is higher. While this helps explain the puzzle of the VIX negative effect, the interaction coefficient is sensitive to whether or not we include similar interactions for other variables. Finally, the results are robust to introducing a dummy variable for the 2007–2008 financial crisis (Appendix Tables 11 and 12).

Table 4 Impact of selected drivers on investment income balances (% of GDP), by country group

	Mean	Minimum	p25	Median	p75	Maximum
Advanced Economies						
VIX (1 std)	0.17	−0.19	0.10	0.20	0.27	0.56
US short-term rate (1 pp)	0.17	−0.14	0.06	0.16	0.23	0.54
US long-term rate (1 pp)	−0.05	−0.23	−0.13	−0.08	0.06	0.27
US $ Broad Index (10 %)	−0.11	−0.47	−0.17	−0.04	0.05	0.46
Emerging Economies						
VIX (1 std)	0.14	0.03	0.07	0.13	0.21	0.81
US short-term rate (1 pp)	0.28	−0.03	0.08	0.28	0.46	1.37
US long-term rate (1 pp)	−0.32	−0.93	−0.49	−0.35	−0.17	−0.09
US $ Broad Index (10 %)	0.27	0.08	0.18	0.26	0.43	1.03

Estimated impact on investment income balances for advanced (top panel) and emerging economies difference (bottom panel). Mean values are weighted by countries' GDP as a share of the country group's total GDP

We run our analysis on a sample including data since 1980, albeit with fewer variables and countries, with broadly similar results (Appendix Table 13). While the long-term interest rates then have a negative effect on yields for other investments, this is offset by a clear significant positive effect of short-term interest rates on these yields. Finally, given the inclusion of lagged dependent variables, we test for serial correlation and potential endogeneity. Using Inoue-Solo and bias-corrected Born-Breitung tests, we find no evidence of first-order serial correlation. Additional panel-corrected standard error (PCSE) and Arellano-Bond estimations (the latter to address endogeneity concerns) confirm the robustness of our results (Appendix Table 14).

5 Impact on Net Investment Income Flows

This section assesses the extent to which movements in yields translate into changes in investment income flows (in % of GDP). While our panel estimates provide us with the impact on (ln of) yields, these translate into very different economic effects depending on the size of a country's external assets and liabilities, their composition across various categories of investments, and the country's net position as a debtor or a creditor. Specifically, we focus on the key drivers (the VIX, US interest rates, and US dollar exchange rate) and combine fitted (ln) yields for each asset category

from our panel estimates of Sect. 4[15] with the actual ratio of asset and liability holdings to GDP (averaged over 2018–2022).[16]

We present the results in Table 4, with the impact of the 4 drivers in the net investment income (in percent of GDP) for advanced economies (top panel) and emerging markets (bottom panel). Each panel shows the mean value (weighted by GDP), as well as the minimum, 25th percentile, median, 75th percentile, and maximum. The moments are weighted by the share of the countries in the GDP of the group.[17]

A 1 standard deviation increase of the VIX index translates into higher net investment income among emerging economies.[18] The median effect in advanced countries is also positive, and larger than for emerging ones, but with a much broader dispersion as some countries see a negative effect. A 1 percentage point rise in the US short-term interest rate also has a positive effect on median net income, especially in emerging economies, but some countries see a deterioration. By contrast, a 1 percentage point increase in the US long-term interest rate leads to a decrease in the net income of emerging economies, while the effect is more evenly spread across positive and negative values among advanced economies. Finally, a 10% appreciation of the dollar moderately reduces the net income in advanced economies, with several seeing positive and negative effects) but raises it among emerging economies.

Overall, our analysis shows a contrasted effect across countries and variables. A puzzling aspect is that estimates often show an unbalanced pattern around zero, while we would expect the effects to add up to zero with increases in the net income in some countries being offset by decreases elsewhere. This is for instance the case for an increase in the VIX or a dollar appreciation where most effects are positive. A possible explanation for this total discrepancy in our sample is our exclusions of financial centers. These centers are characterized by highly leveraged positions, so it could be that a tightening of funding conditions through a higher VIX or a stronger dollar leads to a reduction of leverage and a decrease in the net investment income for that group. In addition, the possibility of a nonlinear impact of the VIX, discussed in our robustness analysis, would also help bring the total effect to zero.

[15] We take the coefficient estimates irrespective of whether they are statistically significant or not.

[16] More exactly, we rely on the average income flows (relative to GDP) in previous years. The income stream in an investment category k a time t is the product of the yield and the lagged position, $P_{k,t} = r_{k,t}A_{k,t-1}$. Using lower-case letters to denote income and positions scaled by GDP, and taking log, gives $\ln(p_{k,t}) = \ln(r_{k,t}) + \ln(a_{k,t-1}) - \ln(1+g_t)$ where g is the gross rate of nominal GDP. We take a log-linear approximation around a steady growth path to write the impact of a change in yields as $\hat{p}_{k,t} = p_{k,ss}\left[\ln(r_{k,t}) - \ln(r_{k,ss})\right]$, where ss denotes values along the steady growth path, and the change between the primary investment income to GDP ratio after a shock and the value it would have kept without the shock is $\widehat{p}_{k,t} = p_{k,t} - p_{k,ss}$. We compute the impact on a primary income flow by combining the fitted yield from the econometric analysis, $\ln(r_{k,t}) - \ln(r_{k,ss})$, with a reference value for the income flows relative to GDP, $p_{k,ss}$, which we take as the 2018–2022 average. The specific steps are given in the appendix.

[17] In the Appendix, Figs. 10, 11, 12, 13 present the value for each individual country.

[18] A value of 0.2 indicates 0.2% of GDP.

Table 5 Impact of selected drivers on gross and net income flows in 2023 compared to 2021, % of GDP

	Gross investment income flows											
	Advanced economies						Emerging economies					
	Mean	Min	p25	Median	p75	Max	Mean	Min	p25	Median	p75	Max
US interest rates	2.31	1.12	1.78	2.48	3.18	4.58	1.09	0.35	0.59	0.92	1.68	2.92
Domestic interest rate	0.02	0.19	0.31	0.43	0.59	0.78						
Dollar exchange rate	−0.71	−1.31	−1.04	−0.70	−0.40	−0.15	−0.14	−0.52	−0.28	−0.07	0.00	0.19
Inflation	−0.07	−0.92	−0.22	0.02	0.35	1.03	0.06	−0.29	0.01	0.08	0.33	1.17
VIX (normalized)	−0.04	−0.07	−0.06	−0.04	−0.02	0.00	−0.02	−0.10	−0.04	−0.02	−0.01	−0.01
Total	1.70	0.98	1.55	2.37	3.03	4.50	0.99	0.26	0.77	1.01	1.40	2.97
	Investment income balance											
	Advanced economies						Emerging economies					
	Mean	Min	p25	Median	p75	Max	Mean	Min	p25	Median	p75	Max
US interest rates	0.72	−0.49	0.25	0.66	1.36	2.17	0.58	−0.84	0.07	0.57	1.17	4.28
Domestic interest rate	−0.02	−0.78	−0.59	−0.43	−0.31	−0.19						
Dollar exchange rate	0.00	−0.38	−0.09	−0.05	0.02	0.06	0.00	−0.32	−0.15	−0.01	0.03	0.16
Inflation	−0.30	−1.21	−0.69	−0.38	−0.12	0.44	−0.23	−3.30	−0.54	−0.10	−0.01	0.35
VIX (normalized)	−0.04	−0.10	−0.07	−0.05	−0.03	−0.02	0.00	−0.06	0.00	0.00	0.01	0.02
Total	0.17	−1.21	−0.69	−0.15	0.33	1.06	0.34	−1.43	0.06	0.22	0.70	2.61

Estimated impact on the sum of investment income flows on assets and liabilities (top panel) and their difference (bottom panel) for 2023 using 2021 as the base year. Mean values are weighted by countries' GDP as a share of the country group's total GDP. US interest rates include the estimated effect of short and long-term US interest rates

6 Investment Income During the Recent Tightening Cycle

6.1 Estimated Impact on Income Flows

We complement our analysis of Sect. 5 by assessing how the evolution of the main drivers since 2021 affected income flows. The 2021–2023 period was characterized by a large increase in inflation that translated into a sizable and rapid increase of interest rates (both short- and long-term), and a strengthening of the dollar. Given the paths of the various drivers, what do our estimates predict (in sample) for the investment income flows up to 2023, and how do these compare to the actual evolution of investment income?[19]

We first compute the predicted changes in the ratio of investment income to GDP since 2021 from the observed changes in (a) US interest rates (short- and long-term), (b) domestic interest rates (for advanced economies), (c) the broad dollar exchange rate, (d) inflation, (e) the VIX index, and (f) the total impact of these drivers. The results are shown in Table 5, structured in four panels that present values for advanced economies (left panels), emerging economies (right panels), gross investment income flows (sum of receipts and payments, top panels), and net investment flows (bottom panels). Each of the panel indicates the mean value (weighted by GDP), as well as the minimum, 25th percentile, median, 75th percentile, and maximum.[20]

The increase in US interest rates led to a sizable increase in gross income flows, especially in advanced economies (median increase of 2.48% vs, 0.92% in emerging countries). The other moments also show a larger increase in advanced economies, reflecting the larger extent of financial integration for that group. Higher domestic interest rates also led to higher gross income flows in advanced countries, albeit with a smaller effect than US rates. Turning to net investment income flows, the increase in US rates raised the balance, with a similar median for the two country groups, but with more extreme values in emerging economies. Advanced economies saw their income balance decrease in response to higher domestic rates.

The broad appreciation of the dollar reduced gross investment income flows, particularly in advanced economies (the top quartile of emerging countries shows an increase). In net terms, the median effect is a moderate decrease, but with a sizable left tail as decreases are larger than increases. The increase in inflation had little median effect on gross income flows, but shows a right tail in emerging economies with large positive values. Inflation reduced net income flows in nearly all countries, with the effect being of a larger magnitude among advanced economies. As the VIX has not moved much since 2021, and much less than in earlier crisis episodes, it leads to moderate decreases in gross and net flows.

[19] Our choice of an in-sample forecast, relying upon the panel regressions computed on 1999–2023 data, is motivated by the need to include as many cycles of the drivers as possible. One could undertake an out of sample forecast using estimates from a 1999–2021 panel. The estimates would however be dominated by the downward trends of interest rates and inflation, except for a brief inflation increase in 2008. While regressions over the shorter sample show that results are broadly similar, some of the coefficients on inflation are sensitive.

[20] Figures 14, 15, 16, 17, 18 in the appendix show the pattern of the effects for each individual country.

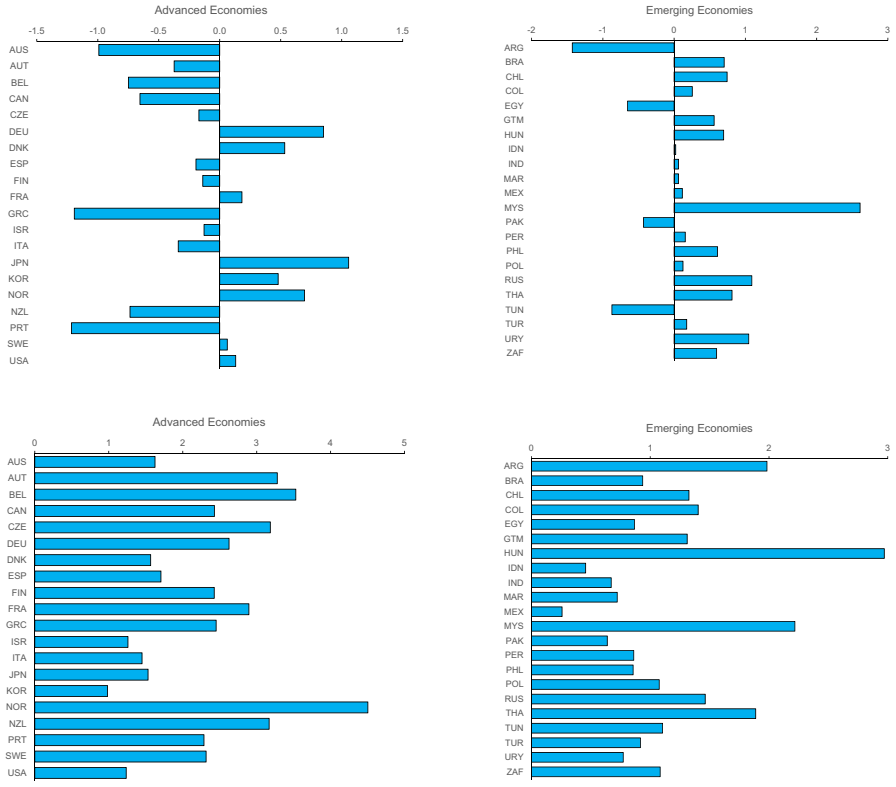

Fig. 5 Impact of combined scenarios in 2023 in relation to 2021, % of GDP
Note: Impact of the actual and expected changes of (US and domestic) interest rates, US dollar exchange rate, and world and domestic inflation since 2021 on the gross (top panel) and net (bottom panel) primary investment income (% of GDP), in 2023

The last row of each panel shows the impact of all these drivers taken together. We complement it by showing the distribution across the various countries in Fig. 5 for gross and net income flows (top and bottom panel, respectively). Gross income flows increased in both country groups, but more so among advanced economies (between 1 and 4.5% of GDP, with a median of 2.37%) than in emerging ones (between 0.26 and 2.97%, with a median at 1.01%), reflecting the larger magnitudes of external assets and liabilities in advanced countries.[21]

Turning to the investment income balance, we see a small deterioration for the median advanced economy, with a moderate increase for the median emerging one. Several advanced countries experienced a material deterioration, with the 25th percentile at −0.69%. By contrast, the change in emerging economies is more tilted toward an improvement, with the 75th percentile at +0.70%. The sharp movements in interest rates, exchange rates, and inflation since 2021 have therefore not led to a

[21] The bottom-left panel of Fig. 12 shows that the effect for the United States is moderate.

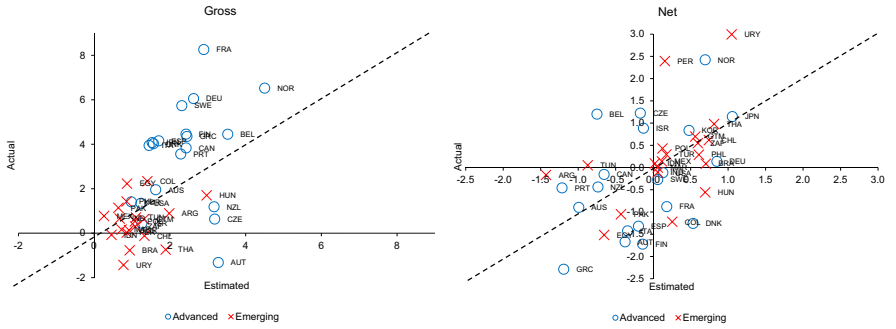

Fig. 6 Fitted and actual values of gross and net income flows in 2023
Note: Change in the gross and net investment income flows between 2021 and 2023 (% of GDP): estimated change based on interest rates, US dollar exchange rate, and inflation (horizontal axis), and actual change (vertical axis). Russia and Malaysia have been dropped as they are significant outliers. 45-degree line dotted. Regressing the actual on estimated changes gives the following coefficients (p-val and R2 in parenthesis): gross flows, AE 1.38 (0.00; 0.69), EME 0.44 (0.02; 0.27), net flows, AE 0.87 (0.03; 0.22), EME 0.86 (0.02; 0.26)

worsening of emerging economies' net investment income, quite to the contrary. The deterioration is instead seen among several advanced economies.

Figure 6 contrasts our estimates of the 2021–2023 change of income flows (horizontal axis) with the actual values (vertical axis), doing so for gross flows (left panel) and net flows (right panel). While our estimates rely only on a selected set of drivers, they correlate well with actual values in advanced economies (circled dots), especially for gross flows (coefficient of 1.38 when regressing actual values on estimated ones, with a p value of 0.00 and an R^2 of 0.69), and—with more dispersion—for net flows (coefficient 0.87, with a p value of 0.03 and an R^2 of 0.22). Turning to emerging economies (crossed dots), the fit is less good for gross flows (coefficient 0.44, with a p value of 0.02 and an R^2 of 0.27), but similar to advanced countries in terms of net flows (coefficient 0.86, with a p value of 0.02 and an R^2 of 0.26).[22]

6.2 What Lessons Can We Draw for Policy?

While our analysis is far from being a final word on the drivers of primary investment income flows, it points to a couple of lessons from the turmoil seen since 2021. First, the development over the last two years has translated into a sizable increase in investment income flows overall, which is to be expected in a period of rising interest rates.

[22] Russia and Malaysia being significant outliers, they are excluded from the exercise.

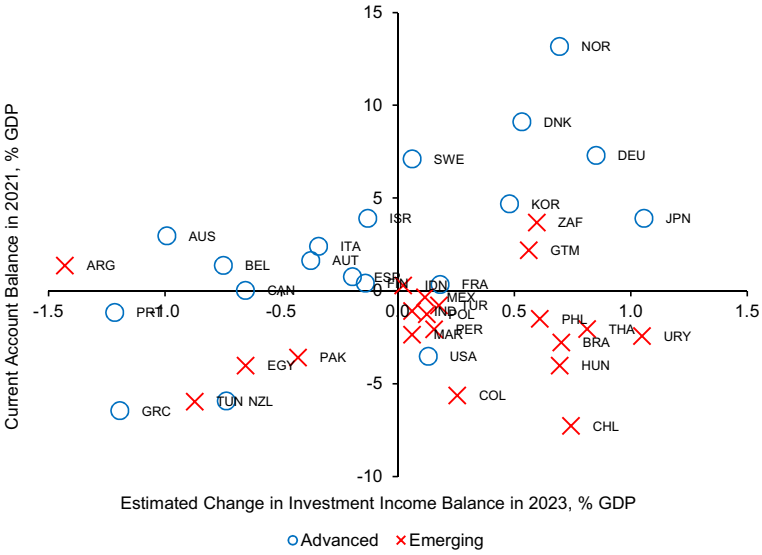

Fig. 7 Fitted change in Investment Income vs Current Account in 2021, % of GDP
Note: Current account balance in 2021 (% of GDP) on the vertical axis, estimated change 2021-2023 in net investment income (% of GDP) on the horizontal axis. Russia and Malaysia have been dropped as they are significant outliers. Regressing the current account on the fitted change (and a constant) gives the following coefficient (p-val and R2 in parenthesis): AE 4.87 (0.00, 0.43); EME -0.01 (0.99; 0.00)

Second, the drivers have tended to deteriorate the investment income balance since 2021 for several advanced economies, but tended to improve that balance for several emerging ones, with sizable heterogeneity in each country group. One should therefore not assume that a period of high inflation and interest rates, even occurring globally, has a homogeneous impact across countries within a given group. Instead, the specific composition of external assets and liabilities plays an important role.

Third, while we would expect times of rapidly increasing interest rates to put emerging countries under pressure, this has not proven to be the case, at least in terms of changes in the investment income balance.

Fourth, an important question is whether countries that experienced a deterioration of their income balance were in a position to absorb it or not. More specifically, if countries experiencing a deterioration are also countries that started with a current account deficit, this would be of particular concern, as the changes in the income balance would then act as amplifiers. Our results show that this is the case for advanced economies, but not emerging ones. Specifically, Figure 7 contrasts the 2021 current account balance (% of GDP, vertical scale) against our estimated 2021–2023 change in the income balance (horizontal scale). There is a positive relation for advanced economies (circled dots): regressing the current account on a constant and the estimated income balance change gives a coefficient equal to 4.88, with a p value of 0.00 and an R^2 of 0.43. By contrast, there is no relation for emerging economies (crossed dots), where the coefficient is essentially zero (-0.01) and not significant (p value of 0.99 and an R^2 of 0.0).

7 Conclusion

Financial globalization has opened the door to a growing role of dividend and interest flows in the balance of payment. While the downward trend of interest rates until 2021 held income streams back, this has come to an end. In this paper, we contribute to the understanding of investment income drivers by documenting the pattern of the yields that countries earn and pay on their external financial positions, assessing the drivers through a panel analysis, and combining the estimated yields with the structure of external positions to compute the impact on gross and net investment income flows. We find that the pre-2021 decrease in yields was driven by categories where interest rates are particularly important. The econometric analysis shows that movements in exchange rates, short- and long-term interest rates, and macroeconomic conditions matter, albeit in a highly heterogeneous way across investment categories. Applying our estimates to the movements of drivers since 2021, we find that they have raised gross investment income flows, especially in advanced economies. In terms of the income balance, while emerging economies tended to see an improvement, the opposite is seen among advanced economies, especially for countries with current account deficits in 2021.

What are the implications of our analysis looking forward? While inflation and short-term interest rates have come down, they remain high, and so do long-term interest rates. Investment income flows are therefore unlikely to go back to their low values of the late 2010's, and can be expected to play a larger role in the current account than in the past (Appendix Figs. 21, 22, 23, 24). A challenging dimension in assessing the sensitivity of investment income flows to various shocks for a specific country is the sizable extent of heterogeneity. A given driver, such as the interest rate, often impacts the yields for both receipts and payments. Assessing the impact on the current account then requires carefully taking into account the size and composition of a country's balance sheet. A global shock then has very contrasted impacts on various countries' current accounts, even though it affects the various yields identically across countries.

Our analysis can be extended in several directions. The econometric analysis can be expanded, for instance looking in more detail at the puzzling impact of the VIX index. Our robustness section points to the possible presence of nonlinearities in the effect, and future work can assess how countries' characteristics can affect our panel estimates. The impact of the exchange rate points to the need for additional data on the currency composition of countries' assets and liabilities. Another avenue of work is to model the joint movements in interest rate, exchange rate, stock prices, and other drivers to compute a broader view of the impact of specific underlying shocks through these various channels. As our analysis excludes financial centers, the impact of various drivers on net income flows unsurprisingly does not add up to zero. An avenue of future research is to include these centers in the analysis, taking into account of the different sensitivity of their yields to the various drivers, and include the global adding-up constraints of surpluses and deficits to conduct a joint estimation across countries.

Appendix 1: Framework for the Analysis of Yields

General Setting

The primary income flows are generated by an asset position denominated in a currency basket D. As flows and assets are measured in dollars, we denote the exchange rate between the dollar and the currency of denomination by $S^{\$,D}$ with an increase representing a depreciation of the dollar. The primary income flows in the denomination currency reflect the effective net return in that currency $r^{\text{eff},D}$, so we write $P_t^D = r_t^{\text{eff},D} A_{t-1}^D$ where A^D is the asset position expressed in the currency of denomination. The dollar flows are written as $P_t^{\$} = r_t^{\text{eff},D}\left(S_t^{\$/D}/S_{t-1}^{\$/D}\right)A_{t-1}^{\$} = r_t^{\text{eff},G} A_{t-1}^{\$}$. The portfolio held by the country consists of fixed income assets, indexed by F, and assets with variable yield, indexed by V. A share α^F of fixed income assets matures in each period. The gross capital flows in period t consist of a purchase of assets replacing the maturing ones, and net capital flows $K_t^{\text{net},\$}$ (measured in dollar).

Income Flows and Yields

The income flow associated with the variable-yield asset in period t is simply the yield $r_t^{\text{new},V,D}$ on the market value at the end of the previous period, $A_{t-1}^{V,D}$. The change in the asset position in the currency of denomination reflects net capital flows and capital gains from changes in asset prices in the currency of denomination, $Q_t^{V,D}$:

$$A_t^{V,D} = \frac{Q_t^{V,D}}{Q_{t-1}^{V,D}} A_{t-1}^{V,D} + K_t^{\text{net},V,D}; P_t^{V,D} = r_t^{\text{new},V,D} A_{t-1}^{V,D}$$

Turning to fixed-income assets, we distinguish between the face value, $\widetilde{A}_t^{F,D}$, on which the fixed yield applies, and the market value $A_t^{F,D} = Q_t^{F,D}\widetilde{A}_t^{F,D}$ of the holding, in the currency of denomination. At the beginning of period t, a share $1-\alpha^F$ of fixed income assets has not matured and delivers the same yield (on the face value in the currency of denomination) in period t than in period *t-1*, denominated as $r_{t-1}^{\text{eff},F,D}$. The income flows on these assets in period t is the same as in the previous period. The newly purchased assets deliver a new yield $r_t^{\text{new},F,D}$ in period t. The value of the asset position at the end of period t is the part of the previous position that has not matured, valuated at the new asset price, and the gross capital flows equal to the sum of net flows and replacement of the matured asset, $K_t^{\text{gross},F,D} = K_t^{\text{net},F,D} + \alpha^F Q_t^{F,D}\widetilde{A}_{t-1}^{F,D}$:

$$A_t^{F,D} = \left(1-\alpha^F\right) Q_t^{F,D} \tilde{A}_{t-1}^{F,D} + K_t^{\text{gross},F,D}$$

$$A_t^{F,D} = \frac{Q_t^{F,D}}{Q_{t-1}^{F,D}} A_{t-1}^{F,D} + K_t^{\text{net},F,D}$$

In period t, the assets purchased in the previous period, $K_{t-1}^{\text{gross},F,D}$, earn a new yield $\tilde{r}_t^{\text{new},F,D}$ on the face value. The assets that have not matured in period *t-1* earn the old yield $\tilde{r}_{t-1}^{\text{eff},F,D}$ on the face value $\left(1-\alpha^F\right)\tilde{A}_{t-2}^{F,D}$. Using the fact that $P_{t-1}^{F,D}=\tilde{r}_{t-1}^{\text{eff},F,D}\tilde{A}_{t-2}^{F,D}$, the income flow is:

$$P_t^{F,D}=\left(1-\alpha^F\right)\tilde{r}_{t-1}^{\text{eff},F,D}\tilde{A}_{t-2}^{F,D}+\tilde{r}_t^{\text{new},F,D}\left(\frac{K_{t-1}^{\text{net},F,D}}{Q_{t-1}^{F,D}}+\alpha^F\tilde{A}_{t-2}^{F,D}\right)$$

$$P_t^{F,D}=\left(1-\alpha^F\right)P_{t-1}^{F,D}+\frac{\tilde{r}_t^{\text{new},F,D}}{Q_{t-1}^{F,D}}\left(K_{t-1}^{\text{net},F,D}+\alpha^F\frac{Q_{t-1}^{F,D}}{Q_{t-2}^{F,D}}A_{t-2}^{F,D}\right)$$

$$P_t^{F,D}=\left(1-\alpha^F\right)P_{t-1}^{F,D}+\frac{\tilde{r}_t^{\text{new},F,D}}{Q_{t-1}^{F,D}}\left(K_{t-1}^{\text{net},F,D}+\alpha^F\left(A_{t-1}^{F,D}-K_{t-1}^{\text{net},F,D}\right)\right)$$

$$P_t^{F,D}=\left(1-\alpha^F\right)P_{t-1}^{F,D}+r_t^{\text{new},F,D}\left(\left(1-\alpha^F\right)K_{t-1}^{\text{net},F,D}+\alpha^FA_{t-1}^{F,D}\right)$$

where $K_{t-1}^{\text{net},F,D}$ denotes the net capital flows. The expression for variables yields asset is similar, setting $\alpha^F=1$.

The overall primary income ($P_t^D=P_t^{F,D}+P_t^{V,D}$) is then, in currencies of denomination and in dollar:

$$P_t^D=\left(1-\alpha^F\right)P_{t-1}^{F,D}+r_t^{\text{new},F,D}\left[\left(1-\alpha^F\right)K_{t-1}^{\text{net},F,D}+\alpha^FA_{t-1}^{F,D}\right]+r_t^{\text{new},V,D}A_{t-1}^{V,D}$$

$$P_t^{\$}=\frac{S_t^{\$,D}}{S_{t-1}^{\$,D}}\left[\left(1-\alpha^F\right)P_{t-1}^{F,\$}+r_t^{\text{new},F,D}\left[\left(1-\alpha^F\right)K_{t-1}^{\text{net},F,\$}+\alpha^FA_{t-1}^{F,\$}\right]+r_t^{\text{new},V,D}A_{t-1}^{V,\$}\right]$$

The yield on the overall asset position, $r_t^{\$}=P_t^{\$}/A_{t-1}^{\$}$, is written as:

$$\begin{aligned}r_t^{\$}=&\frac{S_t^{\$,D}}{S_{t-1}^{\$,D}}\frac{A_{t-1}^{F,\$}}{A_{t-1}^{\$}}\left[\left(1-\alpha^F\right)\frac{A_{t-2}^{F,\$}}{A_{t-1}^{F,\$}}r_{t-1}^{F,\$}+\left(\alpha^F+\left(1-\alpha^F\right)\frac{K_{t-1}^{\text{net},F,\$}}{A_{t-1}^{F,\$}}\right)r_t^{\text{new},F,D}\right]\\&+\frac{S_t^{\$,D}}{S_{t-1}^{\$,D}}\frac{A_{t-1}^{V,\$}}{A_{t-1}^{\$}}r_t^{\text{new},V,D}\end{aligned}\tag{2}$$

Approximation

We take a linear approximation around a steady growth path, where asset prices and exchange rates are constant, all variables grow at a rate ρ_{ss}. Fixed income assets represent a share δ_{ss}^F of the overall assets, and all yields are equal to r_{ss}. Asset holdings grow through net capital flows:

$$K_{ss,t}^{\text{net},F,D}=\rho_{ss}A_{ss,t-1}^{F,D};K_{ss,t}^{\text{net},V,D}=\rho_{ss}A_{ss,t-1}^{V,D}$$

$$K_{ss,t}^{\text{net},F,\$} = \rho_{ss} A_{ss,t-1}^{F,\$}; K_{ss,t}^{\text{net},V,\$} = \rho_{ss} A_{ss,t-1}^{V,\$}$$

Hatted variables denote log deviations from the growth path, while hatted yields are deviations in absolute value.[23] The linear approximation of income flows, measured in dollars, on variable yield assets, fixed yield assets and overall assets gives:

$$\begin{aligned}
\hat{P}_t^{V,\$} &= \left(\hat{S}_t^{\$/D} - \hat{S}_{t-1}^{\$/D}\right) + \frac{\hat{r}_t^{\text{new},V,D}}{r_{ss}} \hat{A}_{t-1}^{V,\$} \\
\hat{P}_t^{F,\$} &= \left(\hat{S}_t^{\$/D} - \hat{S}_{t-1}^{\$/D}\right) + \frac{1-\alpha^F}{1+\rho_{ss}} \hat{P}_{t-1}^{F,\$} + \frac{\left(1-\alpha^F\right)\rho_{ss}}{1+\rho_{ss}} \hat{K}_{t-1}^{\text{net},F,\$} \\
&\quad + \left(1 - \frac{1-\alpha^F}{1+\rho_{ss}}\right) \frac{\hat{r}_t^{\text{new},F,\$}}{\rho_{ss}} + \alpha^F \hat{A}_{t-1}^{F,\$} \\
\hat{P}_t^{F,\$} &= \left(\hat{S}_t^{\$/D} - \hat{S}_{t-1}^{\$/D}\right) + \frac{\left(1-\alpha^F\right)\delta_{ss}^F}{1+\rho_{ss}} \hat{P}_{t-1}^{F,\$} + \frac{\left(1-\alpha^F\right)\delta_{ss}^F \rho_{ss}}{1+\rho_{ss}} \hat{K}_{t-1}^{\text{net},F,\$} \\
&\quad + \left(1 - \frac{1-\alpha^F}{1+\rho_{ss}}\right) \delta_{ss}^F \frac{\hat{r}_t^{\text{new},F,D}}{r_{ss}} + \left(1-\delta_{ss}^F\right) \frac{\hat{r}_t^{\text{new},NF,D}}{r_{ss}} \\
&\quad + \alpha^F \delta_{ss}^F \hat{A}_{t-1}^{F,\$} + \left(1-\delta_{ss}^F\right) \hat{A}_{t-1}^{V,\$}
\end{aligned}$$

The yield in dollars is given by $\hat{r}_t^{\text{eff},\$} = r_{ss}\left(\hat{P}_t^{\$} - \hat{A}_{t-1}^{\$}\right)$. The linear approximation of (2) is then:

$$\begin{aligned}
\frac{\hat{r}_t^{\$}}{r_{ss}} &= \left(\hat{S}_t^{\$/D} - \hat{S}_{t-1}^{\$/D}\right) + \frac{\left(1-\alpha^F\right)\delta_{ss}^F}{1+\rho_{ss}} \left(\frac{\hat{r}_{t-1}^{F,\$}}{r_{ss}} + \hat{A}_{t-2}^{F,\$}\right) - \left(1-\alpha^F\right)\delta_{ss}^F \hat{A}_{t-1}^{F,\$} \\
&\quad + \frac{\left(1-\alpha^F\right)\delta_{ss}^F \rho_{ss}}{1+\rho_{ss}} \hat{K}_{t-1}^{\text{net},F,\$} + \left(1 - \frac{1-\alpha^F}{1+\rho_{ss}}\right) \delta_{ss}^F \frac{\hat{r}_t^{\text{new},F,D}}{\rho_{ss}} + \left(1-\delta_{ss}^F\right) \frac{\hat{r}_t^{\text{new},V,D}}{r_{ss}} \\
&\quad + \delta_{ss}^F \left(\hat{A}_{t-1}^{F,\$} - \hat{A}_{t-1}^{\$}\right) + \left(1-\delta_{ss}^F\right)\left(\hat{A}_{t-1}^{V,\$} - \hat{A}_{t-1}^{\$}\right)
\end{aligned}$$

where $\hat{r}_t^{\$}/r_{ss}$ indicates the effect on the yield in percent, and not percentage points.[24] By definition $\hat{A}_{t-1}^{\$} = \delta_{ss}^F \hat{A}_{t-1}^{F,\$} + \left(1-\delta_{ss}^F\right)\hat{A}_{t-1}^{V,\$}$. The dynamics of the asset position in fixed income assets is approximated as $\left(1+\rho_{ss}\right)\hat{A}_{t-1}^{F,\$} = \left(\hat{S}_{t-1}^{\$/D} - \hat{S}_{t-2}^{\$/D}\right) + \left(\hat{Q}_{t-1}^{F/D} - \hat{Q}_{t-2}^{F/D}\right) + \hat{A}_{t-2}^{F,\$} + \rho_{ss}\hat{K}_{t-1}^{\text{net},F,\$}$. Using these results, we obtain:

[23] Specifically, $\hat{A}_t^{\$} = \left(A_t^{\$} - A_{ss,t}^{\$}\right)/A_{ss,t}^{\$}$, $\hat{S}_t^{\$/D} = \left(S_t^{\$/D} - S_{ss}^{\$/D}\right)/S_{ss}^{\$/D}$, $\left(\hat{K}_{t-1}^{net,F,\$} = K_{t-1}^{net,F,\$} - \frac{\rho_{ss}}{1+\rho_{ss}} A_{ss,t-1}^{F,\$}\right)/\left(\frac{\rho_{ss}}{1+\rho_{ss}} A_{ss,t-1}^{F,\$}\right)$, $\hat{r}_t^D = r_t^D - r_{ss}$, $\hat{Q}_t^{F,D} = \left(Q_t^{F,D} - Q_{ss}^{F,D}\right)/Q_{ss}^{F,D}$ where the *ss* subscript denotes the value of variables along the steady growth path.

[24] If for instance the steady state yield is 4% and a variable moves the yield to 4.5%, we have $\hat{r}_t^{\$} = 0.005$ (0.5 percentage points) and $\hat{r}_t^{\$}/r_{ss} = 0.005/0.04 = 0.125$ (12.5 percent of steady-state value)

$$\begin{aligned}\frac{\hat{r}_t^{\$}}{r_{ss}} &= \left(\hat{S}_t^{\$/D} - \hat{S}_{t-1}^{\$/D}\right) + \frac{\left(1-\alpha^F\right)\delta_{ss}^F}{1+\rho_{ss}}\frac{\hat{r}_{t-1}^{F,\$}}{r_{ss}} \\ &+ \left(1 - \frac{1-\alpha^F}{1+\rho_{ss}}\right)\delta_{ss}^F\frac{\hat{r}_t^{\text{new},F,D}}{r_{ss}} + \left(1-\delta_{ss}^F\right)\frac{\hat{r}_t^{\text{new},V,D}}{r_{ss}} \\ &- \frac{\left(1-\alpha^F\right)\delta_{ss}^F}{1+\rho_{ss}}\left(\hat{S}_{t-1}^{\$/D} - \hat{S}_{t-2}^{\$/D} + \hat{Q}_{t-1}^{F/D} - \hat{Q}_{t-2}^{F/D}\right)\end{aligned} \tag{3}$$

(3) shows that the yield in the currency of measurement is affected by several factors. First is a valuation effect reflecting the movement of the exchange rate between the currency of measurement (the dollar) and the currency in which the assets are denominated, with a dollar depreciation raising the primary income. Second, as shown by the last block in the first row, the yield is affected by the lagged yield to the extent that there are long maturity fixed income assets. The second row presents the impact of changing yields on specific assets in the currency of denomination. This applies to variable yield assets, as well as fixed income assets to the extent that their maturity is short (α^F is high). Finally, the lagged exchange rate between the currency of denomination and the dollar enters, as well as the lag of capital gains on fixed income assets in the currency of denomination, to the extent that there are long maturity fixed income assets. The presence of capital gains is linked to fixed assets that do not yet mature, and for which the market value changes relative to the face value, the latter being the one which the fixed yield applies to.

Appendix 2: Impact on Income Flows

General Relations

The income flow for a category k (FDI, portfolio equity, portfolio debt, other, reserves) expressed in dollar is given by $P_{k,t}^{\$} = r_{k,t}^{\$} A_{k,t-1}^{\$}$. Scaling by GDP (measured in dollar), we write $p_{k,t}^{\$} = r_{k,t}^{\$} a_{k,t-1}^{\$}\left(Y_{k,t-1}^{\$}/Y_{k,t}^{\$}\right)$ which is approximated as:

$$\hat{p}_{k,t}^{\$} = -p_{k,ss}^{\$}\left(\hat{Y}_t^{\$} - \hat{Y}_{t-1}^{\$}\right) + p_{k,ss}^{\$}\frac{\hat{r}_t^{\$}}{r_{ss}} + \frac{r_{k,ss}}{1+g_{ss}}\hat{a}_{k,t-1}^{\$} \tag{4}$$

where r_{ss} and g_{ss} are the rate of return and the GDP growth rate in the steady state, and lower-case letters denote ratios to GDP.[25] To compute the impact of movements in the exchange rate between the dollar and the currency of denomination on the last term, notice that (assuming that GDP and position in the currency of denomination grow along the steady growth path):

[25] Specifically, $\hat{Y}_t^{\$} = \left(Y_t^{\$} - Y_{ss,t}^{\$}\right)/Y_{ss,t}^{\$}$, $\hat{p}_{k,t}^{\$} = p_{k,t}^{\$} - p_{k,ss}^{\$}$, and $\hat{a}_{k,t}^{\$} = a_{k,t}^{\$} - a_{k,ss}^{\$}$.

$$\frac{A^{\$}_{t+h}}{A^{\$}_{t-1}} = \frac{S^{\$/D}_{t+h}}{S^{\$/D}_{t-1}} \frac{A^{D}_{ss,t+h}}{A^{D}_{ss,t-1}}$$
$$\frac{a^{\$}_{t+h}}{a^{\$}_{t-1}} = \frac{S^{\$/D}_{t+h}}{S^{\$/D}_{t-1}} \frac{A^{D}_{ss,t+h}}{A^{D}_{ss,t-1}} \frac{Y^{\$}_{ss,t-1}}{Y^{\$}_{ss,t+h}}$$
$$\frac{a^{\$}_{t+h}}{a^{\$}_{t-1}} = \frac{S^{\$/D}_{t+h}}{S^{\$/D}_{t-1}}$$

which implies $a^{\$}_{t+h} = a^{\$}_{ss}\left(\widehat{S}^{\$/D}_{t+h} - \widehat{S}^{\$/D}_{t-1}\right) + a^{\$}_{t-1}$ (for $h \geq 0$), hence $\frac{r^{\$}_{ss}}{1+g_{ss}}\widehat{a}^{\$}_{t+h} = p^{X\$}_{ss}\left(\widehat{S}^{\$/D}_{t+h} - \widehat{S}^{\$/D}_{t-1}\right) + \frac{r^{\$}_{ss}}{1+g_{ss}}\widehat{a}^{\$}_{t-1}$.

Starting from a period $t-1$, we compute the impact of a shock at time t through the yield $\widehat{r}^{\$}_{t}/r_{ss}$ on the income flows $\widehat{p}^{\$}_{k,t}$ in terms of percentage point to GDP.[26] We proxy $p^{\$}_{k,ss}$ by the value of primary income to GDP for the asset category, taking the average over several years. The effect on income flows (in percentage points of GDP) through the yield in period $t+h$ is then $\widehat{p}^{\$}_{k,t+h} = p^{\$}_{k,ss}\left(\widehat{r}^{\$}_{k,t+h}/r_{ss}\right)$ for $h \geq 0$, with $\widehat{r}^{\$}_{k,t+h}/r_{ss}$ also including the effects through the lag of the yield. When looking at the impact of movements on the exchange rate, we also take account of the impact through the dollar value of the asset holdings as outlined above.

The impact on overall income flows is obtained by summing up across categories k of investments. In addition to the impact on yields, movements in the exchange rate between the dollar and the currency of denomination affect the dollar value of assets, $\widehat{a}^{\$}_{k}$.

Effect of the VIX Index

The impact of a VIX change $\widehat{Vix}_t = Vix_t - Vix_{t-1}$ between period t-1 and t ($\widehat{Vix}_t = 1$ indicates a 1 standard deviation increase) on the dollar yield in an asset category k is obtained from the panel regression (focusing on the receipt without loss of generality):

$$\left[\frac{\widehat{r}^{\$}_{t}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-Vix,k} = \delta^{\text{receipt}}_{\text{VIX},k}\left(\widehat{Vix}_t\right)$$

where $\delta^{\text{receipt}}_{\text{VIX},k}$ is the coefficient on the VIX. This fitted value is the same for all countries. We compute a country-specific fit for the income to GDP for category k in country c following (4):

[26] For simplicity, we abstract from the impact on GDP growth, setting the term $\widehat{Y}^{\$}_{t} - \widehat{Y}^{\$}_{t-1}$ to zero.

$$\left[\widehat{p}_t^{\$}\right]^{\text{receipt}}_{\text{FIT}-Vix,k,c} = \overline{p}^{\$,\text{asset}}_{k,c}\left[\frac{\widehat{r}_t^{\$}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-Vix,k} = \overline{p}^{\$,\text{asset}}_{k,c}\delta^{\text{receipt}}_{\text{VIX},k}\left(\widehat{Vix}_t\right)$$

where $\overline{p}^{\$,\text{asset}}_{k,c}$ is the reference value of income flows to GDP for category k in country c, proxying for the steady-state value above. These values are then summed across categories to obtain the overall primary income receipts, relative to GDP (in terms of change from period $t-1$):

$$\left[PI_t/Y_t\right]^{\text{receipt}}_{\text{FIT}-Vix,c} = \sum_k \overline{p}^{\$,\text{asset}}_{k,c}\delta^{\text{receipt}}_{\text{VIX},k}\left(\widehat{Vix}_t\right)$$

Similarly, the overall payments on liabilities are:

$$\left[PI_t/Y_t\right]^{\text{payment}}_{\text{FIT}-Vix,c} = \sum_k \overline{p}^{\$,\text{liability}}_{k,c}\delta^{\text{payment}}_{\text{VIX},k}\left(\widehat{Vix}_t\right)$$

The primary income balance is computed as $\left[\text{NPI}_t/Y_t\right]_{\text{FIT}-Vix,c} = \left[\text{PI}_t/Y_t\right]^{\text{receipt}}_{\text{FIT}-Vix,c} - \left[\text{PI}_t/Y_t\right]^{\text{payment}}_{\text{FIT}-Vix,c}$.

Effect of US Interest Rates

Turning to the effect of US interest rates, we consider a change of $\widehat{\text{USrate}}_{t+h} = \text{USrate}_{t+h} - \text{USrate}_{t-1}$ for $h \geq 0$ ($\Delta\text{USrate}_{t+1} = 1$ indicates a 1 percentage point increase).

Start with the immediate impact of an increase in the US interest rate. The effect on category k yield is:

$$\left[\frac{\widehat{r}_t^{\$}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-\text{USrate},k} = \delta^{\text{receipt}}_{\text{USrate},k}\left(\widehat{\text{USrate}}_t\right)$$

The impact on primary income flows to GDP is computed as for the Vix:

$$\left[\text{PI}_t/Y_t\right]^{\text{receipt}}_{\text{FIT}-\text{USrate},c} = \sum_k \overline{p}^{\$,\text{asset}}_{k,c}\delta^{\text{receipt}}_{\text{USrate},k}\left(\widehat{\text{USrate}}_t\right)$$

$$\left[\text{PI}_t/Y_t\right]^{\text{payment}}_{\text{FIT}-\text{USrate},c} = \sum_k \overline{p}^{\$,\text{liability}}_{k,c}\delta^{\text{payment}}_{\text{USrate},k}\left(\widehat{\text{USrate}}_t\right)$$

We now turn to the impact at a future period, which is used in our scenario analysis. $\widehat{\text{USrate}}_{t+h}$ is expressed relative to the pre-shock period $t-1$. The impact reflects the persistence through the lagged yield:

$$\left[\frac{\widehat{r}^{\$}_{t+h}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-\text{USrate},k} = \delta^{\text{receipt}}_{\text{USrate},k}\left(\widehat{\text{USrate}}_{t+h}\right) + \beta_{\text{lag}}\left[\frac{\widehat{r}^{\$}_{t+h-1}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-\text{USrate},k}$$

The impact on primary income flows to GDP, relative to their value in period *t-1*, is computed as:

$$\left[\mathrm{PI}_{t+h}/Y_{t+h}\right]^{\text{receipt}}_{\text{FIT-USrate},c} = \sum_k \overline{p}^{\$,\text{asset}}_{k,c}\left[\delta^{\text{receipt}}_{\text{USrate},k}\left(\widehat{\text{USrate}}_{t+h}\right) + \beta_{\text{lag}}\left[\frac{\hat{r}^{\$}_{t+h-1}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT-USrate},k}\right]$$

$$\left[\mathrm{PI}_{t+h}/Y_{t+h}\right]^{\text{payment}}_{\text{FIT-USrate},c} = \sum_k \overline{p}^{\$,\text{liability}}_{k,c}\left[\delta^{\text{payment}}_{\text{USrate},k}\left(\widehat{\text{USrate}}_{t+h}\right) + \beta_{\text{lag}}\left[\frac{\hat{r}^{\$}_{t+h-1}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT-USrate},k}\right]$$

Effect of Dollar Exchange Rate

We finally compute the effect of the dollar exchange rate. It first impacts the yield, both through the broad dollar index and through the exchange rate between the dollar and the currency of denomination (this later effect being present also with a lag). The exchange rate also has an impact on the valuation of position (the last term in (4)), except in the initial period as $\widehat{a}^{\$}_{t-1} = 0$.

$\Delta\$_t$ denotes the change in the dollar exchange rate between period *t-1* and period *t* ($\Delta\$_t = 0.1$ denotes a 10% appreciation of the dollar), considering its transmission through the Broad dollar index as well as through the dollar exchange rate against the currency of denomination. The change in the broad dollar index is $\Delta\$_t$, while the change between the dollar and the currency of denomination reflects the weight of the dollar in the basket for a category k in country c, $w^{\$}_{t,k,c}$, the effect being equal to $-\left(1 - w^{\$}_{t,k,c}\right)\left(\Delta\$_t\right)$. In our computations of effects, we take the average of $w^{\$}_{t,k,c}$ over several years, denoted by $\overline{w}^{\$}_{k,c}$.

In period *t*, the effect on the dollar yield on assets in a category k in country c is (the presence $\overline{w}^{\$,\text{asset}}_{k,c}$ of makes the effect country specific):

$$\left[\frac{\hat{r}^{\$}_t}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT-USD},k,c} = \left[\delta^{\text{receipt}}_{\text{USDbroad},k} - \delta^{\text{receipt}}_{\text{val},k}\left(1 - \overline{w}^{\$,\text{asset}}_{k,c}\right)\right]\left(\Delta\$_t\right)$$

The impact on primary income flows to GDP is given by:

$$\left[\mathrm{PI}_t/Y_t\right]^{\text{receipt}}_{\text{FIT-USD},c} = \sum_k \overline{p}^{\$,\text{asset}}_{k,c}\left[\delta^{\text{receipt}}_{\text{USDbroad},k} - \delta^{\text{receipt}}_{\text{val},k}\left(1 - \overline{w}^{\$,\text{asset}}_{k,c}\right)\right]\left(\Delta\$_t\right)$$

$$\left[\mathrm{PI}_t/Y_t\right]^{\text{payment}}_{\text{FIT-USD},c} = \sum_k \overline{p}^{\$,\text{liability}}_{k,c}\left[\delta^{\text{payment}}_{\text{USDbroad},k} - \delta^{\text{payment}}_{\text{val},k}\left(1 - \overline{w}^{\$,\text{liability}}_{k,c}\right)\right]\left(\Delta\$_t\right)$$

We now turn to the impact at period *t+1*. The effect of $\Delta\$_{t+1}$ (the change between period *t* and period *t+1*) on the yield combines various channels, namely the impact through the lagged yield, the direct impact of the exchange rate in period *t+1*, and the

coefficient on the lagged exchange rate between the dollar and the currency of denomination. Specifically:

$$\left[\frac{\hat{r}^{\$}_{t+1}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-\text{USD},k,c} = \beta_{\text{lag}}\left[\frac{\hat{r}^{\$}_{t}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-\text{USD},k,c} + \left[\delta^{\text{receipt}}_{\text{USDbroad},k} - \delta^{\text{receipt}}_{\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\right]\left(\Delta\$_{t+1}\right) - \delta^{\text{receipt}}_{\text{Lag}-\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\left(\Delta\$_{t}\right)$$

In addition to the effect through the yield, the primary income flows are also affected by the impact on the dollar value of asset $\hat{a}^{\$}_{t}$, that is $p^{\$}_{ss}\left(\hat{S}^{\$/D}_{t} - \hat{S}^{\$/D}_{t-1}\right) = p^{\$}_{ss}\left(\Delta\$_{t}\right)$. As this valuation should have the same coefficient that the direct effect on the yield, we adjust it as $-\overline{p}^{\$,\text{asset}}_{k,c}\delta^{\text{receipt}}_{\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\left(\Delta\$_{t}\right)$. The impact on primary income flows to GDP is therefore computed as:

$$\begin{aligned}
\left[PI_{t+1}/Y_{t+1}\right]^{\text{receipt}}_{\text{FIT}-\text{USD},c} &= \sum_{k}\overline{p}^{\$,\text{asset}}_{k,c}\beta_{\text{lag}}\left[\frac{\hat{r}^{\$}_{t}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-\text{USD},k,c} \\
&+ \sum_{k}\overline{p}^{\$,\text{asset}}_{k,c}\left[\delta^{\text{receipt}}_{\text{USDbroad},k} - \delta^{\text{receipt}}_{\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\right]\left(\Delta\$_{t+1}\right) \\
&- \sum_{k}\overline{p}^{\$,\text{asset}}_{k,c}\left[\delta^{\text{receipt}}_{\text{Lag}-\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\left(\Delta\$_{t}\right)\right] \\
&- \sum_{k}\overline{p}^{\$,\text{asset}}_{k,c}\left[\delta^{\text{receipt}}_{\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\right]\left(\Delta\$_{t}\right) \\
\left[PI_{t+1}/Y_{t+1}\right]^{\text{receipt}}_{\text{FIT}-\text{USD},c} &= \sum_{k}\overline{p}^{\$,\text{asset}}_{k,c}\left[\beta_{\text{lag}}\left[\frac{\hat{r}^{\$}_{t}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-\text{USD},k,c} + \delta^{\text{receipt}}_{\text{USDbroad},k}\left(\Delta\$_{t+1}\right)\right] \\
&- \sum_{k}\overline{p}^{\$,\text{asset}}_{k,c}\left[\delta^{\text{receipt}}_{\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\left(\Delta\$_{t+1}+\Delta\$_{t}\right)\right] \\
&- \sum_{k}\overline{p}^{\$,\text{asset}}_{k,c}\left[\delta^{\text{receipt}}_{\text{Lag}-\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\left(\Delta\$_{t}\right)\right]
\end{aligned}$$

Similarly:

$$\begin{aligned}
&\left[PI_{t+1}/Y_{t+1}\right]^{\text{payment}}_{\text{FIT}-\text{USD},c} \\
&= \sum_{k}\overline{p}^{\$,\text{liability}}_{k,c}\left[\beta_{\text{lag}}\left[\frac{\hat{r}^{\$}_{t}}{r_{ss}}\right]^{\text{payment}}_{\text{FIT}-\text{USD},k,c} + \delta^{\text{payment}}_{\text{USDbroad},k}\left(\Delta\$_{t+1}\right)\right] \\
&- \sum_{k}\overline{p}^{\$,\text{liability}}_{k,c}\left[\delta^{\text{receipt}}_{\text{val},k}\left(1-\overline{w}^{\$,\text{liability}}_{k,c}\right)\left(\Delta\$_{t+1}+\Delta\$_{t}\right)\right] \\
&- \sum_{k}\overline{p}^{\$,\text{liability}}_{k,c}\left[\delta^{\text{payment}}_{\text{Lag}-\text{val},k}\left(1-\overline{w}^{\$,\text{liability}}_{k,c}\right)\left(\Delta\$_{t}\right)\right]
\end{aligned}$$

Consider now the impact at period *t+2*. The effect of $\Delta\$_{t+2}$ (the change between period *t+1* and period *t+2*) on the yield is:

$$\left[\frac{\hat{r}^{\$}_{t+2}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-\text{USD},k,c} = \beta_{\text{lag}}\left[\frac{\hat{r}^{\$}_{t+1}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-\text{USD},k,c} + \left[\delta^{\text{receipt}}_{\text{USDbroad},k} - \delta^{\text{receipt}}_{\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\right]\left(\Delta\$_{t+2}\right) - \delta^{\text{receipt}}_{\text{Lag}-\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\left(\Delta\$_{t+1}\right)$$

The impact on the dollar value of asset $\hat{a}^{\$}_{t+1}$, is equal to $p^{\$}_{ss}\left(\Delta\$_{t+1}+\Delta\$_{t}\right)$. Applying again the same coefficient that the direct effect on the yield, we adjust it as $-\overline{p}^{\$,\text{asset}}_{k,c}\delta^{\text{receipt}}_{\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\left(\Delta\$_{t+1}\right)$. The impact on primary income flows to GDP is therefore computed as:

$$\begin{aligned}\left[PI_{t+2}/Y_{t+2}\right]^{\text{receipt}}_{\text{FIT}-\text{USD},c} = &\sum_{k}\overline{p}^{\$,\text{asset}}_{k,c}\left[\beta_{\text{lag}}\left[\frac{\hat{r}^{\$}_{t+1}}{r_{ss}}\right]^{\text{receipt}}_{\text{FIT}-\text{USD},k,c} + \delta^{\text{receipt}}_{\text{USDbroad},k}\left(\Delta\$_{t+2}\right)\right]\\ &-\sum_{k}\overline{p}^{\$,\text{asset}}_{k,c}\left[\delta^{\text{receipt}}_{\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\left(\Delta\$_{t+2}+\Delta\$_{t+1}+\Delta\$_{t}\right)\right]\\ &-\sum_{k}\overline{p}^{\$,\text{asset}}_{k,c}\left[\delta^{\text{receipt}}_{\text{Lag}-\text{val},k}\left(1-\overline{w}^{\$,\text{asset}}_{k,c}\right)\left(\Delta\$_{t+1}\right)\right]\end{aligned}$$

$$\begin{aligned}\left[PI_{t+2}/Y_{t+2}\right]^{\text{payment}}_{\text{FIT}-\text{USD},c} = &\sum_{k}\overline{p}^{\$,\text{liability}}_{k,c}\left[\beta_{\text{lag}}\left[\frac{\hat{r}^{\$}_{t+1}}{r_{ss}}\right]^{\text{payment}}_{\text{FIT}-\text{USD},k,c} + \delta^{\text{payment}}_{\text{USDbroad},k}\left(\Delta\$_{t+2}\right)\right]\\ &-\sum_{k}\overline{p}^{\$,\text{liability}}_{k,c}\left[\delta^{\text{receipt}}_{\text{val},k}\left(1-\overline{w}^{\$,\text{liability}}_{k,c}\right)\left(\Delta\$_{t+2}+\Delta\$_{t+1}+\Delta\$_{t}\right)\right]\\ &-\sum_{k}\overline{p}^{\$,\text{liability}}_{k,c}\left[\delta^{\text{payment}}_{\text{Lag}-\text{val},k}\left(1-\overline{w}^{\$,\text{liability}}_{k,c}\right)\left(\Delta\$_{t+1}\right)\right]\end{aligned}$$

Appendix 3: Construction of Currency-of-Investment (CIW) Weighted Exchange Rate Indices

This appendix presents the steps in constructing the exchange rate between the dollar and the currency of denomination of financial assets and liabilities. We rely on Bénétrix et al. (2020) data on the currency of invoicing of Assets and Liabilities for 50 countries between 1990 and 2017. As the Bénétrix et al. (2020) data are available only until 2017, we keep the currency composition of that year unchanged until 2022. Our approach follows the steps of Colacelli et al. (2021), focusing on the period since 1999 to better handle the role of the euro.

As in Colacelli et al. (2021), indices are geometric averages of the ratios of bilateral exchange rates with respect to the US dollar around the base year 2010. Specifically, for country *i*, $R_{i,t}/R_{i,2010}$ is the exchange rate of currency *i* relative to the US dollar, set to 1 in 2010, with a value above units denoting a depreciation of the

country's currency against the dollar. The ratio $\left(R_{i,t}/R_{i,2010}\right)/\left(R_{j,t}/R_{j,2010}\right)$ is exchange rate currency of i against the currency of j, with a value above unity denoting a depreciation of i. We weight this ratio by the share of the external assets (liabilities) of country i that are denominated in currency j, $W^{A,L}_{i,j,t}$. We have information about the weights of the USD, EUR, GBP, CNY and JPY, as well as domestic currency, with the balance consisting of other currencies (OTH). We assume that the OTH currency has the same composition across the currencies (other than the domestic one), and adjust the weights of USD, EUR, GBP, CNY and JPY accordingly,[27] leaving the share of domestic currency $S^{A,L}_{i,DC,t}$ unchanged.

These exchange rates are then weighted using the share of assets (and liabilities) invoiced in USD, EUR, GBP, CNY and JPY, as well as domestic currency, with the assumption that foreign assets (and domestic liabilities) invoiced in other (OTH) currencies are actually invoiced in the known currencies by re-weighting the other shares in a proportional way (leaving the share of domestic currency unchanged).

The weighted exchange rate between the dollar and the basket in which the assets of country i are denominated, $R^{\$,D,A,L}_{i,t}$, is as follows, with a value $R^{\$,D,i}_{i,t} > 1$ indicating that since 2010 the dollar has depreciated against depreciated against the currencies in which country i's assets (liabilities) are denominated.

The currency of investment weighted exchange rate for assets (and liabilities) is then of the following form, with a value of $R^{\$,D,A,L}_{i,t} > 1$ indicating that since 2010 the currency of country i has depreciated against the currencies in which its assets (liabilities) are denominated:

$$R^{\$,D,A,L}_{i,t} = \prod\nolimits_j \left(\frac{1}{R_{j,t}/R_{j,2010}}\right)^{W^{A,L}_{i,j,t}}$$

where $R_{\$,t} = 1$ and:

$$W^{A,L}_{i,j,t} = S^{A,L}_{i,j,t} \times \frac{\sum_{k\in(\text{USD,EUR,GBP,CNY,JPY})} S^{A,L}_{i,k,t} + S^{A,L}_{i,\text{OTH},t}}{\sum_{k\in(\text{USD,EUR,GBP,CNY,JPY})} S^{A,L}_{i,k,t}}$$

$$W^{A,L}_{i,j,t} + S^{A,L}_{i,DC,t} = 1$$

We consider a series of weights across different categories of assets and liabilities, with each set of weights giving a different measure of $R^{\$,D,A,L}_{i,t}$. Specifically, we rely on Bénétrix et al. (2020) for weights for all assets, as well as weights for "debt" assets, which include portfolio debt and other investment. Combining these two sets of weights with the holdings from Milesi-Ferretti (2024b), we can compute the values of the "non-debt" assets (FDI, Portfolio equity, reserves) across the various currencies, as well as the corresponding weights. This gives us an exchange rate $R^{\$,D,A,L}_{i,t}$ for these specific categories. Finally, combining the weighted exchange rates of debt and non-debt assets, and the holdings of portfolio equity and portfolio debt,

[27] $W^{A,L}_{i,j,t}$ are the weight after the adjustment, and $S^{A,L}_{i,j,t}$ are the weights before.

Table 6 List of countries

Advanced economies		Emerging economies	
Australia	Japan	Argentina	Pakistan
Austria	Korea	Brazil	Peru
Belgium	New Zealand	Chile	Philippines
Canada	Norway	Colombia	Poland
Czech Rep.	Portugal	Egypt	Russia
Denmark	Spain	Guatemala	South Africa
Finland	Sweden	Hungary	Thailand
France	United States	India	Tunisia
Germany		Indonesia	Turkey
Greece		Malaysia	Uruguay
Israel		Mexico	
Italy		Morocco	

Table 7 Data and sources

Variable	Source	Time period / Frequency
Current Account Data in USD	IMF BOPS	1999–2023 / annual, quarterly
Exchange Rates	IMF IFS	1999–2023 / annual, quarterly
Nominal and Real GDP	IMF IFS	1999–2022 / annual, quarterly
	IMF WEO	2023 / annual
	UNCTAD	1999–2023 / annual
Monetary Base	FRED	1999–2023/ monthly
Currency of Invoicing of Assets and Liabilities	Benetrix_al_2020	1999–2017 / annual
Assets and Liabilities, decomposition	External Wealth of Nation Database	1999–2023 / annual
Short-term interest rates (3-month Money Market & CB Policy rate)	IMF IFS	1999–2023 / annual, quarterly
	OECD	1999–2023 / annual, quarterly
Long-term interest rates (10-year Government Bond Yield)	IMF IFS	1999–2023 / annual, quarterly
	OECD	1999–2023 / annual, quarterly
VIX	FRED	1999–2023 / daily
Broad US Index	FED Board	2006–2023 / monthly
	Author's calculation	1999–2006 / monthly
CPI	IMF IFS	1999–2023 / annual, quarterly
	UNCTAD	1999–2023 / annual, quarterly
	OECD	1999–2023 / annual, quarterly
Bond Premium	Scheubel et al. (2024)	1999–2023/ monthly
Global Stock Factor	Scheubel et al. (2024)	1999–2023/ monthly

we construct weights and the corresponding exchange rate for the overall portfolio category. Similar steps are done on the liability side.

Table 8 Drivers of (ln) yields—all countries, US monetary base

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L.ln Yield	0.642***	0.733***	0.505***	0.626***	0.590***	0.563***	0.658***	0.741***	0.840***	0.662***	0.649***
	(0.0461)	(0.0328)	(0.0444)	(0.0523)	(0.0821)	(0.0623)	(0.0852)	(0.0528)	(0.0526)	(0.0302)	(0.0335)
Δln $-Denomination XR (increase = $ depreciation)	0.745***	0.272	0.444	−0.541**	1.193	0.984**	0.465	1.310***	0.692*	1.052***	−0.206
	(0.236)	(0.174)	(0.610)	(0.258)	(0.807)	(0.390)	(0.353)	(0.366)	(0.351)	(0.327)	(0.478)
L.Δln $-Denomination XR (increase = $ depreciation)	−0.127	−0.107*	−0.0946	0.127	−0.200	0.108	−0.269	0.00865	−0.165	−0.229	−0.0798
	(0.115)	(0.0637)	(0.158)	(0.144)	(0.166)	(0.204)	(0.242)	(0.138)	(0.129)	(0.157)	(0.0857)
Δln $ Broad Index (increase = $ appreciation)	−0.678	−1.370***	0.00183	−2.837***	1.445	−0.289	0.00293	0.458*	−1.227***	0.0705	−1.145*
	(0.412)	(0.241)	(0.745)	(0.414)	(1.067)	(0.885)	(0.436)	(0.254)	(0.420)	(0.300)	(0.650)
US 3-month interest rate	0.0481***	0.00757	0.0669***	−0.0239**	0.0984**	−0.0284	0.00805	−0.00556	−0.00458	0.107***	0.112***
	(0.0102)	(0.00481)	(0.0193)	(0.00936)	(0.0381)	(0.0187)	(0.0204)	(0.0105)	(0.0189)	(0.00837)	(0.0279)
US 10-year treasury yield	0.00242	0.0274***	0.0102	0.00876	0.105***	0.103***	0.108***	0.0963***	0.0475**	0.109***	0.101***
	(0.0108)	(0.00910)	(0.0247)	(0.0163)	(0.0299)	(0.0331)	(0.0253)	(0.0166)	(0.0213)	(0.0238)	(0.0282)
VIX (normalized)	−0.0260*	−0.0227***	0.0845***	−0.0283***	0.104	−0.0607**	−0.0296	−0.0324***	−0.211***	−0.0327**	−0.138***
	(0.0149)	(0.00582)	(0.0301)	(0.00929)	(0.0687)	(0.0254)	(0.0301)	(0.0108)	(0.0367)	(0.0134)	(0.0395)

Table 8 (continued)

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Global Stock Market Factor (normalized)	−0.0114	0.00240	0.115***	−0.0116	0.243***	0.0898*	−0.0276	0.0270	−0.0851**	0.0954***	0.0176
	(0.0201)	(0.0106)	(0.0277)	(0.0157)	(0.0529)	(0.0497)	(0.0296)	(0.0163)	(0.0421)	(0.0230)	(0.0513)
Excess Bond Premium (normalized)	0.00399	0.000660	−0.0621**	0.0167	−0.0911	0.0298	−0.0450	−0.00122	0.0675**	−0.00810	0.0881**
	(0.0112)	(0.00775)	(0.0282)	(0.0138)	(0.0580)	(0.0229)	(0.0307)	(0.0139)	(0.0278)	(0.0137)	(0.0409)
Fed Monetary Base growth rate	−0.0884	−0.127***	0.0596	−0.338***	0.589*	−0.107	0.0143	0.122**	−0.455***	−0.0814	−0.478**
	(0.0583)	(0.0385)	(0.132)	(0.0843)	(0.324)	(0.117)	(0.120)	(0.0561)	(0.139)	(0.0729)	(0.223)
Inflation(ΔlnCPI)	0.612	0.690***	−4.781***	1.050***	−9.715**	1.195***	0.736	0.00791	16.79***	0.246	7.675**
	(1.047)	(0.237)	(1.649)	(0.324)	(4.282)	(0.315)	(1.996)	(0.202)	(2.763)	(0.225)	(3.240)
Real GDP Growth	0.0247**	1.015***	0.0972***	1.524***	0.0776*	1.198**	−0.0173	0.163	−0.0790***	0.129	−0.0502**
	(0.00935)	(0.243)	(0.0190)	(0.333)	(0.0404)	(0.558)	(0.0115)	(0.212)	(0.0195)	(0.228)	(0.0219)
L. Capital Gains	−0.00353***	−0.00563***	−0.000101	−0.00383***	−0.000884**	−0.00371***	−0.000291***	−0.00403***	−0.00228	−0.00681***	0.00288
	(0.000773)	(0.000777)	(0.0000934)	(0.000852)	(0.000399)	(0.000726)	(0.0000275)	(0.00115)	(0.00205)	(0.00143)	(0.00374)
Constant	−1.478***	−0.997***	−1.836***	−1.071***	−2.148***	−1.936***	−1.387***	−1.138***	−1.088***	−1.878***	−2.119***
	(0.154)	(0.109)	(0.176)	(0.157)	(0.429)	(0.321)	(0.302)	(0.177)	(0.217)	(0.166)	(0.126)
Country Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	984	987	944	977	791	819	850	909	953	952	494
Countries	42	42	42	42	39	38	40	41	41	41	28
Adjusted R^2	0.716	0.749	0.372	0.560	0.381	0.378	0.577	0.738	0.822	0.787	0.788

OLS panel estimates, errors clustered at the country level. *, **, *** indicates significance at the 10, 5 and 1% level respectively. Inflation and real GDP growth are values for the rest of the world in the Receipt regressions, and values for the country in the Payment regressions

Table 9 Drivers of (ln) yields—emerging countries, US monetary base

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L.ln Yield	0.636***	0.746***	0.527***	0.698***	0.584***	0.531***	0.624***	0.660***	0.859***	0.662***	0.598***
	(0.0567)	(0.0421)	(0.0519)	(0.0591)	(0.102)	(0.0786)	(0.103)	(0.107)	(0.0628)	(0.0490)	(0.0378)
Δln $-Denomination XR (increase = $ depreciation)	0.811	−0.171	1.010	−0.570	4.940*	2.446**	1.371	1.394**	0.476	0.731*	1.166
	(0.584)	(0.262)	(1.368)	(0.394)	(2.517)	(1.140)	(1.785)	(0.508)	(1.249)	(0.418)	(1.425)
L.Δln $-Denomination XR (increase = $ depreciation)	−0.457*	−0.0679	0.871	0.405**	0.258	0.550	0.330	0.751**	0.144	−0.0511	0.00178
	(0.241)	(0.126)	(0.607)	(0.172)	(1.149)	(0.455)	(1.180)	(0.319)	(0.420)	(0.295)	(1.505)
Δln $ Broad Index (increase = $ appreciation)	−0.720	−1.605***	0.424	−2.577***	3.671	1.092	0.358	0.317	−1.320*	−0.124	−1.383
	(0.635)	(0.351)	(1.246)	(0.560)	(2.297)	(1.828)	(0.950)	(0.384)	(0.762)	(0.323)	(0.795)
US 3-month interest rate	0.0687***	0.000352	0.0575	−0.0385***	0.160*	−0.0457	0.0351	−0.0176	−0.0115	0.0937***	0.107**
	(0.0160)	(0.00661)	(0.0344)	(0.0136)	(0.0846)	(0.0418)	(0.0487)	(0.0152)	(0.0322)	(0.0110)	(0.0452)
US 10-year treasury yield	−0.0161	0.0128	0.0236	0.0288	0.153**	0.193**	0.103**	0.0623***	0.0364	0.0502**	0.0685
	(0.0177)	(0.0108)	(0.0422)	(0.0231)	(0.0708)	(0.0687)	(0.0442)	(0.0211)	(0.0331)	(0.0186)	(0.0457)
VIX (normalized)	−0.0389	−0.0181*	0.0842	−0.0190	0.232	−0.0111	−0.00274	−0.0464**	−0.242***	−0.0585***	−0.169**
	(0.0257)	(0.00949)	(0.0500)	(0.0116)	(0.154)	(0.0460)	(0.0637)	(0.0178)	(0.0681)	(0.0147)	(0.0742)

Table 9 (continued)

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Global Stock Market Factor (normalized)	−0.0291	−0.000724	0.121**	−0.0181	0.349***	0.120	−0.0775	0.00594	−0.104	0.0768**	−0.0699
	(0.0331)	(0.0135)	(0.0433)	(0.0229)	(0.118)	(0.0972)	(0.0731)	(0.0238)	(0.0734)	(0.0344)	(0.0799)
Excess Bond Premium (normalized)	0.0144	0.00376	−0.0276	0.00610	−0.143	0.000000957	−0.110	0.0317	0.0678	0.0188	0.143*
	(0.0183)	(0.0125)	(0.0483)	(0.0215)	(0.130)	(0.0399)	(0.0662)	(0.0205)	(0.0513)	(0.0154)	(0.0722)
Fed Monetary Base growth rate	−0.124	−0.160***	0.0763	−0.261**	0.874	−0.204	−0.0169	0.0761	−0.501*	−0.0738	−0.866**
	(0.109)	(0.0511)	(0.242)	(0.103)	(0.727)	(0.219)	(0.255)	(0.0819)	(0.250)	(0.0784)	(0.396)
Inflation(ΔlnCPI)	1.436	0.500**	−4.390	0.790***	−13.49	1.081**	0.800	0.0152	16.61***	0.142	10.33*
	(1.804)	(0.200)	(2.680)	(0.265)	(9.615)	(0.464)	(3.951)	(0.230)	(4.844)	(0.181)	(5.511)
Real GDP Growth	0.0232	0.765***	0.107***	1.135***	0.131	1.122	−0.0192	0.202	−0.0906**	0.106	−0.0833**
	(0.0157)	(0.215)	(0.0344)	(0.306)	(0.0909)	(0.841)	(0.0250)	(0.288)	(0.0367)	(0.168)	(0.0383)
L. Capital Gains	−0.00344***	−0.00510***	−0.0000998	−0.00353***	−0.000743	−0.00326***	−0.000293***	−0.00357***	−0.00193	−0.00663***	0.00807
	(0.000948)	(0.00118)	(0.0000938)	(0.000974)	(0.000446)	(0.000856)	(0.0000352)	(0.000953)	(0.00216)	(0.00158)	(0.0113)
Constant	−1.543***	−0.829***	−1.922***	−0.872***	−2.648***	−2.384***	−1.349***	−1.122***	−0.928***	−1.580***	−2.144***
	(0.189)	(0.120)	(0.260)	(0.179)	(0.701)	(0.530)	(0.378)	(0.313)	(0.238)	(0.203)	(0.149)
Country Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	514	517	484	512	337	370	393	451	483	482	236
Countries	22	22	22	22	19	18	20	21	21	21	14
Adjusted R^2	0.709	0.660	0.377	0.644	0.367	0.349	0.534	0.571	0.798	0.703	0.770

OLS panel estimates, errors clustered at the country level. *, **, *** indicates significance at the 10, 5 and 1% level respectively. Inflation and real GDP growth are values for the rest of the world in the Receipt regressions, and values for the country in the Payment regressions.

Table 10 Drivers of (ln) yields—all countries, drivers interactions with lagged stock position

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L.ln Yield	0.643***	0.728***	0.501***	0.609***	0.588***	0.562***	0.658***	0.717***	0.836***	0.652***	0.641***
	(0.0487)	(0.0341)	(0.0443)	(0.0555)	(0.0846)	(0.0621)	(0.0866)	(0.0600)	(0.0528)	(0.0307)	(0.0356)
Δln $-Denomination XR (increase = $ depreciation)	0.698***	0.201	0.578	−0.678***	1.451*	0.905**	0.482	1.206***	0.648	0.818***	−0.0858
	(0.227)	(0.182)	(0.590)	(0.241)	(0.797)	(0.380)	(0.429)	(0.306)	(0.405)	(0.266)	(0.557)
L.Δln $-Denomination XR (increase = $ depreciation)	−0.154	−0.116*	−0.0584	0.0803	−0.117	0.0840	−0.275	−0.0354	−0.240	−0.262*	−0.104
	(0.114)	(0.0652)	(0.178)	(0.153)	(0.150)	(0.231)	(0.246)	(0.136)	(0.157)	(0.144)	(0.103)
Δln $ Broad Index (increase = $ appreciation)	−0.283	−0.879***	−0.274	−2.121***	−1.015	−0.270	−0.0410	0.343	0.319	0.815*	0.574
	(0.398)	(0.275)	(0.792)	(0.382)	(0.943)	(1.193)	(0.532)	(0.313)	(0.419)	(0.407)	(1.046)
US 3-month interest rate	0.0533***	0.00913	0.0677***	−0.0361***	0.0817***	−0.0321	0.00874	−0.0107	0.0162	0.106***	0.148***
	(0.00996)	(0.00608)	(0.0240)	(0.0103)	(0.0292)	(0.0207)	(0.0202)	(0.0128)	(0.0163)	(0.00935)	(0.0384)
US 10-year treasury yield	0.0102	0.0371***	0.00907	0.0506***	0.0504	0.114***	0.107***	0.0928***	0.0945***	0.120***	0.149***
	(0.0103)	(0.00869)	(0.0205)	(0.0139)	(0.0354)	(0.0343)	(0.0229)	(0.0196)	(0.0182)	(0.0257)	(0.0330)
VIX (normalized)	−0.0249	−0.0245***	0.0745*	−0.0455***	0.0832	−0.0521	−0.0417	−0.0504***	−0.192***	−0.0776***	−0.127***
	(0.0176)	(0.00864)	(0.0372)	(0.0132)	(0.0561)	(0.0407)	(0.0311)	(0.0139)	(0.0337)	(0.0147)	(0.0335)
Inflation(Δln CPI)	−0.00414	0.707***	−4.290**	1.128***	−5.685*	1.231***	0.769	−0.00426	13.40***	0.249	4.480**
	(0.911)	(0.243)	(1.677)	(0.347)	(2.858)	(0.309)	(1.486)	(0.206)	(2.191)	(0.225)	(2.123)

Table 10 (continued)

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Real GDP Growth	0.0309***	1.052***	0.0961***	1.637***	0.0389	1.250**	−0.0178	0.154	−0.0463**	0.166	−0.0149
	(0.00819)	(0.249)	(0.0185)	(0.362)	(0.0258)	(0.544)	(0.0111)	(0.214)	(0.0177)	(0.221)	(0.0109)
L. Capital Gains	−0.00353***	−0.00571***	−0.0000917	−0.00387***	−0.000899**	−0.00374***	−0.000292***	−0.00394***	−0.00213	−0.00731***	0.00379
	(0.000767)	(0.000791)	(0.0000866)	(0.000901)	(0.000386)	(0.000728)	(0.0000268)	(0.00110)	(0.00202)	(0.00133)	(0.00383)
Global Stock Market Factor (normalized)	0.00122	0.00595	0.113***	−0.00542	0.177***	0.0878*	−0.0284	0.0168	−0.0215	0.101***	0.0914**
	(0.0171)	(0.0108)	(0.0300)	(0.0167)	(0.0563)	(0.0495)	(0.0273)	(0.0162)	(0.0370)	(0.0235)	(0.0341)
Excess Bond Premium (normalized)	−0.00723	−0.0138**	−0.0495**	−0.0187*	−0.0142	0.0187	−0.0432	0.0169	0.00654	−0.0127	0.0335
	(0.00797)	(0.00681)	(0.0230)	(0.0104)	(0.0263)	(0.0237)	(0.0258)	(0.0141)	(0.0198)	(0.0136)	(0.0243)
VIX * L. Stock-to-GDP	0.00516	0.000143	0.0163	0.0244	−0.123	−0.0515	0.0545	0.0568***	0.0806**	0.0978***	0.225*
	(0.00517)	(0.00342)	(0.0291)	(0.0153)	(0.0803)	(0.118)	(0.0431)	(0.0197)	(0.0351)	(0.0242)	(0.127)
Δln $ Broad Index * L. Stock-to-GDP	−0.120	−0.169	0.719	0.0600	3.781**	1.070	0.0277	−0.594	−0.490	−1.820***	−1.792
	(0.135)	(0.122)	(0.450)	(0.355)	(1.652)	(2.466)	(0.902)	(0.584)	(0.916)	(0.583)	(3.472)
US short IR * L. Stock-to-GDP	−0.000394	−0.00269	−0.000327	0.0216***	−0.0537	0.0185	−0.00531	0.00879	0.0183	−0.00368	−0.0443
	(0.00240)	(0.00244)	(0.0190)	(0.00703)	(0.0481)	(0.0392)	(0.0390)	(0.0104)	(0.0130)	(0.0100)	(0.212)
US long IR * L. Stock-to-GDP	0.000340	0.00380	−0.0273	−0.0257***	0.0210	−0.0196	0.000702	−0.0137	−0.0258	0.00275	−0.136
	(0.00318)	(0.00334)	(0.0223)	(0.00930)	(0.0493)	(0.0530)	(0.0416)	(0.0141)	(0.0176)	(0.0138)	(0.230)
Constant	−1.511***	−1.073***	−1.825***	−1.249***	−1.913***	−1.978***	−1.384***	−1.166***	−1.304***	−1.961***	−2.366***
	(0.171)	(0.111)	(0.155)	(0.164)	(0.375)	(0.311)	(0.269)	(0.203)	(0.217)	(0.179)	(0.197)

Table 10 (continued)

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Observations	982	987	943	977	790	819	849	909	951	952	494
Countries	42	42	42	42	39	38	40	41	41	41	28
Adjusted R^2	0.714	0.747	0.380	0.554	0.377	0.376	0.576	0.744	0.821	0.791	0.785

OLS panel estimates, errors clustered at the country level. *, **, *** indicates significance at the 10, 5 and 1% level respectively. Inflation and real GDP growth are values for the rest of the world in the Receipt regressions, and values for the country in the Payment regressions. All regressions include countries' fixed-effects

Table 11 Drivers of (ln) yields—all countries, dummy for the 2007–2008 crisis

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L.ln Yield	0.636***	0.718***	0.493***	0.596***	0.580***	0.557***	0.656***	0.742***	0.835***	0.667***	0.640***
	(0.0464)	(0.0353)	(0.0493)	(0.0562)	(0.0817)	(0.0638)	(0.0853)	(0.0528)	(0.0528)	(0.0321)	(0.0384)
Δln $-Denomination XR (increase = $ depreciation)	0.745***	0.231	0.427	−0.643**	1.164	0.907**	0.497	1.323***	0.724**	1.072***	−0.192
	(0.239)	(0.173)	(0.623)	(0.253)	(0.804)	(0.388)	(0.357)	(0.365)	(0.356)	(0.312)	(0.483)
L.Δln $-Denomination XR (increase = $ depreciation)	−0.205	−0.150**	−0.143	0.0197	−0.234	−0.00161	−0.476	−0.0355	−0.173	−0.119	−0.0958
	(0.128)	(0.0652)	(0.137)	(0.141)	(0.173)	(0.226)	(0.319)	(0.145)	(0.142)	(0.145)	(0.0956)
Δln $ Broad Index (increase = $ appreciation)	−0.297	−0.966***	0.227	−1.721***	0.382	0.348	0.409	0.268	0.110	−0.0189	0.213
	(0.338)	(0.201)	(0.647)	(0.318)	(0.873)	(0.834)	(0.439)	(0.217)	(0.404)	(0.381)	(0.665)
US 3-month interest rate	0.0526***	0.00488	0.0596***	−0.0286***	0.0564**	−0.0316*	0.00189	−0.00475	0.0246	0.109***	0.144***
	(0.00938)	(0.00511)	(0.0220)	(0.00948)	(0.0232)	(0.0182)	(0.0158)	(0.0105)	(0.0162)	(0.00797)	(0.0254)
US 10-year treasury yield	0.0118	0.0439***	0.0133	0.0490***	0.0750**	0.123***	0.115***	0.0861***	0.0813***	0.108***	0.137***
	(0.0103)	(0.00775)	(0.0195)	(0.0133)	(0.0317)	(0.0306)	(0.0228)	(0.0160)	(0.0198)	(0.0261)	(0.0301)
VIX (normalized)	−0.0168	−0.0237***	0.0764**	−0.0320***	0.0458	−0.0618**	−0.0325	−0.0303***	−0.167***	−0.0354**	−0.0922***
	(0.0144)	(0.00577)	(0.0327)	(0.00921)	(0.0457)	(0.0249)	(0.0256)	(0.0106)	(0.0305)	(0.0133)	(0.0270)

Table 11 (continued)

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Global Stock Market Factor (normalized)	−0.00515	−0.00201	0.0866***	−0.0200	0.127**	0.0746	−0.0523	0.0198	−0.0184	0.113***	0.0885**
	(0.0150)	(0.0112)	(0.0317)	(0.0171)	(0.0555)	(0.0490)	(0.0331)	(0.0167)	(0.0374)	(0.0210)	(0.0345)
Excess Bond Premium (normalized)	−0.0209**	−0.0305***	−0.111***	−0.0694***	−0.123*	−0.0389	−0.104**	−0.000652	0.0169	0.0252	0.0574*
	(0.0101)	(0.00872)	(0.0293)	(0.0158)	(0.0625)	(0.0370)	(0.0512)	(0.0169)	(0.0236)	(0.0151)	(0.0306)
Global Financial Crisis Dummy	0.0596*	0.0772***	0.263**	0.217***	0.507**	0.258*	0.275	0.0590	−0.0470	−0.193***	−0.143*
	(0.0328)	(0.0249)	(0.127)	(0.0592)	(0.212)	(0.151)	(0.168)	(0.0361)	(0.0677)	(0.0563)	(0.0747)
Inflation(Δln CPI)	0.00647	0.710***	−3.940**	1.122***	−4.938*	1.206***	1.234	−0.00451	13.30***	0.254	3.943*
	(0.873)	(0.237)	(1.753)	(0.328)	(2.491)	(0.308)	(1.363)	(0.208)	(2.170)	(0.241)	(2.090)
Real GDP Growth	0.0312***	1.036***	0.0918***	1.613***	0.0330	1.176**	−0.0190*	0.133	−0.0457***	0.171	−0.0153
	(0.00779)	(0.246)	(0.0189)	(0.351)	(0.0230)	(0.537)	(0.0106)	(0.212)	(0.0167)	(0.239)	(0.0110)
L. Capital Gains	−0.00346***	−0.00568***	−0.0000917	−0.00381***	−0.000959**	−0.00365***	−0.000293***	−0.00403***	−0.00217	−0.00653***	0.00456
	(0.000783)	(0.000804)	(0.0000912)	(0.000904)	(0.000403)	(0.000726)	(0.0000259)	(0.00116)	(0.00201)	(0.00132)	(0.00405)
Constant	−1.550***	−1.113***	−1.895***	−1.328***	−2.024***	−2.048***	−1.436***	−1.095***	−1.293***	−1.856***	−2.345***
	(0.163)	(0.117)	(0.178)	(0.169)	(0.371)	(0.318)	(0.281)	(0.174)	(0.218)	(0.188)	(0.206)
Country Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	984	987	944	977	791	819	850	909	953	952	494
Countries	42	42	42	42	39	38	40	41	41	41	28
Adjusted R^2	0.717	0.749	0.378	0.560	0.386	0.381	0.582	0.738	0.820	0.789	0.785

OLS panel estimates, errors clustered at the country level. *, **, *** indicates significance at the 10, 5 and 1% level respectively. Inflation and real GDP growth are values for the rest of the world in the Receipt regressions, and values for the country in the Payment regressions

Table 12 Drivers of (ln) yields—emerging countries, dummy for the 2007–2008 crisis

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L.ln Yield	0.630***	0.717***	0.524***	0.661***	0.570***	0.530***	0.621***	0.662***	0.854***	0.669***	0.577***
	(0.0569)	(0.0488)	(0.0557)	(0.0664)	(0.0992)	(0.0781)	(0.103)	(0.108)	(0.0626)	(0.0536)	(0.0427)
Δln $-Denomination XR (increase = $ depreciation)	0.797	−0.277	0.938	−0.845*	4.347	2.384**	1.425	1.361**	0.546	0.808*	1.453
	(0.584)	(0.260)	(1.413)	(0.443)	(2.572)	(1.120)	(1.726)	(0.512)	(1.268)	(0.392)	(1.444)
L.Δln $-Denomination XR (increase = $ depreciation)	−0.601**	−0.172	0.772	0.153	−0.317	0.502	−0.344	0.687**	−0.170	0.0367	0.150
	(0.270)	(0.136)	(0.654)	(0.177)	(1.307)	(0.474)	(1.221)	(0.327)	(0.398)	(0.276)	(1.363)
Δln $ Broad Index (increase = $ appreciation)	−0.179	−1.010***	0.329	−1.554***	2.055	1.687	1.244	0.222	0.406	−0.186	1.164
	(0.482)	(0.293)	(1.042)	(0.428)	(1.527)	(1.639)	(0.798)	(0.313)	(0.705)	(0.498)	(0.804)
US 3-month interest rate	0.0752***	−0.00320	0.0509	−0.0439***	0.101*	−0.0483	0.0316	−0.0174	0.0195	0.0956***	0.169***
	(0.0142)	(0.00690)	(0.0395)	(0.0141)	(0.0528)	(0.0403)	(0.0331)	(0.0152)	(0.0273)	(0.0105)	(0.0417)
US 10-year treasury yield	−0.00267	0.0357***	0.0219	0.0653***	0.108	0.217***	0.114**	0.0568**	0.0793**	0.0494**	0.135**
	(0.0168)	(0.00915)	(0.0317)	(0.0191)	(0.0742)	(0.0593)	(0.0409)	(0.0229)	(0.0303)	(0.0230)	(0.0557)
VIX (normalized)	−0.0260	−0.0194*	0.0764	−0.0227*	0.153	−0.0142	−0.00303	−0.0450**	−0.193***	−0.0606***	−0.0780
	(0.0252)	(0.00933)	(0.0522)	(0.0115)	(0.105)	(0.0445)	(0.0485)	(0.0171)	(0.0540)	(0.0145)	(0.0443)

Table 12 (continued)

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Global Stock Market Factor (normalized)	−0.0192	−0.00817	0.102*	−0.0325	0.171	0.118	−0.115*	−0.000191	−0.0405	0.0925***	0.0671
	(0.0228)	(0.0145)	(0.0522)	(0.0245)	(0.128)	(0.0968)	(0.0580)	(0.0244)	(0.0633)	(0.0293)	(0.0489)
Excess Bond Premium (normalized)	−0.0212	−0.0467***	−0.0412	−0.0924***	−0.233	−0.0424	−0.234*	0.0257	−0.0189	0.0501**	0.0974*
	(0.0162)	(0.0152)	(0.0461)	(0.0220)	(0.150)	(0.0759)	(0.114)	(0.0306)	(0.0358)	(0.0183)	(0.0470)
Global Financial Crisis Dummy	0.0868	0.148***	0.109	0.314***	0.913	0.0873	0.545	0.0652	0.0931	−0.182	−0.297***
	(0.0571)	(0.0408)	(0.214)	(0.0833)	(0.528)	(0.302)	(0.392)	(0.0647)	(0.111)	(0.109)	(0.0809)
Inflation(ΔlnCPI)	0.595	0.508**	−3.705	0.817***	−6.886	1.089**	1.211	0.0112	12.90***	0.155	3.198
	(1.449)	(0.196)	(2.774)	(0.247)	(5.701)	(0.453)	(2.549)	(0.238)	(3.687)	(0.199)	(2.734)
Real GDP Growth	0.0324**	0.762***	0.102***	1.147***	0.0642	1.121	−0.0191	0.182	−0.0533*	0.153	−0.0169
	(0.0128)	(0.216)	(0.0339)	(0.306)	(0.0503)	(0.806)	(0.0180)	(0.293)	(0.0305)	(0.191)	(0.0176)
L. Capital Gains	−0.00330***	−0.00497***	−0.0000970	−0.00332***	−0.000901*	−0.00330***	−0.000295***	−0.00358***	−0.00191	−0.00633***	0.0118
	(0.000972)	(0.00124)	(0.0000956)	(0.000997)	(0.000479)	(0.000867)	(0.0000313)	(0.000960)	(0.00209)	(0.00147)	(0.0119)
Constant	−1.636***	−1.007***	−1.919***	−1.129***	−2.461***	−2.484***	−1.446***	−1.095***	−1.181***	−1.555***	−2.576***
	(0.207)	(0.144)	(0.244)	(0.192)	(0.561)	(0.497)	(0.325)	(0.312)	(0.251)	(0.240)	(0.288)
Country Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	514	517	484	512	337	370	393	451	483	482	236
Countries	22	22	22	22	19	18	20	21	21	21	14
Adjusted R^2	0.709	0.664	0.378	0.651	0.375	0.349	0.543	0.571	0.796	0.706	0.759

OLS panel estimates, errors clustered at the country level. *, **, *** indicates significance at the 10, 5 and 1% level respectively. Inflation and real GDP growth are values for the rest of the world in the Receipt regressions, and values for the country in the Payment regressions

Table 13 Drivers of (ln) yields—all countries, since 1980

	Investment income		FDI		Portfolio equity		Portfolio debt		Other investment		Reserves
	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts	Payments	Receipts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L.ln Yield	0.754***	0.842***	0.652***	0.764***	0.624***	0.588***	0.738***	0.701***	0.855***	0.795***	0.687***
	(0.0300)	(0.0185)	(0.0454)	(0.0231)	(0.0788)	(0.0650)	(0.0502)	(0.0597)	(0.0367)	(0.0187)	(0.0205)
Δln $ Broad Index (increase = $ appreciation)	−0.861***	−0.882***	−0.518	−1.477***	−1.553***	0.0412	−0.934*	−0.566*	−0.712***	−0.672***	−0.549
	(0.106)	(0.118)	(0.311)	(0.198)	(0.475)	(0.466)	(0.481)	(0.279)	(0.231)	(0.203)	(0.649)
US 3-month interest rate	0.0589***	0.0250***	0.0156	0.0151*	0.00755	−0.0137	0.0466***	0.00358	0.126***	0.111***	0.185***
	(0.00655)	(0.00330)	(0.00984)	(0.00789)	(0.0150)	(0.0160)	(0.0120)	(0.0133)	(0.0124)	(0.00806)	(0.0276)
US 10-year treasury yield	−0.0246***	0.00252	−0.000323	−0.00254	0.0425*	0.0594**	0.0374*	0.0485**	−0.0658***	−0.0325***	0.00922
	(0.00808)	(0.00360)	(0.0176)	(0.0105)	(0.0209)	(0.0264)	(0.0186)	(0.0182)	(0.00867)	(0.00788)	(0.0321)
Inflation(Δln CPI)	0.185***	−0.00959	−0.0124	−0.0461	0.126	0.226	−0.160	0.0255	0.241***	−0.0390	−1.152
	(0.0551)	(0.0106)	(0.225)	(0.0517)	(0.179)	(0.395)	(0.307)	(0.134)	(0.0727)	(0.0254)	(2.420)
Real GDP Growth	0.0275	0.0510***	0.299	−0.00298	−0.402	0.106***	−0.0548	0.0775	0.0883***	0.0688	−0.803**
	(0.0277)	(0.0139)	(0.191)	(0.0615)	(0.264)	(0.0245)	(0.357)	(0.0509)	(0.0244)	(0.0489)	(0.297)
L. Capital Gains	−0.00296***	−0.00468***	−0.000241**	−0.00381***	−0.000914**	−0.000241***	−0.000292***	−0.000191	−0.00297**	−0.00553***	0.00571
	(0.000613)	(0.000647)	(0.000103)	(0.000706)	(0.000335)	(0.0000825)	(0.0000349)	(0.00170)	(0.00119)	(0.000598)	(0.00506)
Constant	−0.927***	−0.559***	−1.127***	−0.685***	−1.704***	−1.740***	−0.995***	−1.085***	−0.613***	−0.897***	−1.638***
	(0.127)	(0.0654)	(0.147)	(0.0859)	(0.380)	(0.298)	(0.192)	(0.210)	(0.155)	(0.0886)	(0.166)
Country Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1394	1469	1183	1396	799	855	832	952	1135	1161	379
Countries	35	35	35	35	33	33	33	35	34	34	22
Adjusted R^2	0.779	0.858	0.514	0.611	0.437	0.439	0.719	0.641	0.866	0.876	0.699

OLS panel estimates, errors clustered at the country level. *, **, *** indicates significance at the 10, 5 and 1% level respectively. Inflation and real GDP growth are values for the rest of the world in the Receipt regressions, and values for the country in the Payment regressions

Table 14 Drivers of (ln) investment income yields—all countries, AR(1) & dynamic panel

	Panel-corrected standard errors		Arellano-bond first difference	
	Receipts	Payments	Receipts	Payments
	(1)	(2)	(3)	(4)
L.ln Yield Investment Income	0.617***	0.720***	0.583***	0.639***
	(0.0420)	(0.0376)	(0.0681)	(0.0361)
Δln $-Denomination XR (increase = $ depreciation)	0.779***	0.273	0.675***	0.270*
	(0.221)	(0.215)	(0.251)	(0.161)
L.Δln $-Denomination XR (increase = $ depreciation)	−0.113	−0.0855	−0.0341	−0.0730
	(0.107)	(0.0960)	(0.116)	(0.0610)
Δln $ Broad Index (increase = $ appreciation)	−0.319	−1.025***	−0.589	−1.243***
	(0.256)	(0.303)	(0.400)	(0.196)
US 3-month interest rate	0.0563***	0.00497	0.0527***	0.00200
	(0.00962)	(0.00850)	(0.00950)	(0.00470)
US 10-year treasury yield	0.0113	0.0408***	0.0124	0.0442***
	(0.00950)	(0.0133)	(0.00980)	(0.00930)
VIX (normalized)	−0.00882	−0.0214	−0.0174	−0.0241***
	(0.0144)	(0.0135)	(0.0149)	(0.00570)
Global Stock Market Factor (normalized)	0.00303	0.00389	−0.00801	−0.00606
	(0.0175)	(0.0175)	(0.0169)	(0.00954)
Excess Bond Premium (normalized)	−0.0117	−0.0151	−0.00478	−0.00929
	(0.0106)	(0.0145)	(0.00845)	(0.00693)
Inflation(Δln CPI)	−0.124	0.742***	−0.125	0.811***
	(0.841)	(0.133)	(0.868)	(0.261)
Real GDP Growth	0.0300***	1.009***	0.0274***	1.052***
	(0.00725)	(0.143)	(0.00782)	(0.250)
L. Capital Gains	−0.00350***	−0.00556***	−0.00370***	−0.00634***
	(0.000672)	(0.000652)	(0.000710)	(0.000841)
Constant	−1.451***	−1.191***	−1.720***	−1.362***
	(0.142)	(0.149)	(0.236)	(0.131)
Country Fixed Effects	Y	Y	n.a.	n.a
Observations	984	987	941	943
Countries	42	42	42	42
Instruments	n.a.	n.a.	288	288

Dependent variable is Investment Income (Receipts and Expenses). (1) and (2) present the results of fixed effects regression with panel-corrected s.e. (AR(1) structure). (3) and (4) present dynamic panel regressions using Arellano-Bond in First Difference. *, **, *** indicates significance at the 10, 5 and 1% level respectively. Inflation and real GDP growth are values for the rest of the world in the Receipt regressions, and values for the country in the Payment regressions

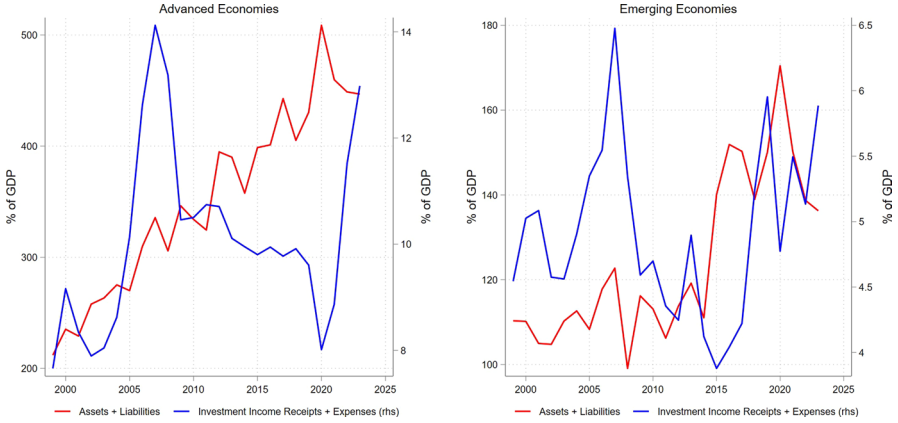

Fig. 8 Gross investment position and primary income flows since 1999 (median values, % GDP)
Note: The figure shows the median value across countries of the sum of international assets and liabilities (red line, left scale) and the median value of the sum of primary investment income receipt and payment flows (blue line, right scale).

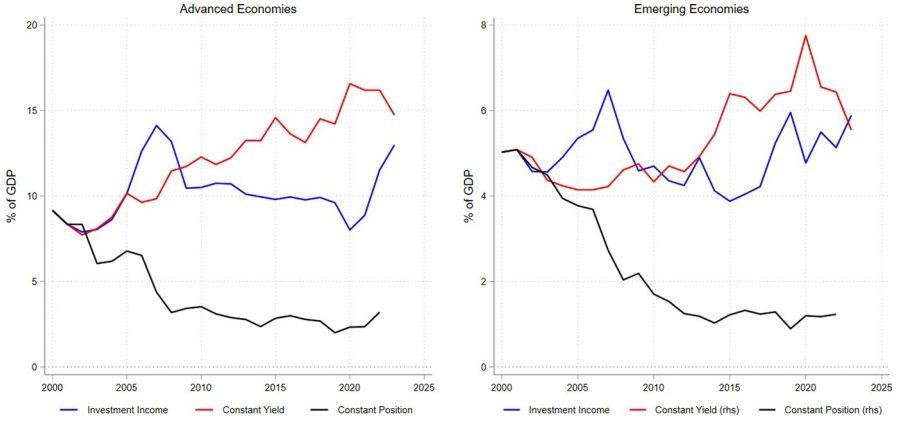

Fig. 9 Gross primary income flows: actual and counterfactual of constant positions or constant yields (median values, % GDP)
Note: The figure shows the median value across countries of the sum of primary investment income receipt and payment flows. The blue line shows the actual value (blue line in Fig. 1), the value if yields had remained unchanged from 2000 on but positions had evolved as they did (red line), and the value if positions had remained unchanged from 2000 on but yields had evolved as they did (black line)

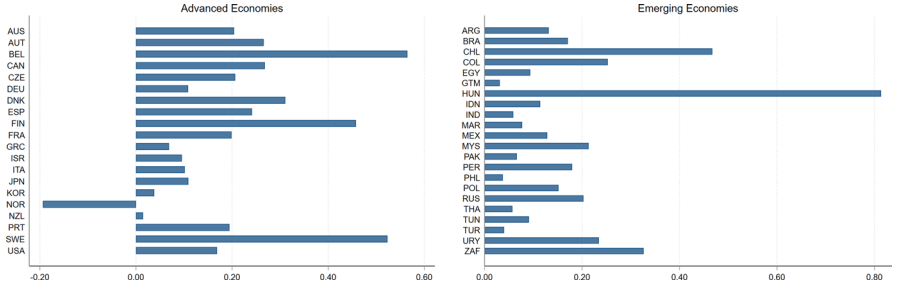

Fig. 10 Impact of a VIX increase on net investment income
Note: Impact of a 1 standard deviation increase in the VIX index on the net primary investment income (% of GDP). Median values: 0.1968 (advanced economies) and 0.1301 (emerging economies), dollar GDP weighted averages: 0.1664 (advanced economies) and 0.1419 (emerging economies)

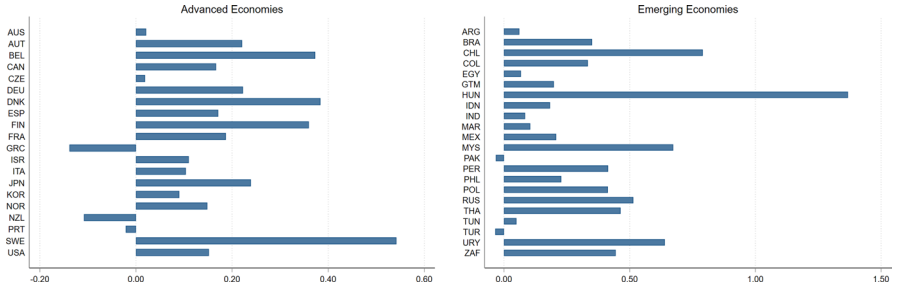

Fig. 11 Impact of a US short-term interest rate increase on net investment income
Note: Impact of a 1 percentage point increase in the US 3 months interest rate on the net primary investment income (% of GDP). Median values: 0.1593 (advanced economies) and 0.2807 (emerging economies), dollar GDP weighted averages: 0.1683 (advanced economies) and 0.2771 (emerging economies)

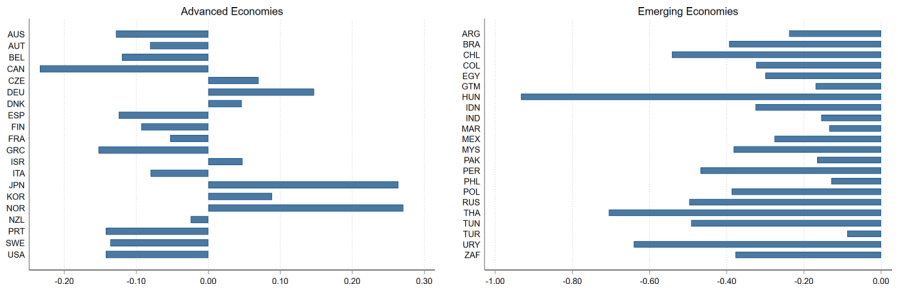

Fig. 12 Impact of a US long-term interest rate increase on net investment income
Note: Impact of a 1 percentage point increase in the US 10 year interest rate on the net primary investment income (% of GDP). Median values: − 0.0805 (advanced economies) and − 0.3514 (emerging economies), dollar GDP weighted averages: − 0.0510 (advanced economies) and − 0.3226 (emerging economies)

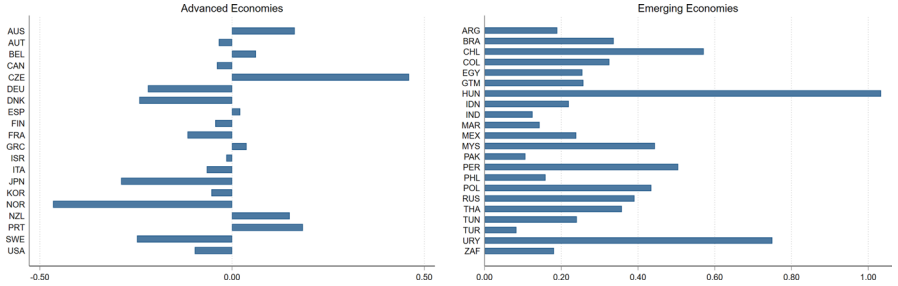

Fig. 13 Impact of a dollar appreciation on net investment income

Note: Impact of a 10 percentage point appreciation of the US dollar against all currencies on the net primary investment income (% of GDP). Median values: − 0.0415 (advanced economies) and 0.2560 (emerging economies), dollar GDP weighted averages: − 0.1082 (advanced economies) and 0.2699(emerging economies)

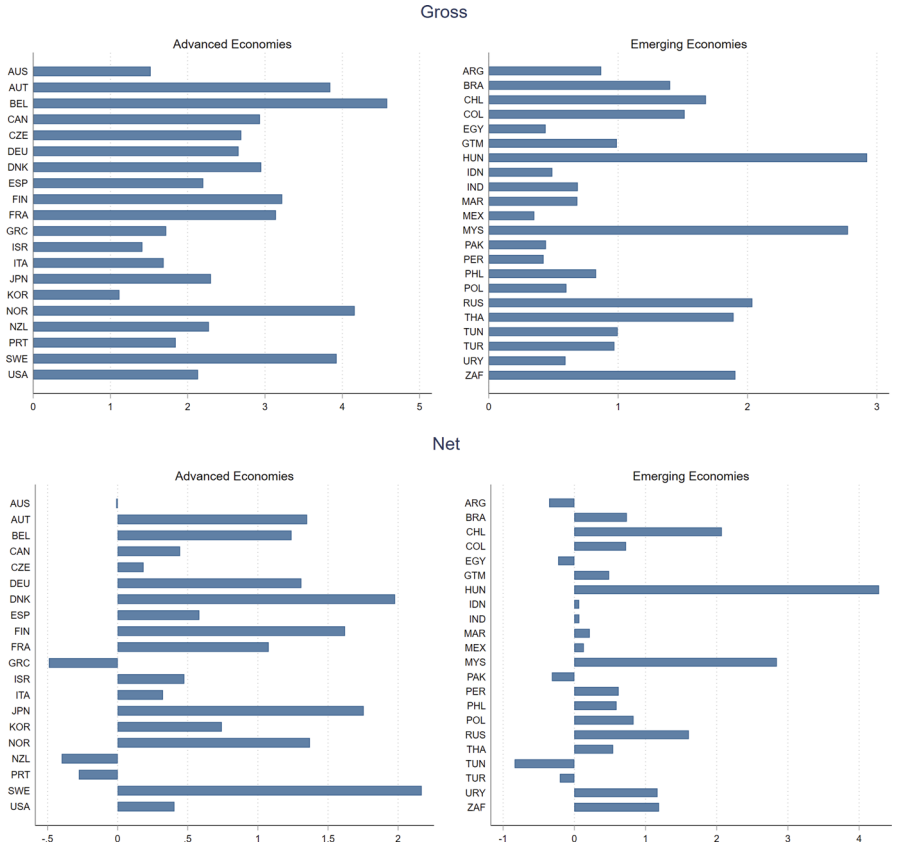

Fig. 14 Impact of rising US interest rates since 2021

Note: Impact of the actual increase of US short and long-term interest rates since 2021 on the gross (top panel) and net (bottom panel) primary investment income (% of GDP), in 2023

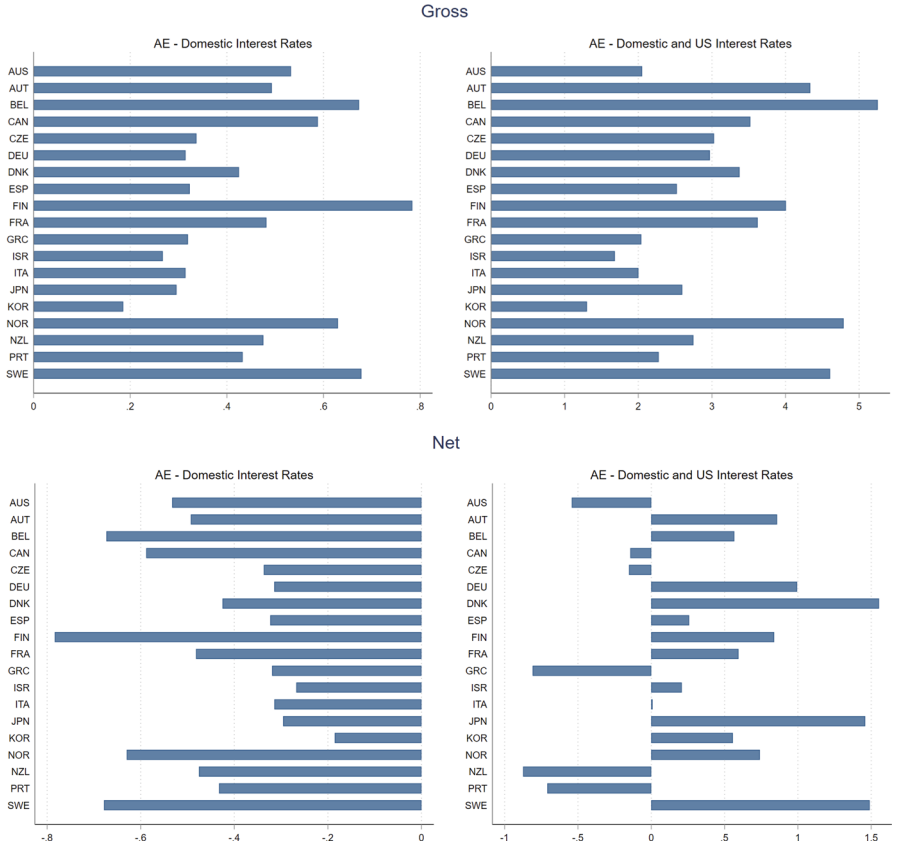

Fig. 15 Impact of rising US and domestic interest rates since 2021

Note: Impact of the actual increase of US and domestic short and long-term interest rates since 2021 on the gross (top panel) and net (bottom panel) primary investment income (% of GDP), in 2023. Effect of domestic interest rates (left panel) and total effect of US and domestic interest rates (right panel)

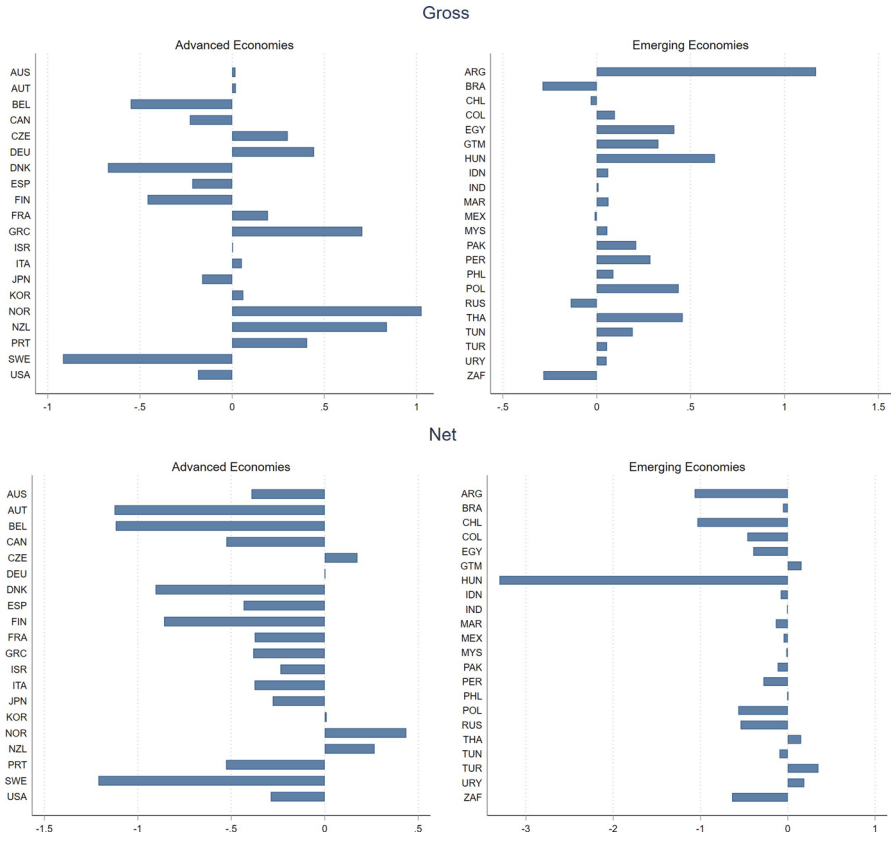

Fig. 16 Impact of world and domestic inflation since 2021
Note: Impact of the actual increase of world and domestic inflation since 2021 on the gross (top panel) and net (bottom panel) primary investment income (% of GDP) in 2023 (blue bars)

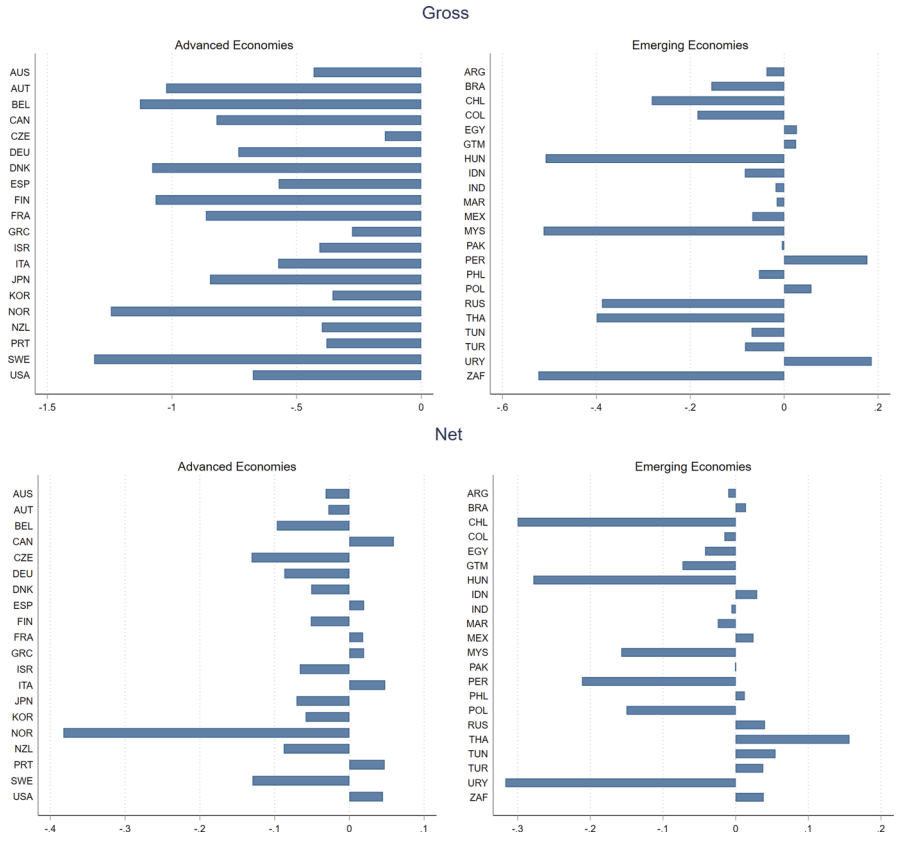

Fig. 17 Impact of US dollar appreciation since 2021
Note: Impact of the actual appreciation of the US Dollar since 2021 on the gross (top panel) and net (bottom panel) primary investment income (% of GDP) in 2023 (blue bars)

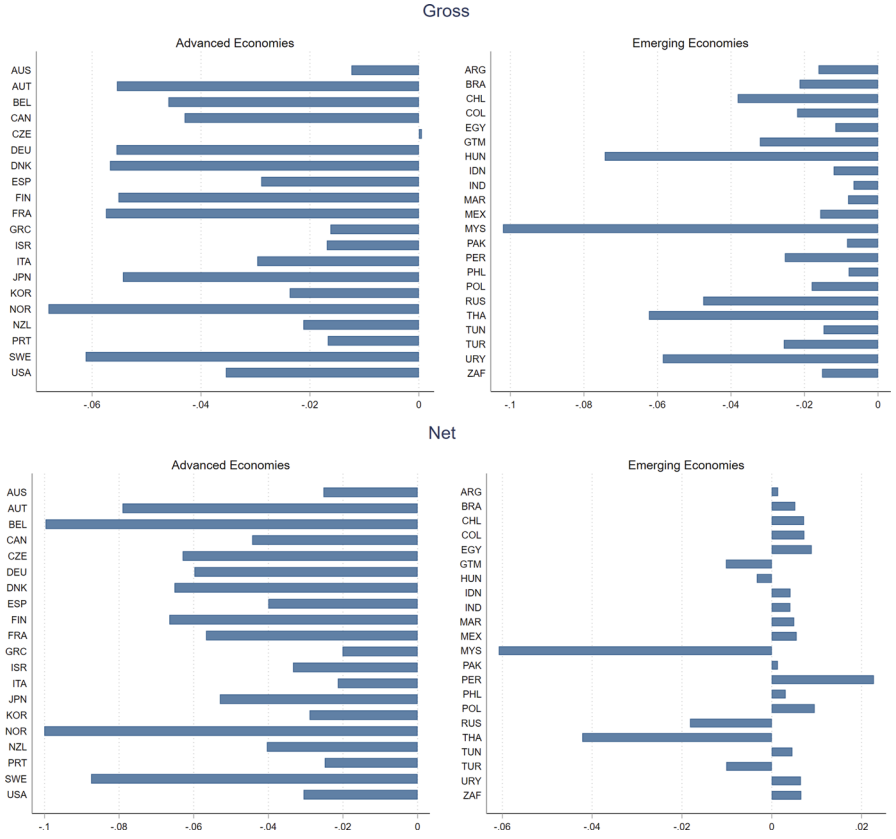

Fig. 18 Impact of VIX movements since 2021

Note: Impact of the actual movements of the VIX since 2021 on the gross (top panel) and net (bottom panel) primary investment income (% of GDP), in 2023 (blue bars)

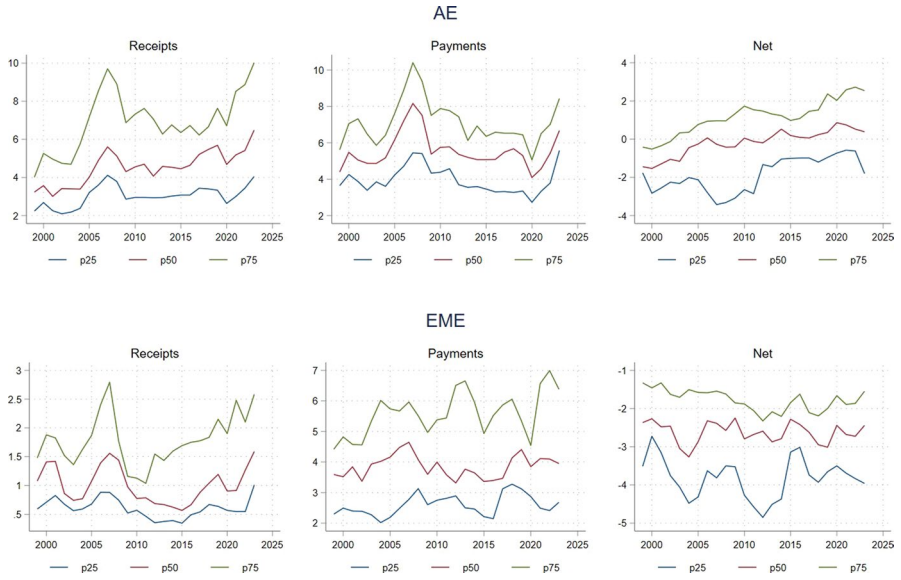

Fig. 19 Gross and net income flows, total (% GDP)
Note: The figure shows the investment income streams on assets (left panel), liabilities (middle panel) and in net terms (right panel), presenting the bottom quartile (blue line), median (red line) and top quartile (green line) of countries in the group. AE and EME and denote advanced and emerging economies

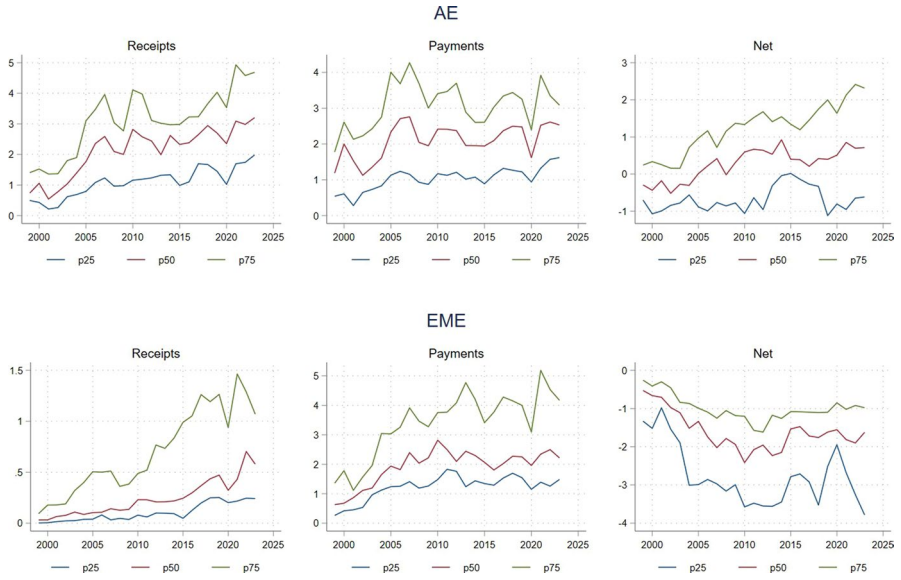

Fig. 20 Gross and net income flows, FDI (% GDP)
Note: The figure shows the investment income streams on assets (left panel), liabilities (middle panel) and in net terms (right panel), presenting the bottom quartile (blue line), median (red line) and top quartile (green line) of countries in the group. AE and EME and denote advanced and emerging economies

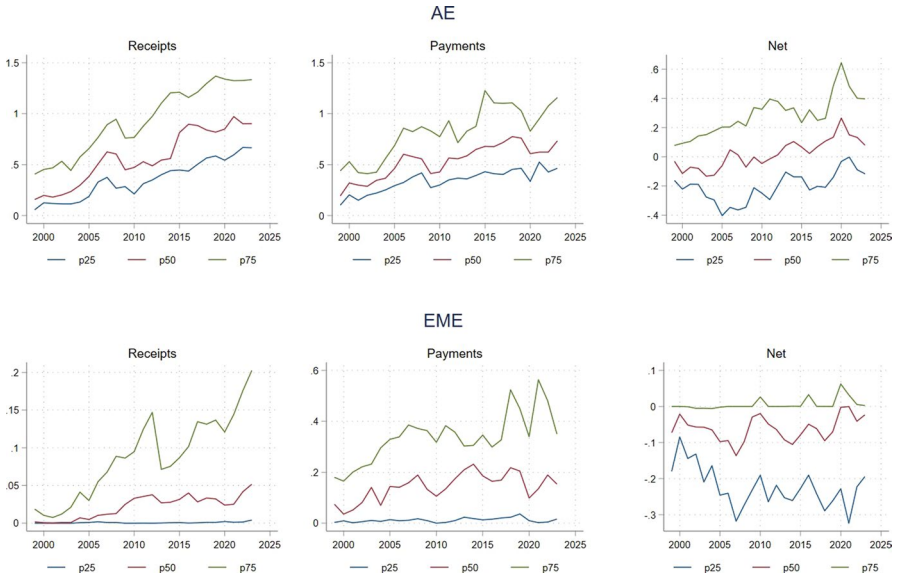

Fig. 21 Gross and net income flows, Portfolio equity (% GDP)
*Note:*The figure shows the investment income streams on assets (left panel), liabilities (middle panel) and in net terms (right panel), presenting the bottom quartile (blue line), median (red line) and top quartile (green line) of countries in the group. AE and EME and denote advanced and emerging economies.

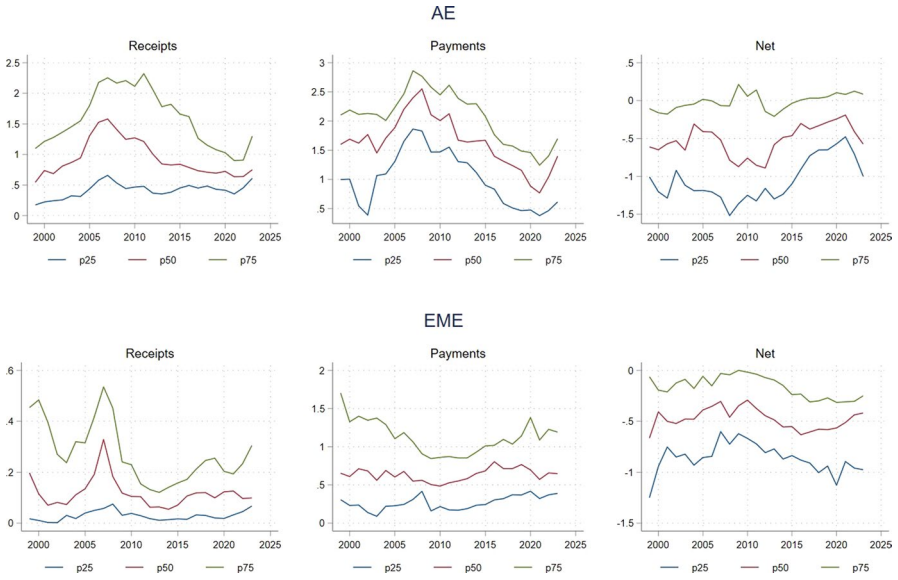

Fig. 22 Gross and net income flows, Portfolio debt (% GDP)
Note: The figure shows the investment income streams on assets (left panel), liabilities (middle panel) and in net terms (right panel), presenting the bottom quartile (blue line), median (red line) and top quartile (green line) of countries in the group. AE and EME and denote advanced and emerging economies.

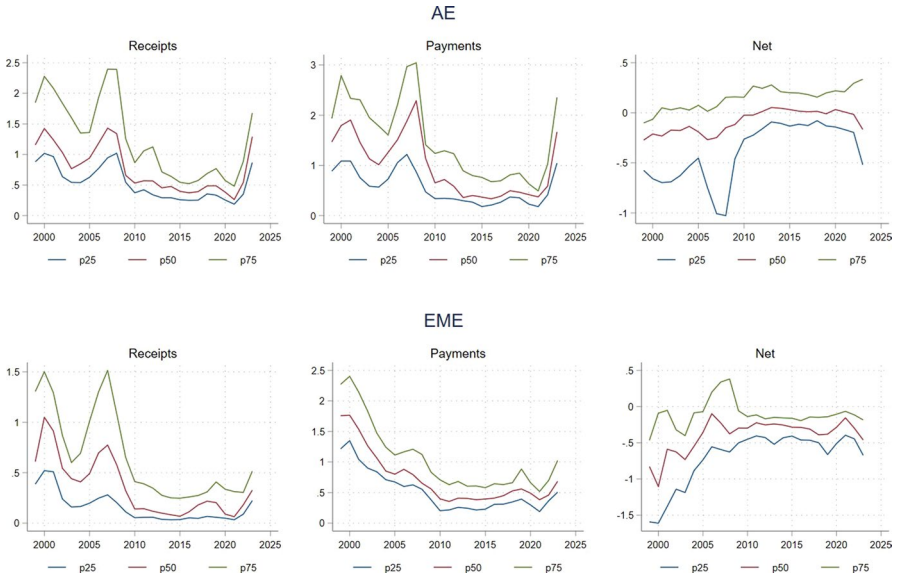

Fig. 23 Gross and net income flows, Other investment (% GDP)
Note: The figure shows the investment income streams on assets (left panel), liabilities (middle panel) and in net terms (right panel), presenting the bottom quartile (blue line), median (red line) and top quartile (green line) of countries in the group. AE and EME and denote advanced and emerging economies

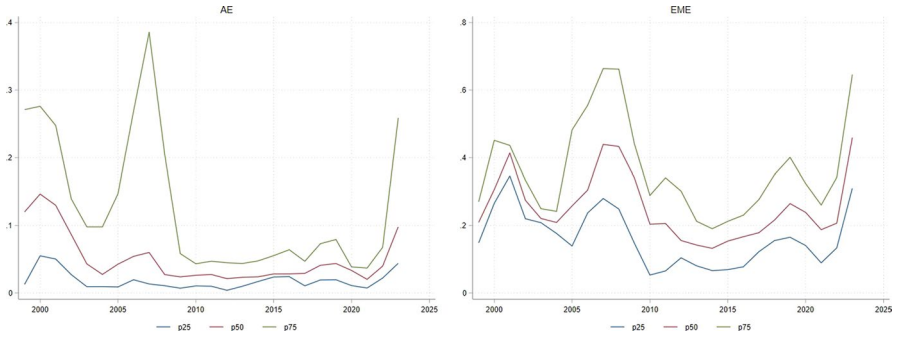

Fig. 24 Gross (also net) income flows, Reserves (% GDP)
Note: The figure shows the investment income streams on assets, presenting the bottom quartile (blue line), median (red line) and top quartile (green line) of countries in the group. AE and EME and denote advanced and emerging economies

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Declarations

Conflict of interest The authors state that there is no conflict of interest.

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