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FACTS AND SECURITY-LEVEL
EVIDENCE FROM EUROPE**

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Centre for Economic Policy Research
33 Great Sutton Street, London EC1V 0DX, UK
Tel: +44 (0)20 7183 8801
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CROSS-BORDER INVESTMENT IN EMERGING MARKET BONDS: STYLIZED FACTS AND SECURITY-LEVEL EVIDENCE FROM EUROPE

Abstract

We provide stylized facts on nonresident holdings of emerging market bonds and analyze the determinants of euro area investors' purchases of such securities, using a comprehensive security-level dataset that tracks net transactions of individual bonds issued by emerging market economies. Euro area investors show a preference for euro-denominated and sovereign EM bonds. Net purchases tend to be higher when the macroeconomic outlook of the respective EMs improves, and US monetary policy is loosened. Conversely, euro area investors—in particular investment funds—sell emerging market debt when global financial stress is high. In a case study for the BRICS countries, we find that euro area investors treat EM bonds issued through offshore affiliates differently from onshore securities, likely reflecting differences in currency composition. The sell-offs of EM debt in 2018 as well as during the Covid-19 shock only affected securities issued directly by domestic entities while euro area investors held on to securities issued through offshore affiliates.

JEL Classification: F30, F34, F65

Keywords: Emerging markets, International portfolio investment, Offshore financial centers

Katharina Bergant - kbergant@imf.org
International Monetary Fund

Gian Maria Milesi-Ferretti - gmilesiferretti@brookings.edu
Brookings Institution and CEPR

Martin Schmitz - martin.schmitz@ecb.europa.eu
European Central Bank

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1. Introduction

Portfolio debt flows have been an important source of external finance for emerging markets (EMs) during the past decade. As bank flows from advanced economies were scaled back in the aftermath of the global financial crisis, emerging market governments and corporates relied to an increasing extent on financing through debt securities. With more credible and stable monetary policy frameworks in many emerging economies, international investors increased their presence in these countries' domestic securities markets, especially for sovereign bonds, implying reduced exposure to currency risk for borrowers.

At the same time, portfolio flows have been criticized as a less stable source of external finance because of their volatility.⁴ An important question this literature raises is whether the geographical and sectoral composition of international investors in emerging market debt securities provides useful information to assess the stability of this source of external finance during periods of financial turmoil.

In this paper, we use aggregate and disaggregated data on foreign investment in emerging market debt securities to shed light on this question. We first provide a broad overview of international purchases of emerging market debt securities, highlighting both the growth of portfolio debt liabilities in recipient countries as well as the geographical composition of investor countries. In this overview, we also include the evolution of EM debt securities issued through offshore affiliates by EM corporates. In the balance of payments and international investment position, these securities are classified as portfolio debt liabilities of the country of residence of the offshore affiliate, and not of the country of nationality of the issuing corporation. We then turn to an examination of security-level holdings of emerging market debt securities by European investors, exploiting the ECB's security holdings statistics dataset, and extend this analysis to include securities issued through offshore affiliates by those countries relying more heavily on such bonds.

Our main findings are as follows. The aggregate data shows rising portfolio debt flows to EMs after the global financial crisis, as well as sizable issue of debt securities through offshore affiliates, particularly by Chinese entities. Most investment in EM securities flows through investment funds, as well as through direct purchases by insurance companies and pension funds. On the investor side, the geographical and sectoral pattern is quite different between investment in China and other EMs, with the former showing a larger share of holdings through Asian financial centers and larger holdings by central banks. Euro area countries are the largest investors in debt securities issued by the remainder of EMs, and their role has been increasing since the onset of quantitative easing in the euro area.

Against this backdrop, we analyze the determinants of euro area investors' capital flows to EMs in calm periods as well as in periods of economic turmoil, using a comprehensive security-level dataset that allows

⁴ See, for example, Calvo et al. (1993), Milesi-Ferretti and Tille (2011), Obstfeld (2012), Bluedorn et al. (2013), Gelos et al. (2019).

us to track net transactions of individual debt securities issued by emerging market economies. Our empirical results show that euro area investors show a preference for euro-denominated and sovereign EM debt securities. Net purchases tend to be higher when the macroeconomic outlook of the issuing country improves, and US monetary policy is relatively loose. Conversely euro area investors—in particular investment funds, the largest investor sector--actively sell emerging market debt when global financial stress is high. We also find marked differences in the currency preferences of investors from different sectors and in their reaction to changes in EMs' macroeconomic outlook. Regarding offshore issuance, we find that euro area investors treat securities issued through offshore affiliates differently from onshore securities and have larger holdings of Chinese securities issued offshore compared to onshore.

We contribute to a literature that provides analytical frameworks to identify the determinants of capital flows to and from emerging markets (EM). Since the early 1990s, this literature has used the distinction “push” and “pull” factors to separate external and domestic conditions in EM as determinants of capital flows (see for example Calvo et al. (1993), Fernandez-Arias (1996), Fratzscher (2012)). Now, there is a growing number of papers showing that global financial conditions as the main “push” factors can significantly affect capital flows and therefore financial conditions in EMs (Canova (2005), Dedola et al. (2017), Mackowiak (2007), Georgiadis (2016), Iacoviello and Navarro (2019), Vicondoa (2019)). While push factors are shown to determine when surges to EMEs occur (Ghosh et al. (2014)), domestic pull factors are also significant drivers of capital flows for EMs, especially for FDI (Eichengreen et al. (2018)). We contribute to this literature by documenting new determinants of capital flows at the aggregate and the security level while considering sectoral heterogeneity as well as offshore issuance of international securities.

The remainder of the paper is organized as follows. Section 2 provides an overview of foreign investment in EM debt securities, showing aggregate trends as well as highlighting the geographical and sectoral composition of investors. Section 3 presents the comprehensive euro area security-level dataset, including both a characterization of euro area investment in emerging market bonds along several dimensions (such as investing sector, currency, geography, and type of issuer) as well as a set of regressions to establish investment patterns more formally. Section 4 concludes and provides some directions for future research.

2. Foreign Investment in Emerging Market Debt Securities: An Overview

2.1 Data

To provide an overview of foreign portfolio investment in emerging market debt securities, we use three main sources of data:

- statistics on the balance of payments (BOP) and international investment position (IIP) by country published by the International Monetary Fund (IMF), supplemented by the External Wealth of Nations database (Lane and Milesi-Ferretti (2018); Milesi-Ferretti (2022));
- Bilateral data on portfolio holdings from the IMF's Coordinated Portfolio Investment Survey (CPIS);
- Data on international debt securities (stocks outstanding and net issuance) by residence and nationality published by the Bank for International Settlements.

The BOP and IIP statistics provide aggregate measures of total net purchases and holdings by nonresidents of emerging market debt securities. These securities include all bonds issued directly by domestic sectors (government and financial and nonfinancial corporates) on domestic or international markets. CPIS data provides information on the geographical composition of investor countries. In addition, the BIS reports data on debt securities issued internationally, on both a residence basis (the same principle used by the balance of payments) and a nationality basis (where, for instance, a bond issued by a Chinese company through a Cayman Islands affiliate is classified as Chinese). This helps identify offshore funding by emerging market corporates as the difference between international debt securities outstanding or net issuance on a nationality basis and a residence basis.

2.2 Foreign investment in EM portfolio debt securities

Foreign portfolio investment in EM debt securities was the only financial inflow category to rise during the period 2010-2020 relative to 2000-2008 (Figure 1). As a result, between 2007 and 2020 the stock of portfolio debt liabilities for emerging markets and developing economies (EMDE) rose from 5.7 percent of their GDP to close to 10 percent. If China is excluded, the ratio almost doubled, from 7.1 percent in 2007 to 13.9 percent in 2020. For the largest 30 recipients of foreign investment in emerging market debt securities (which account for over 90 percent of portfolio debt investment in EMDE as a whole) the median ratio to GDP also doubled, from around 11 percent in 2007 to 22 percent in 2020. The rising trend has been common across all regions (Figure 2), with a particularly sharp rise in Latin America and the Middle East in recent years. Asia remains the region with the lowest share of portfolio debt liabilities, given the low ratios in the largest economies (4.5 percent in China and 3.8 percent in India).

Table 1 presents some summary statistics on portfolio debt liabilities in emerging market economies. In a sample including those economies with GDP exceeding \$100 billion in 2020 (34 economies) China and Mexico head the list of the largest recipients in absolute terms, while the UAE, Qatar, and Chile have the largest portfolio debt liabilities as a share of GDP. Foreign investment in Chinese debt securities has been particularly strong in recent years, accounting for close to 60 percent of total portfolio debt flows to emerging economies since early 2020, when China was included in the JP Morgan EMBI Global Index.

2.3 Debt securities issued offshore

Balance of payments and international investment position statistics rely on the residence principle. Hence, only securities that are issued by entities resident in the country and bought by nonresidents are classified as portfolio investment liabilities. However, many large corporate entities in these economies raise funds on international markets by issuing debt securities offshore. These securities are thus not classified as portfolio debt liabilities of the country, because the issuer is an affiliate resident in a financial center. Conversely, some securities issued on international markets by entities resident in emerging and developing economies are issued by multinational corporations from other countries (for instance Spanish banks in Latin America). To better capture the offshore activity of firms residing in emerging markets, we make use of data from the Bank for International Settlements (BIS) on international debt securities classified by nationality of the issuer. By comparing these data with those on international debt securities classified by the residence of the issuer, also published by the BIS, we can get a measure of net offshore issuance of international debt securities by emerging market firms.⁵

The flow pattern is depicted in Figure 3, where we overlay portfolio investment in EM debt securities from a residence (BOP) perspective with net issuance offshore.⁶ The two series are strongly correlated: net offshore issuance is strong during periods of large portfolio flows to emerging markets.⁷ How does the inclusion of debt securities alter the size and geographical pattern of foreign investment in EM debt securities?⁸ For all EMs and developing economies, the difference in the outstanding stock of international debt securities at the end of 2020 between nationality and residence basis was about \$1.5 trillion, while total portfolio debt liabilities of EMs and developing economies at end-2020 were around \$3.55 trillion. A handful of countries account for the lion's share of net offshore issuance, with China alone representing over two thirds of the total. The second largest issuer is Brazil, followed by Russia, UAE, Qatar, India, and

⁵ The difference in net issuance of international debt securities by nationality vs residence captures net offshore issuance by EM corporates abroad minus net international issuance by foreign multinational corporations through their EM affiliates. See the discussion in BIS (2021).

⁶ As explained further below, we focus on a sample of 35 emerging markets, including virtually all major main destinations of portfolio flows.

⁷ Note that in theory portfolio debt securities issued offshore by EM entities could be purchased by residents of the country of the multinational firm in question, in which case they would not be associated with foreign investor activity. Coppola et al. (2021) provide evidence that investor countries tend to hold more bonds issued offshore by their own corporates relative to bonds issued by corporates of other nationalities.

⁸ In terms of the balance of payments, funds raised through security issuance offshore are often channeled to the domestic parent via an inward foreign direct investment transaction between the affiliate to the parent (a loan by the former to the latter). For countries making more extensive use of such operations, this provides a cautionary note to a strict interpretation of the nature of capital flows (for instance stable FDI vs volatile portfolio investment). See also Blanchard and Acalin (2016).

South Africa. As shown in figure 4, for these countries, the figures on international issuance by corporates notably increase their footprint in international portfolios.⁹ Conversely, international issuance by affiliates of foreign multinationals exceeds international issuance offshore by domestic firms in Turkey, Peru, and Chile, but by smaller amounts in absolute terms.

2.4. The time-series behavior of portfolio flows

Our goal is to provide some aggregate evidence on the time series behavior of total portfolio debt flows to emerging market economies, focusing on a sample of 35 countries, the largest recipients of portfolio debt flows, and compare it to the behavior of net issuance of bonds offshore on a nationality basis as well as to the pattern of overall flows to these EMs.¹⁰ As explanatory variables we include an index of financial market volatility (the VIX); the real effective exchange rate of the dollar against advanced economies' currencies, the change in US short-term shadow interest rates (using data based on the methodology of Wu and Xia, 2016); a linear time trend to capture rising portfolio debt flows; and dummy variables for periods of high financial market turbulence: the 4th quarter of 2008, the taper tantrum in the 2nd and 3rd quarter of 2013, and COVID-related turmoil in the first quarter of 2020. The inclusion of the US real exchange rate vis-a-vis other advanced economies is in line with the recent findings of Obstfeld and Zhou (2022) who show a strong co-movement between this variable and a number of emerging market variables, including real GDP, trade, and investment. The data is quarterly and spans the period 2000-2021Q4. For all measures of flows, we provide results both for the aggregate sample of all 35 emerging markets as well as for an aggregate sample that excludes China. The data on flows is presented in percentage of total GDP of the relevant sample.

Table 2 characterizes the size and volatility of the different flow measures. Portfolio debt flows represented about 20 percent of total inflows in the period after the global financial crisis, averaging less than 1 percent of GDP per year. Their volatility, proxied by the coefficient of variation, is higher than for overall financial flows, as widely documented in the literature. Net offshore issuance is more modest than portfolio debt flows, particularly once China is excluded from the sample.

⁹ One caveat to this comparison is that the BIS statistics used to construct measures of offshore issuance are compiled on a face value basis, while many countries report IIP statistics on portfolio debt liabilities at market value. This matters particularly during periods of financial stress, when the market value of EM debt securities declines (e.g. Argentina 2001-2002, 2019-20).

¹⁰ The countries are Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay, Venezuela in Latin America; Bulgaria, Croatia, Hungary, Poland, Romania, Russia, Turkey, and Ukraine in Central and Eastern Europe; China, India, Indonesia, Malaysia, Pakistan, Philippines, Sri Lanka, Thailand, and Vietnam in emerging Asia, and Egypt, Jordan, Kazakhstan, Kuwait, Lebanon, Morocco, Nigeria, Qatar, Saudi Arabia, and South Africa in Africa, Central Asia, and the Middle East. We lack comprehensive balance of payments data for the United Arab Emirates, a recipient of large portfolio inflows in recent years.

Table 3 presents regression results, which are in line with the findings in much of the literature. Portfolio debt flows to emerging economies have displayed a positive time trend during this period. They tend to be lower in periods of market volatility, dollar strength, and particularly so during the periods of high financial market turmoil identified above. The coefficient on changes in US policy rates is negative, as expected, but not precisely estimated. Issuance through offshore entities also tends to be lower during periods of market volatility and dollar strength. However, there is no evidence of a positive trend in issuance—on the contrary, when China, the main offshore issuer, is excluded, offshore corporate issuance is declining. Also, offshore issuance does not decline more during periods of extreme market turmoil. Finally, the results for total financial flows to emerging economies are also in line with the evidence on portfolio debt flows, but with no significant increase over time and with a more precisely estimated negative relation with changes in US interest rates.

2.5 The investor side

Data from the International Monetary Fund's Coordinated Portfolio Investment Survey (CPIS) provides an important complement to investment destination data by helping identify the residence of investors in emerging market securities. The survey, conducted annually between 2001 and 2012 and every 6 months thereafter, provides a geographical breakdown of the portfolio investment assets for most large international investors in foreign debt securities, including many central banks. Aggregating investor holdings for each destination country enables us to construct a “derived” measure of portfolio debt liabilities. These “derived” liability data are typically a bit lower than portfolio debt liabilities reported by individual countries, given the incomplete investor coverage and potentially incomplete coverage of foreign holdings of domestic investors in some countries. As explained in the data Appendix, the CPIS may miss some 20 percent of debt securities holdings, mostly reflecting central bank reserves held in the form of securities.

Figure 5 summarizes the geographical composition of investors in debt securities issued by EMs and developing economies (EMDEs) and how this composition evolved between 2007 and 2020. It also compares total EMDE portfolio debt liabilities identified through mirror asset data with total portfolio debt liabilities reported by EMDEs in their IIP (broken line). The figure shows how investors from advanced economies account for the lion's share of investment in EMDE securities, and among those euro area investors are the largest. Figure 6 presents the same graph separating China from the rest of emerging and developing economies. The picture for the latter is similar to figure 5, but the composition of investors in Chinese securities is completely different: investors based in Hong Kong and Singapore account for a large, albeit declining, share, with central banks and international organizations taking second place. The joint share of euro area, US, Japan, and UK investors, which is almost $\frac{3}{4}$ for EMDEs excluding China, is only 20 percent for China.

In recent years, the Coordinated Portfolio Investment Survey has been enhanced with the reporting by many investor countries of the sectors holding portfolio instruments. Figure 7 provides a summary as of end-2020 of the sectors holding emerging market debt securities, separating out China from the remainder of emerging market economies (in light of the differences in holders shown in Figure 6). There are sizable differences in the pattern of holdings at the sectoral level too. For emerging markets excluding China, we can track or estimate the sectoral pattern of holdings for over 93 percent of the liabilities identified in the CPIS.¹¹ Over half of these securities are held by investment funds, money market funds, and other financial institutions (excluding deposit-taking institutions, insurance companies, and pension funds). The second largest holders are long-term investors--insurance companies and pension funds, with some 20 percent of the total, followed by banks.¹² Other sectors (central banks, and the remainder, which includes households, government, and nonfinancial corporations) play a more modest role. For China, we can track around 85 percent of holdings and hence we must rely on estimation rather than directly reported data for a larger share than for the remainder of EMDEs. With this proviso, the largest holders are central banks and international organizations, with about 1/3, followed closely by investment funds and banks.

We close this section by highlighting two shortcomings of the investor data from CPIS. The first is the identification of the ultimate investors holding emerging market bonds. Suppose for instance that a US household holds shares of an Irish investment fund that invests in emerging market bonds. In CPIS (and in balance of payments and IIP statistics more generally) Ireland will be identified as the investor country (while the holding of the investment fund shares will be included in US statistics as an equity claim on Ireland). This bias is particularly acute when financial centers play a significant role as bond holders. This is clearly the case for investment in Chinese bonds, which, as shown in Figure 6, comes primarily from financial centers, but also for the behavior of euro area investors, given the prominence of Ireland and Luxembourg in their holdings of EM bonds. Section 3 discusses the euro area data in more depth and provides some evidence on who ultimate investors are through administrative security level holdings data.

A second shortcoming is the lack of information on holders of EM corporate bonds issued offshore. Despite valuable recent research efforts (see Bertaut et al, 2019 and Coppola et al, 2021) coverage remains incomplete. The exception is US data, where Bertaut et al. (2019) have constructed US portfolio asset allocations based on the nationality of the issuer of the security for the universe of US holdings of equity and long-term bonds issued abroad.¹³ Figure 8 provides some evidence from that dataset for the main

¹¹ The data appendix explains in more detail the use of estimates to supplement reported data.

¹² Note that the share of these investors is understated since they also hold portfolio debt securities issued by EMs through investment funds. See the next section for a discussion.

¹³ It is important to note that residents of the country of nationality of the issuer may also be holding bonds issued offshore by domestic corporates, while by definition a country's portfolio debt liabilities are held

emerging market economies issuing debt securities offshore, showing that in some cases—particularly for Brazil and China—those holdings are substantial. The proportions of offshore-issued bonds by these countries held by US investors (18.6 percent for Brazil and 3.3 percent for China) are also similar to the proportion of portfolio debt instruments by these countries held abroad that are owned by US investors (13.1 percent for Brazil and 3.3 percent for China). Section 3 discusses related figures for euro area investor holdings of offshore-issued EM bonds.

3. Euro Area investment in EMs under the Microscope

3.1 Dataset

We use data on security-level portfolio holdings and transactions of all 19 euro area Member States from the European System of Central Banks (ESCB) Securities Holding Statistics by Sector (SHSS). The data are collected by National Central Banks from (i) financial investors and (ii) custodians. We include all short-term and long-term debt securities held by euro area investors. The data are collected quarterly since the first quarter of 2013, and we use releases until the last quarter of 2020 for our analysis. The SHSS data consists of *directly* and *indirectly* reported securities. A financial institution resident in the euro area is obliged to report securities that it holds as its own investment (“direct reporting”) as well as securities that it holds in custody (“indirect reporting”). To avoid double reporting, only assets held in custody for non-financial investors are included in the SHSS.¹⁴ Investors in the data are defined by their country of residence and institutional sector. In line with the IMF’s Balance of Payments Manual (BPM6) the data relies on the residency principle and therefore records all holdings and transactions by investors resident in a country, independent of their nationality.¹⁵

exclusively by nonresidents. Coppola et al (2021) provide some evidence that for the main advanced economies residents tend to hold a higher share of bonds issued offshore by domestic firms relative to residents of other countries.

¹⁴ Double counting would happen if there are several intermediate financial institutions between the final non-financial investor and the financial institution holding assets in custody.

¹⁵ For instance, holdings by Citi’s subsidiary in Frankfurt would be considered German banking sector holdings. On the other hand, Deutsche Bank’s holdings through its subsidiary in New York are not captured.

We follow the European System of Accounts (2010) and aggregate the data to six main sectors: monetary and financial institutions (MFI),¹⁶ insurance companies (IC), pension funds (PF), investment funds (IF), households (HH), and Other which includes governments (GOV), other financial institutions (OFI), and non-financial corporations (NFC)¹⁷. Using the ISIN for each security, we obtain individual asset characteristics from the ESCB's Centralised Securities Database (CSDB) which contains information on over six million debt and equity securities issued globally. Therefore, we can make use of information at the security level, such as the maturity, market prices, or the currency of denomination.

3.2 Stylized facts

Before analyzing the determinants of euro area investment in EM debt securities in a regression setting at the security level, we provide a granular overview across several dimensions. Holdings of EM debt securities have risen steadily since 2014 and now account for around 4 percent of euro area investors' total debt securities portfolio, including domestic securities (Figure 9). While this might seem small at first sight from a euro area perspective, these holdings are sizeable for the issuing EM countries. As shown in Figure 5, euro area investors accounted for around 1/3 of foreign portfolio investment in EMs in 2020. Given the important role of euro area investors it is crucial for EMs to understand their investment behavior, for instance in response to global shocks.

We zoom in further by considering the role of different institutional sectors among euro area investors (Figure 10). IF are by far the largest holders of EM debt, accounting for more than 70% of the euro area's investment at the end of 2020, followed by IC, MFI, and PF. HH and other (NFC, OFI, and GOV) hold much smaller shares. Most sectors -- particularly IC and PF -- show strong increases in holdings since 2013.

The large holdings of IF indicate that the exposure of the other euro area investors to EM debt is in fact much higher once their "indirect" exposure via IF is considered. While not directly observable in the data, the estimation method developed by Carvalho and Schmitz (2021) provides a "look-through" of investment funds to gauge the other euro area sectors' holdings of EM debt via investment funds (Figure 11). These estimates shows that the absolute and relative amounts of indirect holdings of EM debt have increased for all euro area sectors since 2014, particularly strongly for IC, PF, and HH. Most strikingly, over 90% of euro area HH exposure to EM debt is in the form of indirect holdings via investment funds.

Next, we consider the currency composition of euro area holdings of EM debt (Figure 12). The largest share (around 45% in 2020) is denominated in US dollars, followed by EMs' local currencies (33%). The latter

¹⁶ This sector represents the banking sector but does not include monetary authorities which are covered by the SHSS.

¹⁷ GOV, OFI, and NFCs hold very small amounts and show relatively small transaction amounts of EM securities which is why we aggregated this category to "Other".

accounted for the largest share in 2014, after which the US dollar took over as the leading currency and continued to increase its share since. The share of euro-denominated bonds has remained relatively stable at around 20% throughout our sample period.

We now turn to quarterly transactions (net purchases/sales) by euro area investors in EM debt securities. Figure 13 shows that also transactions are dominated by the IF sector, followed by MFI, IC and PF. Given the length of the sample period for which securities-level data are available, the period with the most extreme financial distress captured in the sample is the first quarter of 2020, amid the first Covid wave. The sell-off was by far the largest recorded during our sample period, but was limited to a single quarter, after which net purchases rose to a record high in 2020Q4. In other periods of heightened stress for emerging markets such as the second half of 2015 and second half of 2018 net sales of EM debt were also observed, but on a much smaller scale than in 2020Q1.

Figure 14 presents the geography of euro area investors' purchases of EM debt securities by destination region. From 2015-2017, we see large net purchases of Latin American securities, while the purchases of Chinese securities picked up significantly after Covid-19, consistent with the evidence shown with aggregate data in Section 2. The sell-off of EM debt recorded in 2020Q1 affected all EM regions, with the largest net sales recorded for securities issued in Asia, followed by other EMs, Latin America, and Europe. As regards currencies, euro area investors were net buyers of US dollar and EM local currency denominated bonds for most of our sample period, while local currency bonds suffered the strongest sell-off during the Covid-19 shock of 2020Q1, followed by US dollar bonds (Figure 15). Euro denominated bonds were purchased on a smaller scale but remained persistently positive – even during 2020Q1.

In terms of the sector of the issuer, euro area investors hold mostly sovereign debt (around 72% of their EM debt portfolio) and trade larger volumes of this category (Figure 16). During the Covid-19 shock, euro area investors sold more than EUR 20bn of EM sovereign debt. Although high uncertainty also prevailed in the corporate sector during this time, the net sales of private sector securities only amounted to around USD 1bn. These net sales of public and corporate debt were outweighed by strong net purchases during the rest of 2020. The currency composition of debt instruments helps explain this evidence—a notable share of government debt securities is in local currency while the lion's share of corporate holdings is denominated in dollars or euros.

The focus so far has been on debt securities issued by entities resident in EMs. However, EM corporates also issue securities through overseas affiliates based in financial centers. Aggregate statistics on issuance of these international securities by nationality of the corporate entity are collected and published by the Bank for International Settlements (see Section 2), but detailed data on holders of those securities are generally not available. In this paper we use Bloomberg data which allows us to identify the nationality of the ultimate parent company for individual bonds issued in offshore financial centers, and collect data on individual securities issued offshore for the main EMs relying on such financial instruments--Brazil, Russia,

India, China and South Africa (BRICS). Using the individual codes for such securities (the so-called ISIN codes), we can calculate net purchases and holdings by euro area investors and add them to our analysis.

Figure 17 shows that euro area investors have increased their holdings of BRICS debt securities issued offshore since 2013, both in absolute terms and as a proportion of their total holdings of BRICS securities. Figure 18 shows that this is primarily driven by holdings of Chinese securities issued offshore. There are also significant holdings of bonds issued offshore by Brazilian and South African firms, while offshore debt securities play a smaller role for India and Russia. Figure 19 depicts net purchases of EM debt securities over time. General sell-offs such as in 2018 and 2020Q1 were limited to onshore securities, while euro area investors did not sell offshore securities (which are mostly denominated in international currencies). Subsequently, in 2020Q3, euro area investors made the largest net purchases of offshore BRICS securities on record. This suggests that there may be a different treatment by euro area investors between offshore and onshore securities in times of stress. Finally, Figure 20 sheds light on the currency decomposition of onshore (lhs) and offshore (rhs) bonds issued by BRICS. While most debt securities in most BRICS (all except for India) are in local currency, offshore securities are mainly denominated in USD (especially in Brazil, China, and India) or euro (especially in Russia and South Africa).

3.3 Empirical Framework

In this section, we want to identify determinants of portfolio flows more formally and we run the following panel regression:

$$\frac{Transactions_{a,i,j,t}}{Holdings_{a,i,j,t-1}} = \beta_1 * EUR_a + \beta_2 * USD_a + \beta_3 * LC + \lambda * SOV_a + \eta * x_{j,t} + \sigma * China_{j,t} + \kappa * Yield_{a,t} + \gamma_i + \alpha_{i,j} + \theta_t + \varepsilon_{a,i,j,t} \quad (1)$$

where

- $\frac{Transactions_{a,i,j,t}}{Holdings_{a,i,j,t-1}}$ represents the share of country-sector i's net transactions (i.e., net sales or purchases) in period t of security a issued by country-sector j of its holdings in t-1.¹⁸
- $\beta_1 - \beta_3$ are coefficients for the dummies whether the security is dominated in euro, US dollar, any other non-local currency ("Other"), or local currency, respectively;

¹⁸ The variable includes – by definition – only securities that were held in the previous period. New purchases represent on average only five percent of purchases. As a robustness test, we also run this estimation with $\frac{Transactions_{a,i,j,t}}{Amount\ Outstanding_{a,t}}$ as the left-hand side variable while controlling for $\frac{Holdings_{a,i,j,t-1}}{Amount\ Outstanding_{a,t-1}}$ on the right-hand side where our main results remain robust.

- SOV is a dummy indicating whether security a is issued by sovereigns;
- $\eta * x_{j,t}$ estimates the change in expectations on issuing country j 's macroeconomic performance, measured by the revision of the real GDP forecast over the next two years as documented in the IMF's World Economic Outlook.¹⁹
- $China_{j,t}$ is a dummy that is equal to one if (i) the security has been issued by China and (ii) $t > 2015$ where China was included in major international indices, such as the MSCI.
- $\kappa * Yield_{a,t}$ estimates the effect of security a 's yield to maturity (measured in percent).
- γ_i are holder country-sector fixed effects (FE) -- e.g. for German MFI, French IC, etc..
- $\alpha_{i,j}$ are bilateral FE to control for gravity variables such as distance, bilateral trade etc.
- θ_t are time (quarter) FE

In addition, we run a specification in which we control for security-level fixed effects, to obtain very precise estimates for the issuer-(EM) country time-varying variables such as revisions to the macroeconomic performance.

In our baseline regression, we argue that time FE are the most precise way to control for any confounding global time-varying factors. However, it remains insightful to analyze what drives them. For this, we estimate the following time series regression:

$$\theta_t = \rho * VIX_t + \varsigma_1 * US\ shadow\ rate_t + \varsigma_2 * EUR\ shadow\ rate_t + \tau * Covid_t \quad (2)$$

where

- VIX_t shows the impact of global uncertainty in time t
- EUR and USD shadow rates are the respective policy rates corrected for the ZLB
- $Covid_t$ is a dummy that is equal to one for the Covid period in 2020 Q1

As in Fidora, Bergant and Schmitz (2020) we take advantage of our empirical set-up which allows for assessing heterogeneity between the various investor sectors by estimating sector-specific coefficients. This simultaneously estimates the heterogeneous coefficients so that we can directly infer statistical differences. In addition, we analyze equation (2) at the sectoral level.

¹⁹ For this, we compare subsequent quarterly vintages of the IMF's forecast and use changes in the two-year forecast of GDP-growth at the country level.

3.4. Results

Baseline

Table 4 shows the baseline results from equation (1) adding different fixed effects throughout the specifications. This exercise helps reconcile the regression results with the stylized facts identified earlier in this section. Note that the coefficients on the currency of denomination are to be interpreted relative to the excluded category, which is denomination in local currency. Column (1) highlights a general preference for government debt securities, a result that holds across all specifications, as well as for securities issued in US dollars. On average, net purchases of sovereign debt securities are over two percentage points larger (as percent of existing holdings) than purchases of corporate debt. On the other hand, euro area investors are less likely to purchase securities issued in foreign currencies other than the euro and the US dollar. As we add investor country-sector fixed effects and destination country fixed effects (column 4) results point to a preference for euro-denominated securities, while the negative coefficient on other foreign currencies loses statistical and economic significance. In other words, in the main destination countries of euro area investment securities are mostly denominated in U.S. dollars but holding the destination country constant euro area investors prefer securities denominated in their own currency. Along similar lines, countries issuing in foreign currencies other than the euro and the US dollar are not main destination countries of euro area investment but holding the destination constant there is no specific aversion to bonds denominated in other foreign currencies relative to those issued in domestic currency. As all specifications control for purchases of government bonds -- which are preferred throughout specifications -- these preferences regarding currencies are to be interpreted as within corporate and sovereign debt securities, respectively. In terms of magnitude, net purchases as a share of existing holdings are 1.9 and 1.3 percentage points higher for euro and U.S. dollar denominated securities, respectively. The finding of a strong home-currency bias is in line with findings by Maggiori et al. (2020) who show for a global sample that investors disproportionately invest in bonds denominated in their own country's currency, even controlling for the issuing country.

Once we control for bilateral country FE net purchases of debt securities also depend on the macroeconomic outlook of the issuer country: they are positively correlated with the change in its growth expectations over the medium term. Moreover, euro area investors demand for Chinese securities picked up after these were included in major global indices (such as MSCI) as of 2016. However, this result is insignificant when we include security-fixed effects (column (5) in Table 4), which suggests a high correlation of the China dummy with other security-specific characteristics—for instance a change in security characteristics after 2016.

Table 5 undertakes some robustness checks on the results presented in column (4) of Table 4 (replicating that regression in column (1)). Column (2) shows that the results are not driven by the inclusion of the Covid

period, while column (3) shows that net purchases appear unrelated to the yield on securities once all other controls are included.

In Table 6 we examine the drivers of the time FE derived from columns (4) and (5) of Table 4. Euro area investors buy less EM securities when uncertainty in global financial markets is high, in line with the global analysis presented in Table 3. We also include the US and euro area shadow policy rates as our measures of financial conditions. Euro area investors' net purchases of EM securities only correlate significantly with the US shadow rate. This finding likely reflects both the fact that debt securities denominated in dollars represent the largest share of EM debt securities held by euro area investors, as well as the impact of the US rate on global financial conditions. The negative sign may indicate that a lower US shadow rate can imply looser financial conditions for EM issuers, especially when liabilities are denominated in US dollars, leading to larger purchase of EM debt by euro area investors. The Covid-19 dummy for the first quarter of 2020 turns out insignificant, suggesting that its impact is well captured by other regressors (notably the VIX).²⁰

Sectoral Heterogeneity

In Table 7, we interact each right-hand-side variable with investor sector dummies to analyze sector heterogeneity. The advantage of this identification strategy is that coefficients are directly comparable in size across sectors. MFIs show the clearest aversion towards local-currency bonds as they show the largest euro, US dollar, and other foreign currency bias. IC also show a euro preference and IFs prefer US dollar-denominated bonds, whereas households and others do not show a significant preference for EUR or US dollar denominated securities. One hypothesis for this is that the latter are potentially less or not at all constrained by financial regulation.

Our five main sectors (i.e. all except for "Other", comprising OFI, NFC and GOV) show a preference for sovereign debt which is most pronounced for PF and MFI. Regarding adjustments in macroeconomic expectations, IF and MFI seem to invest pro-cyclically, i.e. they conduct more net purchases of countries' securities when the macroeconomic outlook is revised upwards. On the other hand, the Other sectors appear to invest counter-cyclically, potentially because they are less constrained by benchmark targets directly imposed by investors. PF, IF, and IC show significant preferences for Chinese securities after 2016 which suggests that their investment pattern correlates with the major global indices, such as the MSCI. Taken together, the investment pattern in EM debt among euro area sectors shows heterogeneity,

²⁰ We also test other dummy variables for time periods in our sample which were characterized by heightened stress for emerging markets such as the second half of 2015 and second half of 2018. These dummy variables turn out to be insignificant as well.

particularly regarding the currency dimension and the macroeconomic outlook, which seems consistent with different institutional constraints faced by economic sectors.

In Table 8 we analyze the sector-level equivalent of equation (2) to examine the drivers of the sector-time FE derived from the estimation reported in Table 7. Euro area investor sectors react in a broadly similar fashion to US monetary policy (as measured by the shadow rate) and to global risk aversion (as measured by the VIX). The largest positive impact of looser US monetary policy on net purchases of EM debt is observed for MFI, while higher levels of risk aversion are associated with the largest net sales for MFI and IF. Due to the dominant role of IF in the euro area's holdings of EM debt, shocks to global risk might cause particularly large net sales of EM debt by the euro area in absolute terms. A few sectors (MFI and HH) show a positive correlation between net purchases of EM securities and the euro area shadow rate which may indicate that these euro investor sectors increase their EM debt holdings when domestic macroeconomic conditions in the euro area are improving (as suggested by tighter monetary policy).

Offshore vs. onshore investment in BRICS securities

Finally, we analyze whether euro area investors show the same investment patterns whether securities are issued domestically vs. offshore. To this end, we use information from Bloomberg described in section 3.1. which identifies the nationality of the ultimate parent company for individual bonds issued in offshore financial centers. Overall, we identify 2100 individual debt securities issued offshore by Brazil, Russia, India, China, and South Africa. We use the sub-sample comprising these five countries over the time period 2019Q1 to 2020Q4 (over which we are most confident to capture the universe of offshore securities) resulting in around 120,000 observations compared to the full sample of EM securities including more than 900,000 observations. This allows us to assess whether net purchases of such securities react differently to the factors explaining net purchases of securities issued onshore. Before turning to the regression results, it is useful to revisit the currency composition structure for onshore-issued vs offshore-issued bonds for the five countries in our sample (Figure 20, as briefly described in Section 3.2). Bonds issued in local currency (mostly government bonds) are the majority of euro area holdings for 4 out of the 5 countries—the exception being India. Among FX bonds issued onshore, the dollar is the main currency of denomination—only for Chinese bonds the proportion of dollar and euro-denominated bonds is similar. In contrast, offshore bonds are virtually entirely FX denominated: the dollar being the main currency for bonds issued offshore by corporates from Brazil, China, and India while the euro has the largest share among bonds issued by Russian and South African entities.

Turning now to the regression analysis, Table 9 first presents in column 1 the results for all BRICS securities issued onshore, while results in column 2 also include securities issued offshore. The significantly positive offshore dummy in the latter suggests that for these countries euro area investors have a preference for debt securities issued offshore. In terms of magnitude, euro area investors' net purchases of offshore securities are 2.5 percentage points larger in terms of the existing holdings if issued offshore. Regarding the currency denomination, we find no evidence that euro area investors purchase on net more euro-

denominated bonds, holding constant a series of other country and sector characteristics through fixed effects. There remains instead a clear preference for sovereign debt (onshore) securities—whether denominated in local currency (the majority) or foreign currency. On the other hand, when we include interaction terms with the offshore dummies, we see that euro area investors do show a clear home currency bias for securities that are issued offshore.²¹

4. Conclusions

In this paper, we shed light on the dynamics of investment in EM debt securities, and its determinants. For these issuer countries, bond financing has become a significantly more important—if volatile—component of financial inflows during the past decade.

Combining data from a variety of data sources, we have documented stylized facts on the increasing importance of EM debt securities in international investors' portfolios. The role of China as a destination country, relatively modest until 2016, has grown sharply since, with portfolio debt inflows accounting for close to 60 percent of total portfolio debt flows to EMs in recent years. While EM debt securities are mostly held by investment funds, the largest identified holders of Chinese debt securities are central banks and international organizations.

The corporate sector in China, as well as in a few other major EMs, has also increased issuance of debt securities offshore. These securities are not captured in balance of payments statistics as liabilities of the country of nationality of the issuing entity, given the residency principle underpinning BOP statistics. By combining different datasets, we can identify net purchases and holdings of a large sample of such securities by euro area investors, a notable widening of the scope of the analysis compared to most of the literature. Debt securities issued offshore amount to over 50% of total portfolio debt outstanding by EMs, with China representing most of those offshore securities. Also, sell-offs of EM securities during turmoil seem to mainly affect securities issued onshore, where domestic-currency issuance is much more common.

Our evidence at the aggregate level is in line with the existing literature's findings. Investment in EMs tends to be lower in periods of market volatility, dollar strength, and particularly during periods of high financial market turmoil. As our dataset includes 2020, we can also zoom in on the recent Covid-19 period. We find that the impact on portfolio flows of the Covid shock in the first quarter of 2020, while very large, had characteristics not significantly different from other shocks in our time period: control variables (in particular

²¹ We only include a euro dummy in this specification to compare the euro to the US dollar for offshore securities as Figure 20 shows that these are the two main currencies used for offshore issuance by BRICS. Of course, issues by EM corporates denominated in euro can be explicitly targeted to euro area investors along several dimensions in addition to currency.

the VIX) provide a good fit for the time fixed effects. EM issuance of debt securities offshore—a novel aspect of our aggregate analysis—co-moves strongly with purchases by foreign residents of debt securities issued onshore, but shows no upward time trend, while portfolio debt inflows do.

Aside from offshore issuance, our analysis using security-level holdings of euro area investors finds many interesting patterns. In their investments in EM bond markets, euro area investors show a general preference for government debt securities. While the dollar is the main currency of issuance for the securities held by euro area investors, these show a preference for euro-denominated securities once we control for bilateral country fixed effects, a finding in line with the home currency bias documented in the literature. During periods of high volatility, such as the first quarter of 2020, the evidence suggests that euro area investors sold local-currency bonds. In addition to currency risk considerations, this pattern also reflects the fact that foreign-currency bonds issued by emerging markets are predominantly held by nonresidents, and hence trade in those bonds away from issuance and redemption tends to occur between nonresidents, rather than between foreign and domestic investors. Investors also increase their purchases when the macroeconomic outlook for the destination country improves. Focusing on the sector of the investor, we find that investment funds are the largest investors in EM debt while insurance companies and pension funds are rapidly increasing their portfolio. Investment funds also turn out to be the most pro-cyclical investors—they have the largest propensity to sell EM debt if the macroeconomic outlook deteriorates, while non-financial corporates seem to invest counter-cyclically.

Investment funds are pure intermediaries and hence their investment patterns reflect those of the underlying sector. We have provided an aggregate mapping of investment fund holdings of EM debt securities to the sectors holding investment fund shares, which shows the importance of institutional investors such as insurance companies and pension funds, alongside households. However, the data do not allow us to reliably trace back their net purchases of emerging market debt securities to the original sector, and hence provide a more complete picture of how sectors differ in their investment patterns, particularly during periods of stress. This is an important avenue for future research. Another one is the analysis of the most recent period of financial market turmoil, associated with the rapid increase in interest rates in advanced economies during 2022: this period was characterized by large net sales by foreign investors of portfolio debt securities issued by EMs.

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Data Appendix

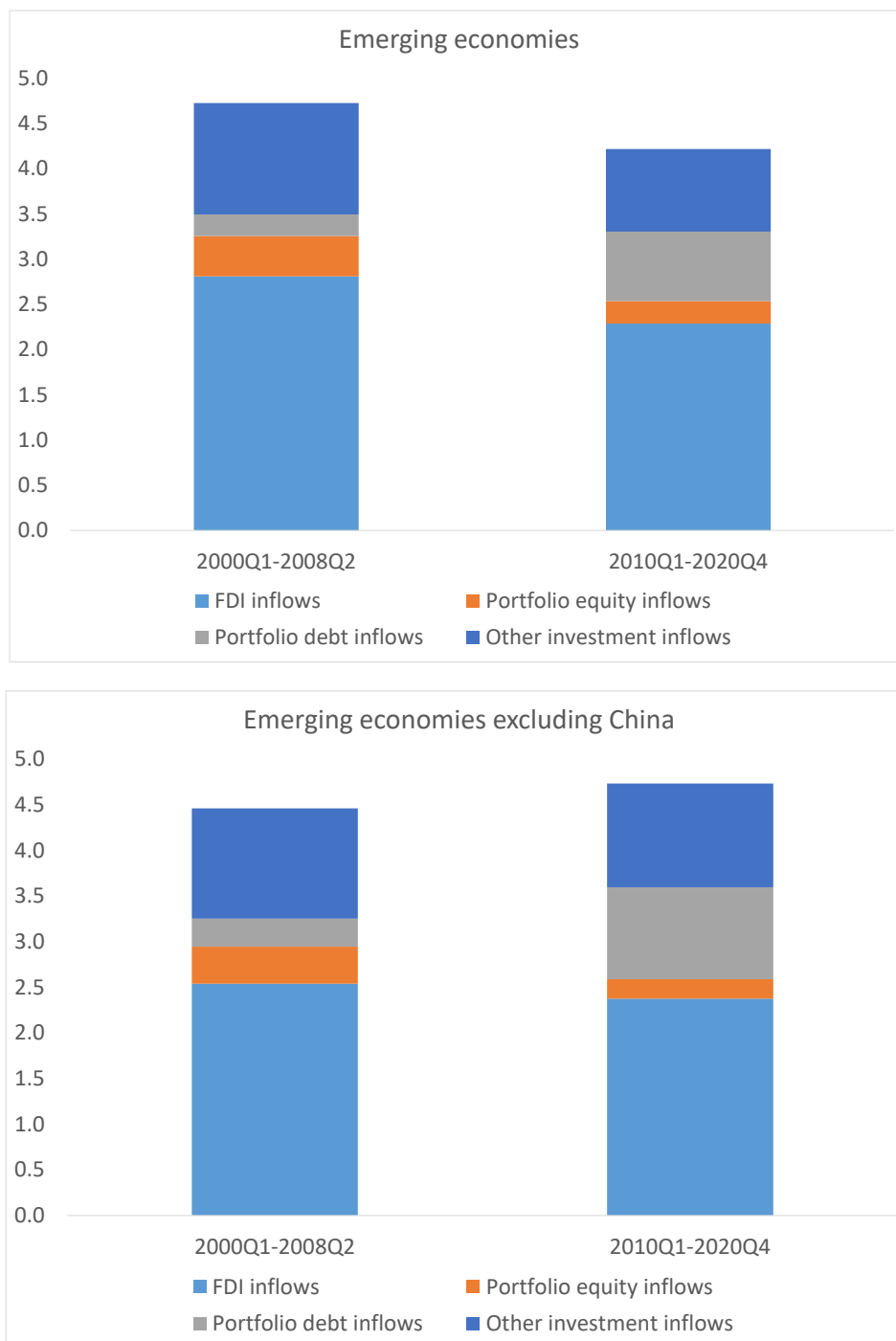
Countries included in the sample for aggregate portfolio debt flows: Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay, Venezuela, China, India, Indonesia, Malaysia, Philippines, Sri Lanka, Thailand, Vietnam, Bulgaria, Croatia, Hungary, Poland, Romania, Russia, Turkey, Ukraine, Egypt, Jordan, Kazakhstan, Kuwait, Morocco, Pakistan, Qatar, Saudi Arabia, South Africa.

Debt securities issued offshore. These are calculated as the difference between international debt securities issued by *nationals* of a country and international debt securities issued by *residents* of a country. This difference is in turn the difference between international debt securities issued offshore by affiliates of domestic multinational corporations and international debt securities issued in the domestic economy by affiliates of foreign multinational corporations. We can thus obtain the overall stock of international debt securities issued offshore as well as net issuance of such securities.

Investor countries. The CPIS includes foreign central banks and international organizations among the holders of a country's debt securities. For each destination country, these holdings are aggregated across all central banks and international organizations that participate to a complementary survey (SEFER-SSIO). Occasionally—when holdings tend to be concentrated—the data is deemed confidential and not reported. This is the case, for instance, for holdings of Chinese debt securities. For those cases, we estimate such holdings where possible. For China, for instance, we have data for the holdings of total portfolio investment: data for earlier years indicates that over 99 percent of portfolio holdings of Chinese securities were in debt instruments, and projecting this ratio forward allows us to estimate holdings in recent years. A similar methodology is applied to estimate holdings of debt securities in other countries where the data is considered confidential, reducing the global amount of such data from over \$340 billion to around \$85 billion in 2020. Overall, the vast majority of portfolio investment by the entities in the SEFER-SSIO survey is in debt securities (over 93 percent globally).

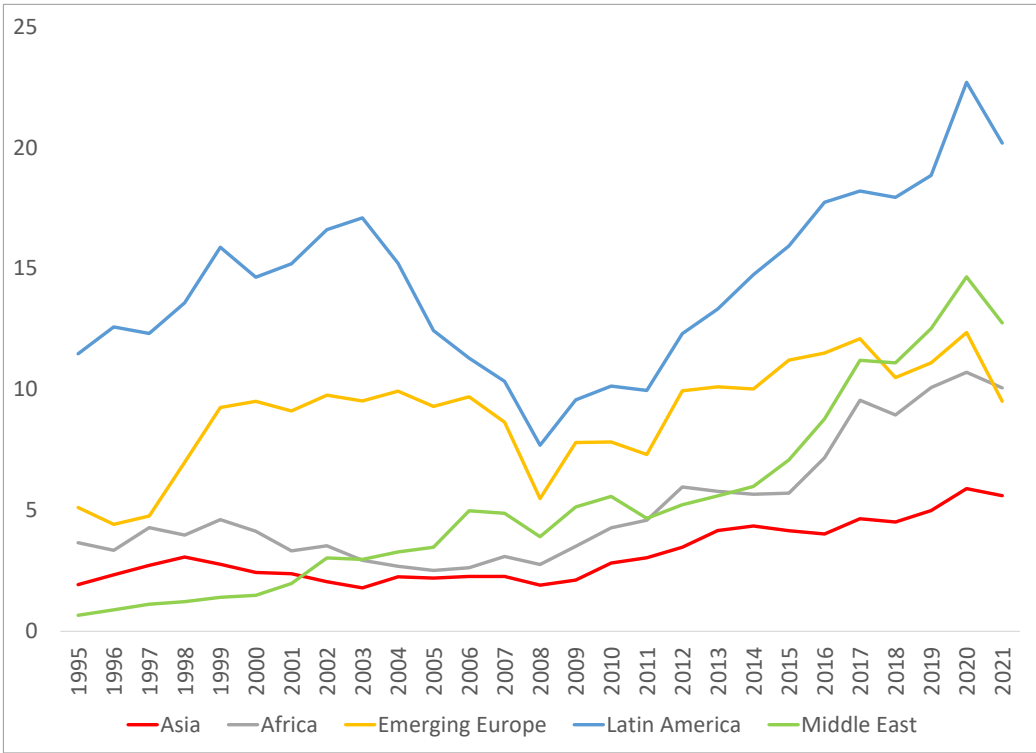
Estimating the sectors holding EM debt securities. The vast majority of countries reporting to the CPIS also provide a sectoral breakdown of their holdings of debt securities for each destination country. To fill some gaps, estimation was used for Australia and the United Kingdom, which report some data as confidential. The estimation was based on the sectoral breakdown of total portfolio investment (available with fewer gaps) and when necessary the sectoral breakdown for the global holdings of foreign debt securities. The latter method was used for Canada since no sectoral breakdown is provided at the level of individual destination countries. For Ireland and Luxembourg, the sectoral breakdown was based on the security-level database used in Sections 3 and 4. Holdings reported in the SEFER-SSIO survey were attributed to central banks and international organizations. Finally for Hong Kong, Mauritius, and Switzerland we used the sectoral breakdown of holders of nonresident debt securities reported in the International Investment Position, assuming that the sectoral shares for emerging market economies are the same as the global shares.

Figure 1. Financial flows to emerging economies: 2000-2008 vs 2010-2020
(percent of GDP)



Note: the data refers to a sample of 35 emerging economies with quarterly data availability. They account for over 85 percent of total portfolio investment in emerging and developing economies. Source: authors' calculations based on IMF, Balance of Payments Statistics and national sources.

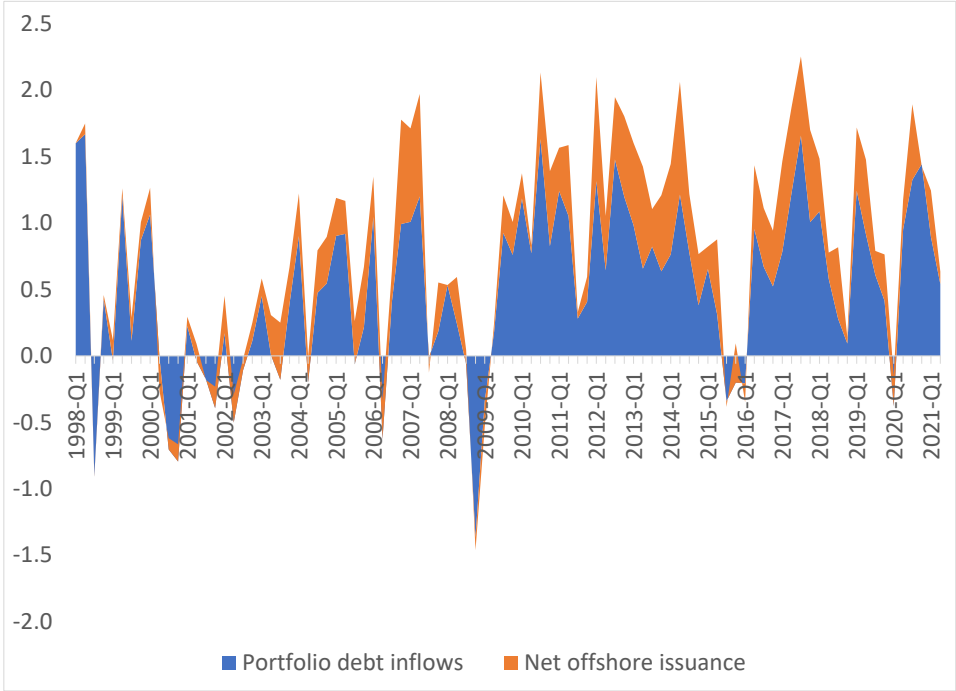
Figure 2. Portfolio debt liabilities in emerging and developing economies: regional patterns (percent of regional GDP)



Note: the data includes estimated portfolio debt liabilities for all emerging and developing economies excluding some financial centers (such as Mauritius and Panama).

Source: authors' calculations based on Lane and Milesi-Ferretti, External Wealth of Nations database.

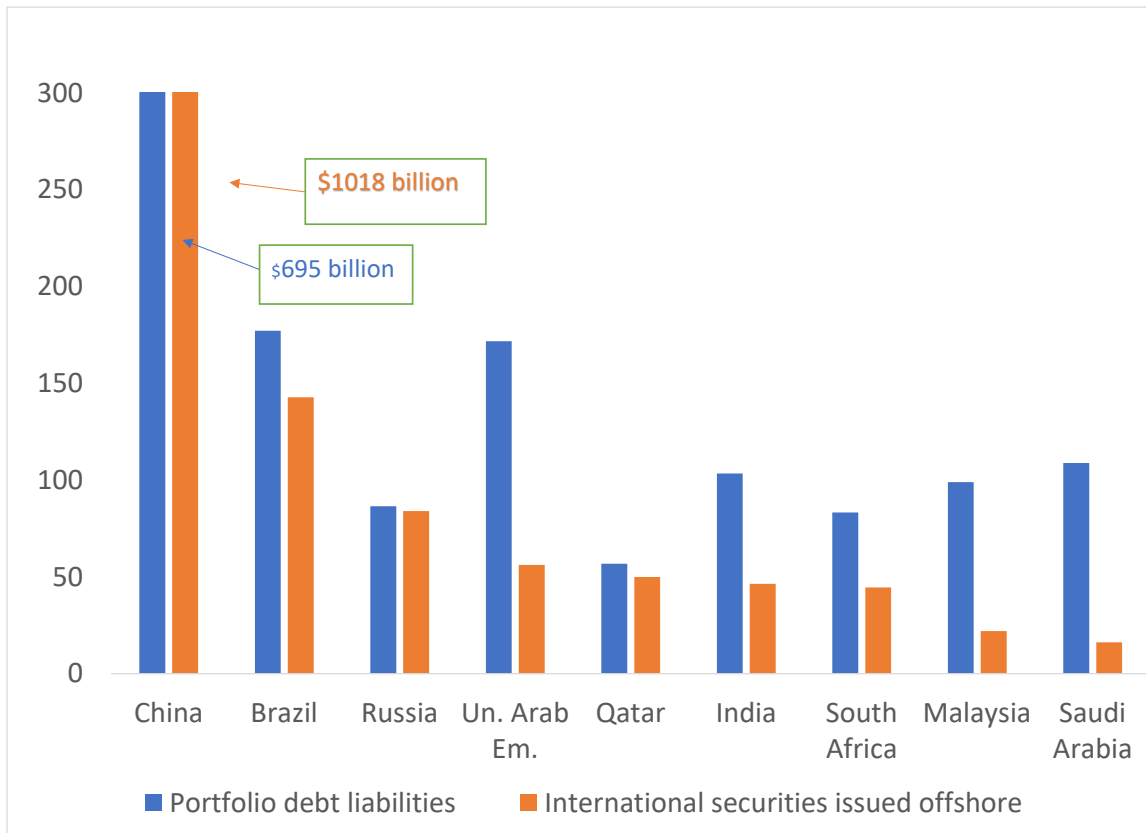
Figure 3. Emerging Markets: Foreign portfolio debt flows and net offshore issuance of debt securities (percent of GDP)



Note: the data refers to a sample of 35 emerging economies with quarterly data availability. They account for over 85 percent of total portfolio investment in emerging and developing economies.

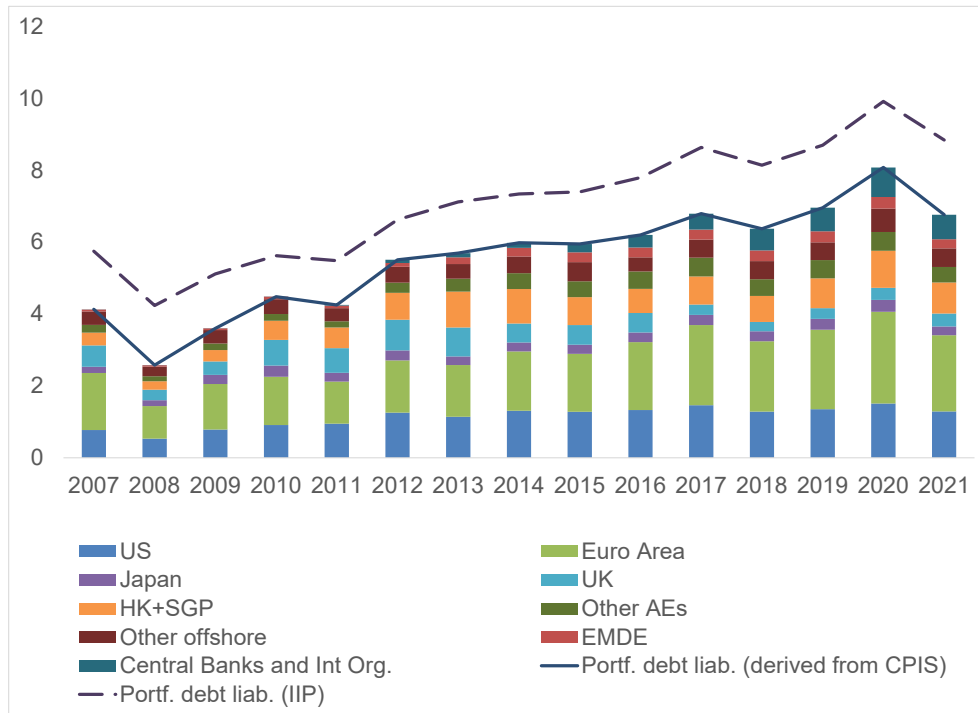
Source: authors' calculations based on IMF, Balance of Payments Statistics and BIS, International Debt Statistics.

Figure 4. Portfolio debt liabilities and debt securities issued offshore
(end-2020, billion US dollars)



Source: authors' calculations based on IMF, Balance of Payments Statistics and BIS, International Debt Statistics.

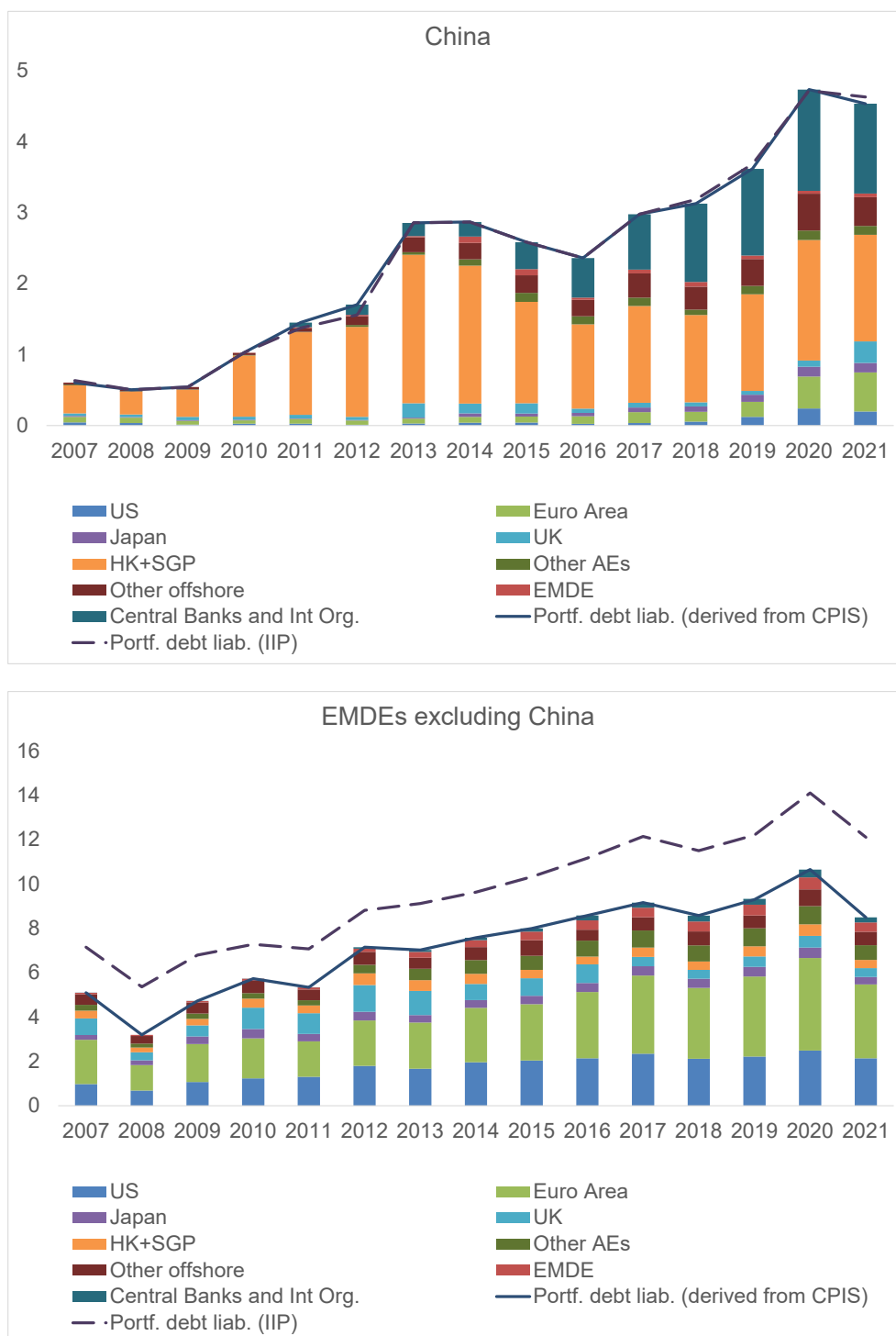
Figure 5. The Composition of Investors in EM debt securities
(percent of EM GDP)



Note: the data on derived portfolio debt liabilities as well as reported portfolio debt liabilities refers to all emerging and developing economies excluding financial centers (which are classified as “other offshore” among holders).

Source: authors' calculations based on IMF, Coordinated Portfolio Investment Survey and Lane and Milesi-Ferretti, External Wealth of Nations Database.

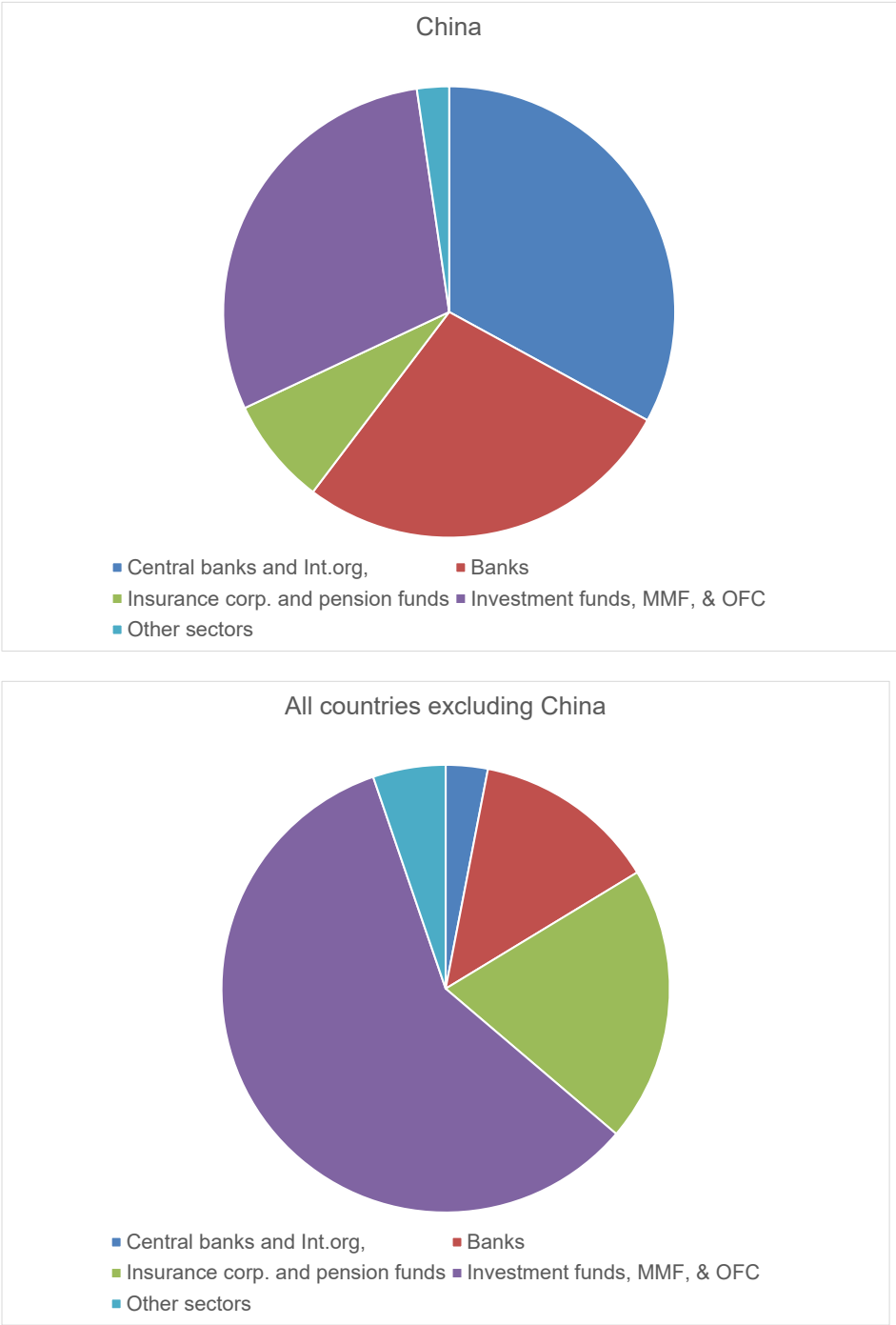
Figure 6. The Composition of Investors in EMDE debt securities: China and other EMDE (percent of GDP)



Note: the data on derived portfolio debt liabilities as well as reported portfolio debt liabilities refers to all emerging and developing economies excluding financial centers (which are classified as "other offshore" among holders).

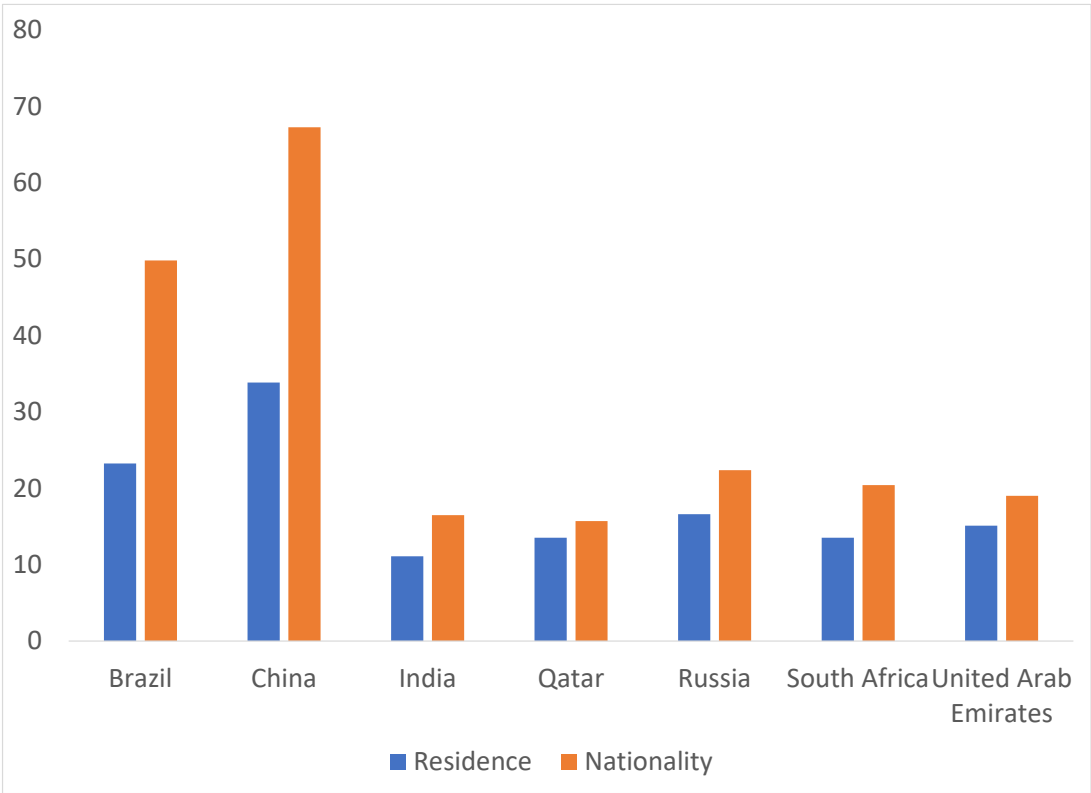
Source: authors' calculations based on IMF, Coordinated Portfolio Investment Survey and Lane and Milesi-Ferretti, External Wealth of Nations Database.

Figure 7. Investors in emerging market debt securities: sectoral composition, 2020



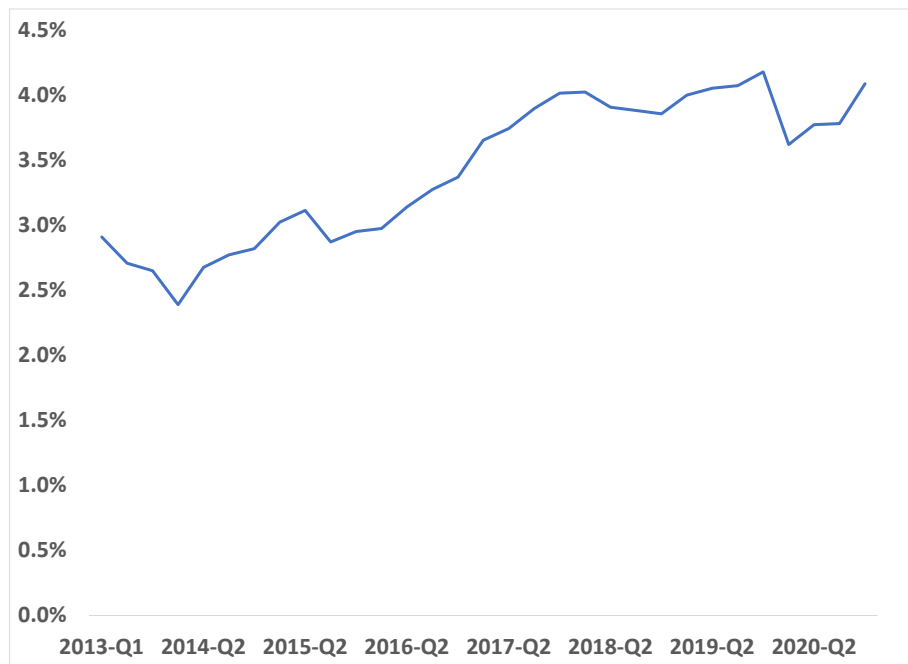
Source: authors' calculations and estimation based on IMF, Coordinated Portfolio Investment Survey and IMF, Balance of Payments Statistics.

Figure 8. US holdings of emerging market long-term bonds, 2020: residence vs nationality principle



Source: Bertaut et al (2019) with subsequent data updates.

Figure 9. Share of emerging markets in euro area debt securities portfolio (percent)



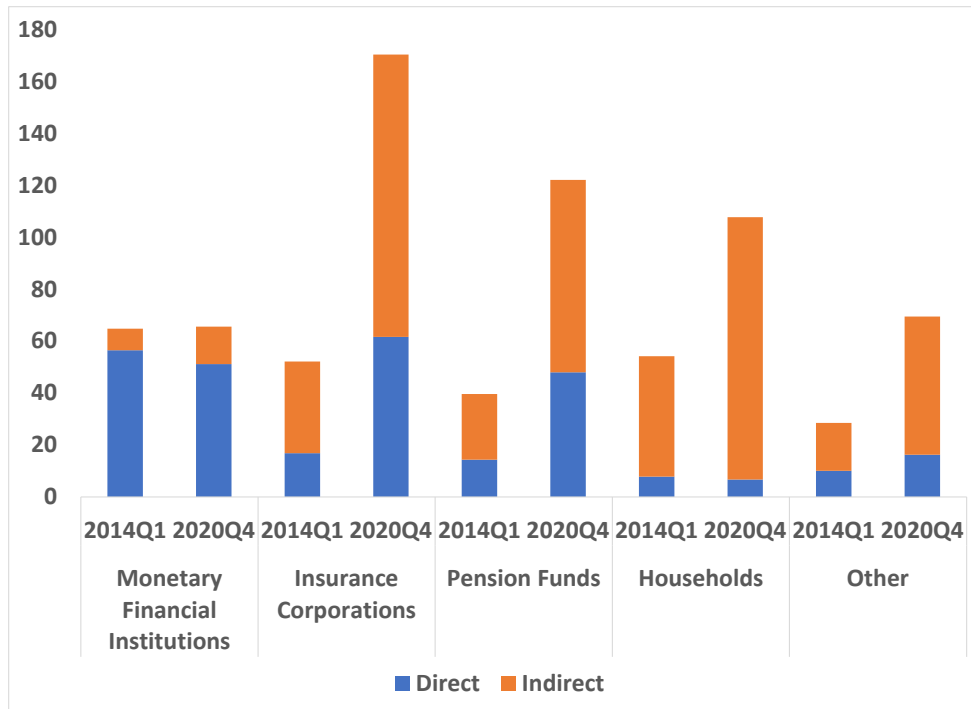
Source: European Central Bank.

Figure 10. Euro area sectors' holdings of emerging market debt securities
(billion euro)



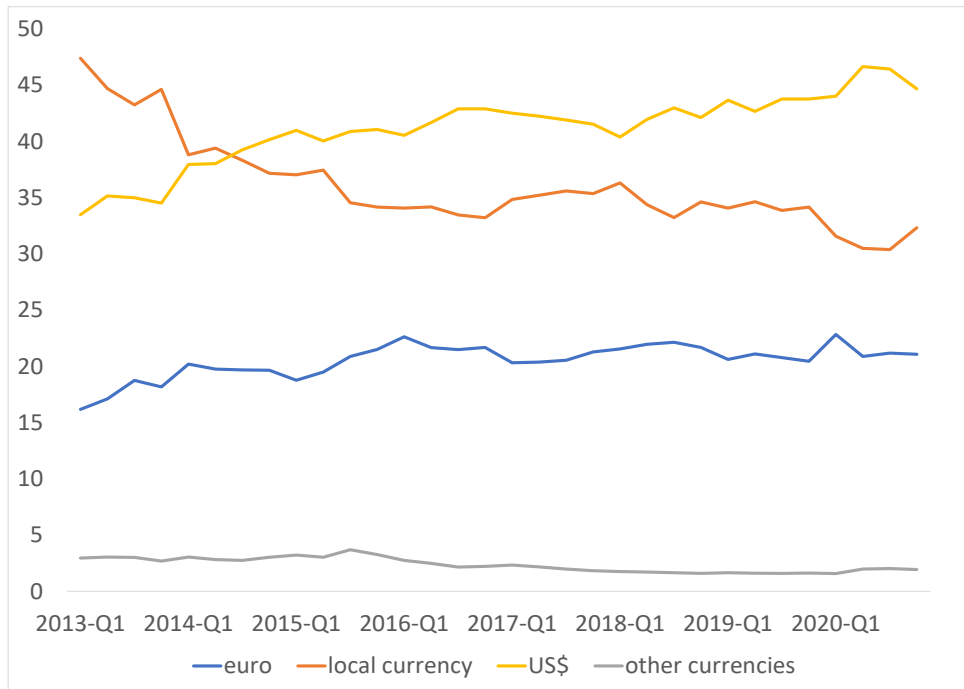
Source: European Central Bank.

Figure 11. Euro area sectors' direct and indirect holdings of emerging market debt securities
(billion euro)



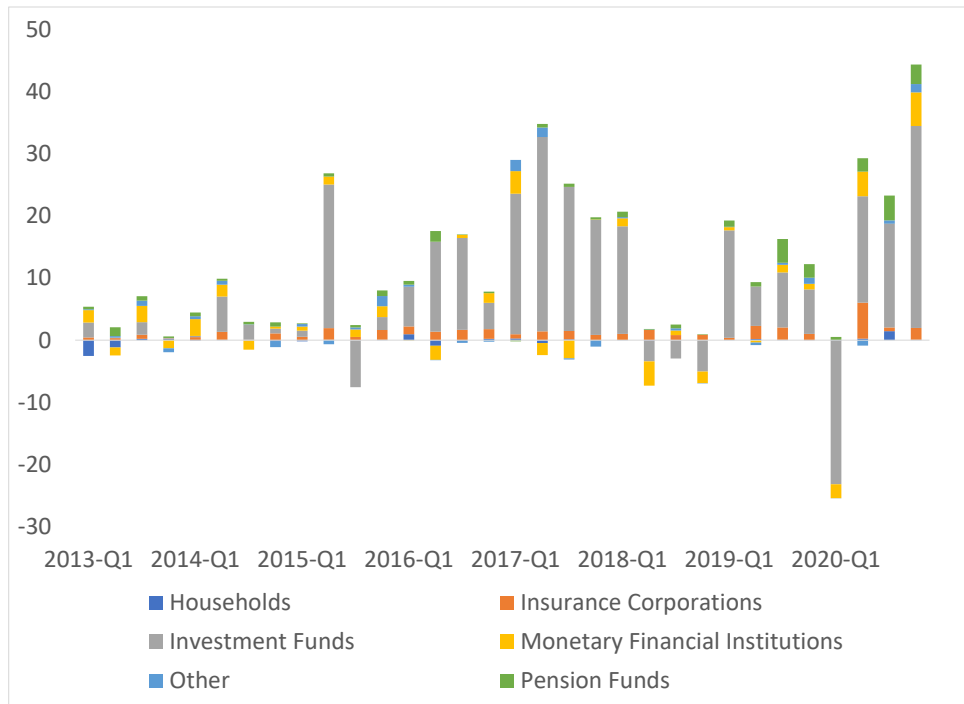
Source: European Central Bank. Notes: Data refer to 2020Q4. Indirect holdings via investment funds following Carvalho and Schmitz (2021)

Figure 12. Euro area holdings of emerging market debt securities by currency
(shares of total)



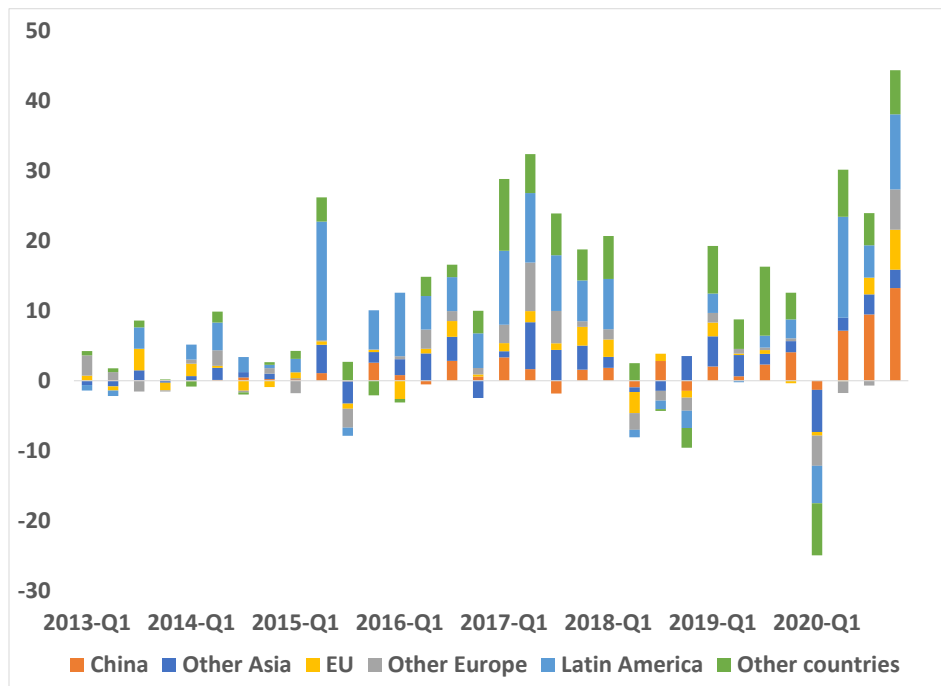
Source: European Central Bank.

Figure 13. Euro area sectors' net transactions in emerging market debt securities (billions euros)



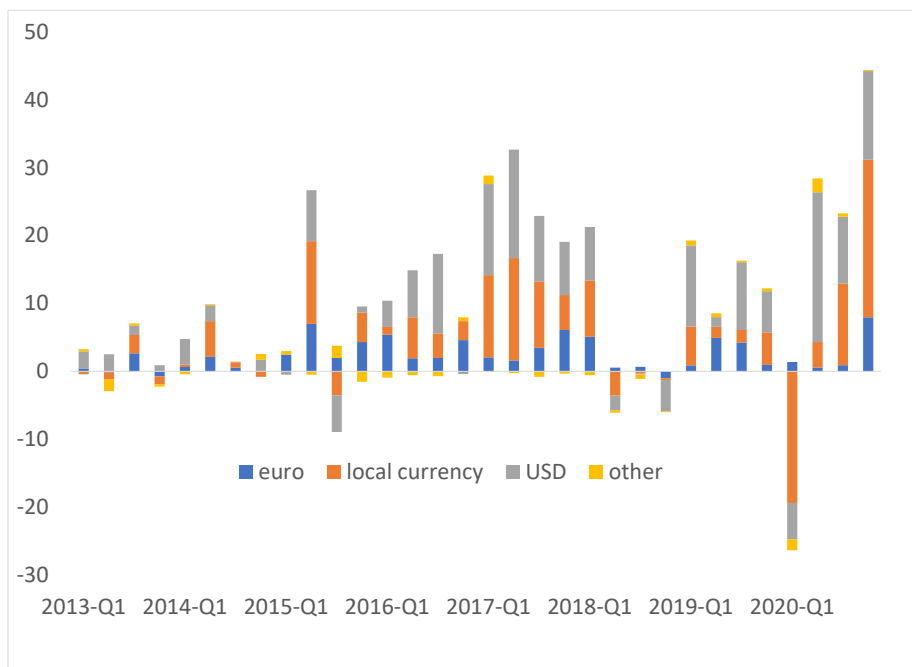
Source: European Central Bank.

Figure 14. Euro area net transactions in emerging market debt securities by region (billion euro)



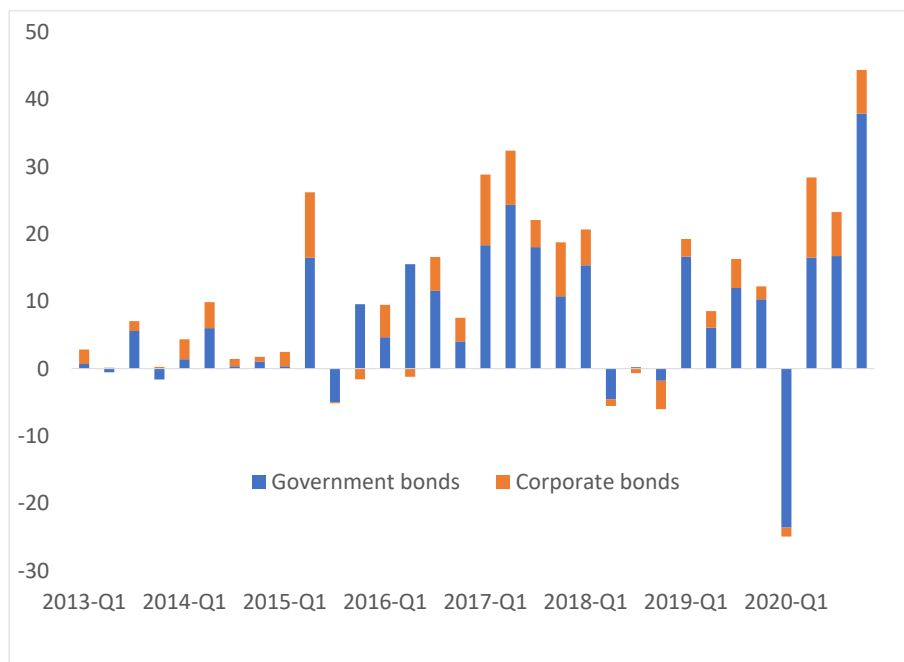
Source: European Central Bank.

Figure 15. Euro area net transactions in emerging market debt securities by currency (billion euro)



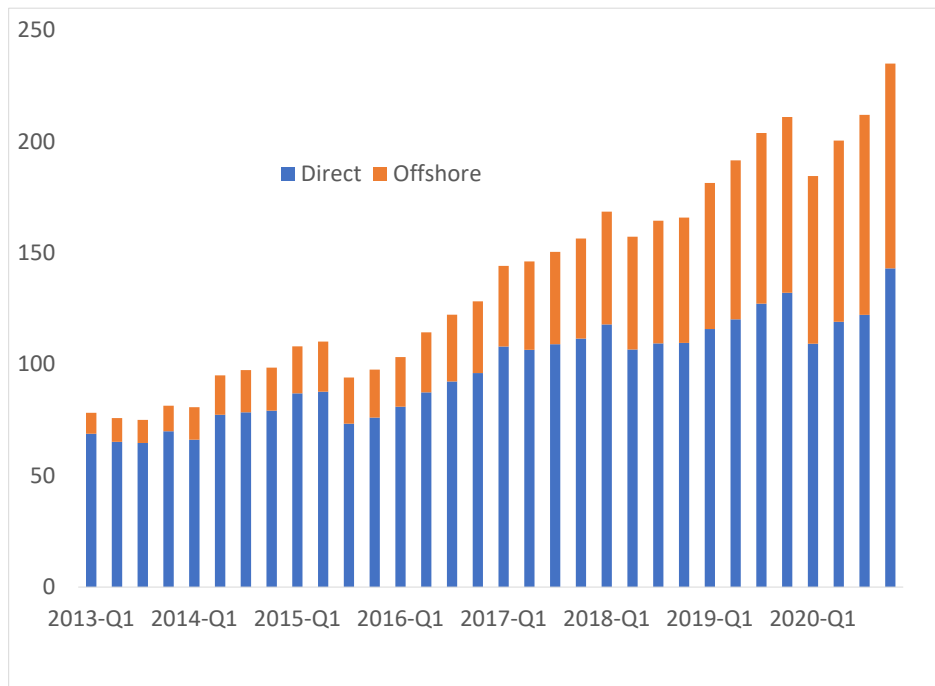
Source: European Central Bank

Figure 16. Euro area net transactions in emerging market debt securities by issuer sector (billion euro)



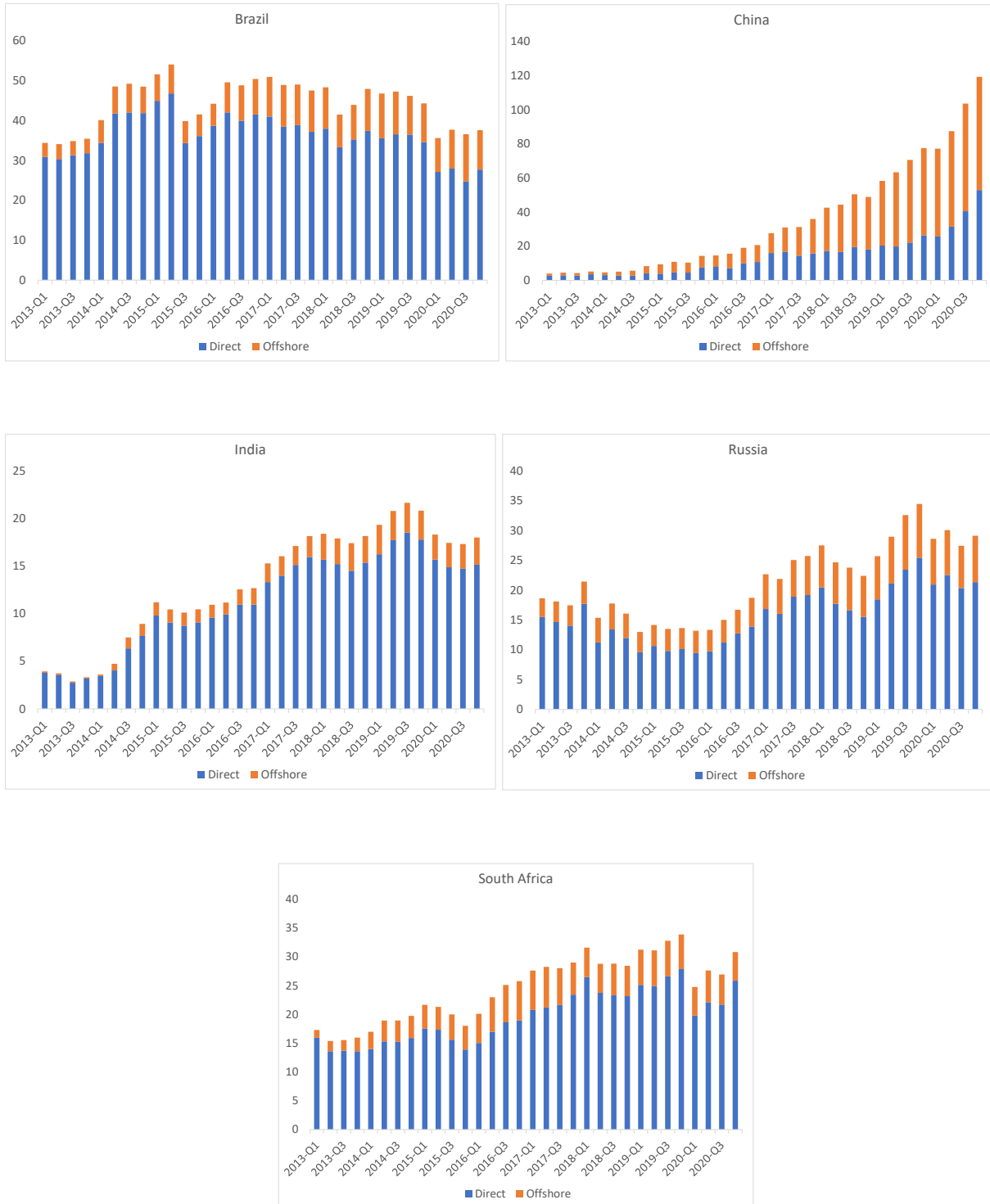
Source: European Central Bank.

Figure 17. Euro area holdings of onshore and offshore BRICS debt securities (billion euro)



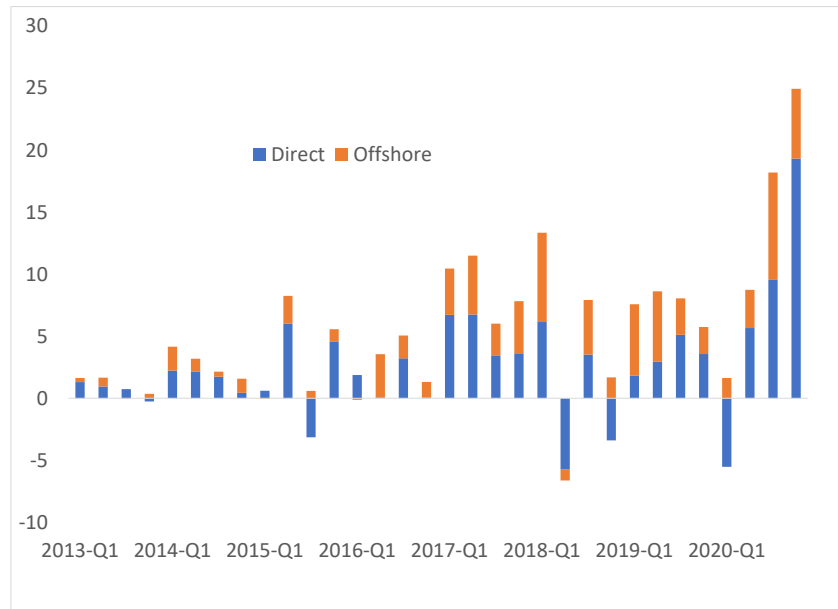
Sources: European Central Bank, Bloomberg and own computations.

Figure 18. Euro area holdings of onshore and offshore BRICS debt securities by country (billion euros)



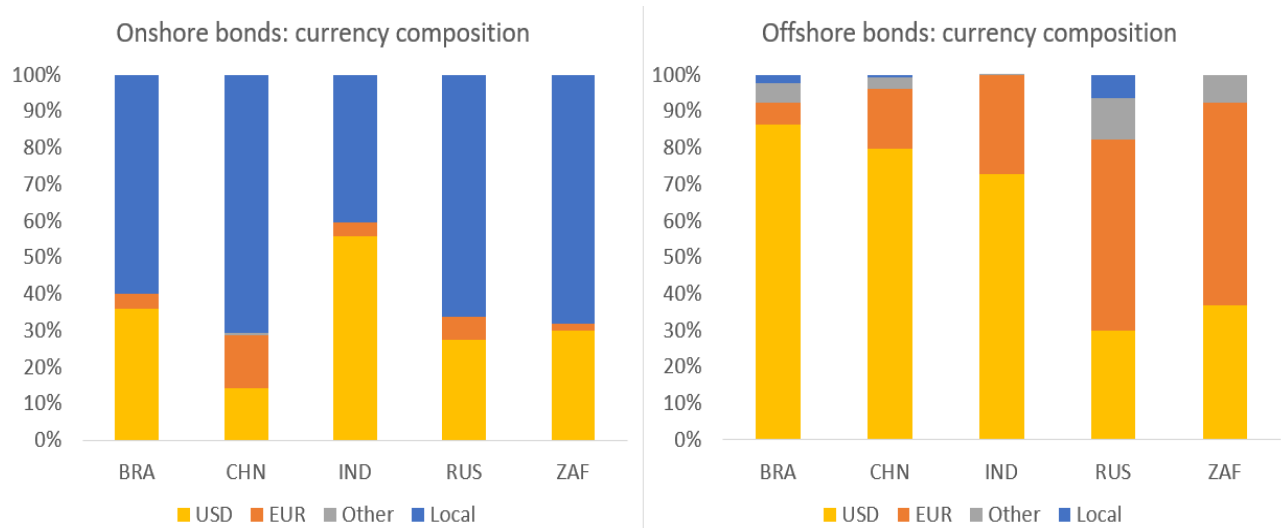
Sources: European Central Bank, Bloomberg and own computations.

Figure 19. Euro area net transactions in onshore and offshore BRICS debt securities (billion euro)



Sources: European Central Bank, Bloomberg and own computations.

Figure 20. Currency Composition of onshore and offshore BRICS debt securities



Sources: European Central Bank, Bloomberg and own computations.

Table 1. Portfolio debt liabilities in emerging markets, Q4 2020

Total (billion US\$)		Percent of GDP	
China	694	United Arab Emirates	47.9
Mexico	381	Qatar	38.7
Indonesia	200	Chile	34.4
Brazil	177	Mexico	30.5
United Arab Emirates	172	Colombia	29.1
Saudi Arabia	109	Peru	28.6
Poland	106	Malaysia	28.0
India	104	Hungary	25.6
Malaysia	99	South Africa	24.6
Chile	95	Romania	22.0

Source: Lane and Milesi-Ferretti, External Wealth of Nations database.

Table 2. Financial flows to emerging markets: stylized facts, 2000-2021

		2000Q1-2021Q4					
Variable		N	Min	Median	Max	Mean	SD
Portfolio debt inflows (pct of GDP)	All	88	-1.37	0.56	1.65	0.50	0.60
	excluding China	88	-1.96	0.63	2.37	0.63	0.81
Net offshore issuance (pct of GDP)	All	88	-0.41	0.20	0.87	0.20	0.27
	excluding China	88	-1.03	-0.01	1.01	-0.02	0.38
Total financial inflows (pct of GDP)	All	88	-2.44	4.14	10.67	4.35	2.15
	excluding China	88	-2.42	4.26	11.73	4.45	2.18
		2010Q1-2021Q4					
Variable		N	Min	Median	Max	Mean	SD
Portfolio debt inflows (pct of GDP)	All	48	-0.37	0.78	1.65	0.75	0.49
	excluding China	48	-0.76	0.93	2.37	0.93	0.7
Net offshore issuance (pct of GDP)	All	48	-0.15	0.31	0.87	0.29	0.24
	excluding China	48	-1.03	-0.12	1.01	-0.13	0.36
Total financial inflows (pct of GDP)	All	48	0.39	4.1	7.87	4.24	1.63
	excluding China	48	1.38	4.48	8.24	4.6	1.45

Source: Authors' calculations based on IMF, Balance of Payments Statistics.

Table 3. Financial flows to emerging markets: aggregate time series analysis (2000Q1-2021Q4)

	(1)	(2)	(3)	(4)	(5)	(6)
	Portfolio debt inflows		Offshore issuance		Total inflows	
	All	Excl. CHN	All	Excl CHN	All	Excl. CHN
VIX (log terms)	-0.49** (0.19)	-0.67*** (0.24)	-0.40*** (0.086)	-0.027 (0.17)	-2.26*** (0.68)	-2.25*** (0.68)
Change in US shadow rate	-0.17 (0.11)	-0.19 (0.12)	-0.070 (0.047)	-0.090 (0.075)	-1.22*** (0.36)	-0.91*** (0.29)
US REER index vis-a-vis AEs (log terms)	-1.67*** (0.44)	-2.65*** (0.63)	-0.48*** (0.17)	-1.28*** (0.31)	-11.9*** (1.43)	-11.3*** (1.38)
Time trend	0.0090*** (0.0023)	0.0094*** (0.0028)	0.0034*** (0.0011)	-0.0032* (0.0018)	-0.0025 (0.0063)	0.011* (0.0066)
Dummy for 2008Q4	-1.53*** (0.22)	-2.17*** (0.30)	0.30*** (0.091)	-0.0041 (0.19)	-6.31*** (0.74)	-6.07*** (0.77)
Dummy taper tantrum (2013Q2-Q3)	-0.18** (0.084)	-0.17 (0.13)	-0.100 (0.26)	-0.18 (0.29)	-2.02*** (0.31)	-2.27*** (0.37)
Dummy for 2020Q1	-0.81*** (0.17)	-1.13*** (0.19)	0.16* (0.087)	0.33** (0.16)	-0.14 (0.52)	-1.21** (0.53)
Constant	9.24*** (2.13)	14.4*** (2.91)	3.39*** (0.91)	6.18*** (1.62)	66.6*** (6.95)	62.8*** (6.81)
Observations	88	88	88	88	88	88
R ²	0.45	0.44	0.39	0.20	0.59	0.55

Note: dependent variable scaled by group GDP. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4. Euro area portfolio debt flows to emerging markets: security-level analysis

	(1) Full	(2) Full	(3) Full	(4) Full	(5) Full
Euro	0.005 (0.009)	0.006 (0.009)	0.014 (0.008)	0.019** (0.008)	
US dollar	0.011* (0.005)	0.011** (0.006)	0.013*** (0.004)	0.013** (0.005)	
Other foreign currency	-0.032** (0.015)	-0.032** (0.015)	-0.021** (0.009)	-0.007 (0.007)	
Sovereign debt	0.025*** (0.004)	0.026*** (0.004)	0.023*** (0.003)	0.021*** (0.003)	
GDP growth forecast revision	0.000 (0.001)	0.000 (0.000)	0.000 (0.000)	0.001** (0.000)	0.001** (0.000)
China dummy as of 2016	-0.016* (0.010)	-0.012 (0.010)	-0.006 (0.008)	0.037*** (0.012)	-0.021 (0.018)
Observations	926,523	926,523	926,523	926,512	921,635
R ²	0.002	0.003	0.024	0.030	0.079
Holder country-sector FE	no	no	yes	yes	yes
Bilateral country FE	no	no	no	yes	yes
ISIN FE	no	no	no	no	yes
Time FE	no	yes	yes	yes	yes

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 5. Euro area portfolio debt flows to emerging markets: security-level analysis

	(1) Full	(2) up to 19Q4	(3) Full
Euro	0.019** (0.008)	0.017** (0.008)	0.017** (0.007)
US dollar	0.013** (0.005)	0.012** (0.005)	-0.007 (0.004)
Other foreign currency	-0.007 (0.007)	-0.012 (0.008)	0.002 (0.006)
Sovereign debt	0.021*** (0.003)	0.022*** (0.003)	0.013*** (0.003)
GDP growth forecast revision	0.001** (0.000)	0.002*** (0.001)	0.001*** (0.000)
China dummy as of 2016	0.037*** (0.012)	0.028* (0.016)	0.031*** (0.006)
Yield			0.001 (0.000)
Observations	926,512	764,973	812,257
R ²	0.030	0.028	0.031
Holder country-sector FE	yes	yes	yes
Bilateral country FE	yes	yes	yes
ISIN FE	no	no	no
Time FE	yes	yes	yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 6. Euro area portfolio debt flows to emerging markets: determinants of time-fixed effects

	(1) Time FE	(2) Time FE
US Shadow Rate	-0.005** (0.002)	-0.019*** (0.005)
Euro Area Shadow Rate	0.001 (0.005)	0.016 (0.010)
VIX	-0.023* (0.012)	-0.098*** (0.025)
Covid	0.001 (0.018)	0.019 (0.038)
Observations	28	28
R ²	0.26	0.56

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 7. Euro area portfolio debt flows to emerging markets by investor sector: security-level analysis

	(1) MFI	(2) IC	(3) IF	(4) PF	(5) HH	(6) Other
Euro	0.132*** (0.013)	0.026* (0.015)	0.001 (0.010)	-0.001 (0.012)	-0.011* (0.006)	0.015 (0.012)
US dollar	0.048*** (0.013)	0.013 (0.011)	0.014** (0.007)	0.007 (0.013)	0.006 (0.006)	-0.002 (0.014)
Other foreign currency	0.066** (0.028)	-0.024* (0.014)	-0.010 (0.012)	0.024 (0.040)	0.025*** (0.005)	0.007 (0.017)
Sovereign debt	0.029* (0.016)	0.013** (0.006)	0.022*** (0.003)	0.035*** (0.011)	0.021*** (0.006)	0.008 (0.009)
GDP growth forecast revision	0.002** (0.001)	0.001 (0.001)	0.003*** (0.001)	0.001* (0.001)	-0.001 (0.001)	0.002*** (0.001)
China dummy as of 2016	-0.009 (0.041)	0.040** (0.016)	0.043*** (0.013)	0.069*** (0.023)	0.032 (0.025)	0.026 (0.027)
Observations	926,512					
R ²	0.032					
Holder country-sector FE	yes					
Bilateral country FE	yes					
ISIN FE	no					
Time FE	yes					

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 8. Euro area portfolio debt flows to emerging markets:
determinants of time-fixed effects by investor sector

	(1)	(2)	(3)	(4)	(5)	(6)
	MFI	IC	IF	PF	HH	Other
US Shadow Rate	-0.031*** (0.009)	-0.019*** (0.006)	-0.018*** (0.004)	-0.014*** (0.005)	-0.017*** (0.005)	-0.024*** (0.008)
Euro Area Shadow Rate	0.035* (0.019)	0.022 (0.013)	0.010 (0.009)	0.005 (0.009)	0.022** (0.010)	0.020 (0.015)
VIX	-0.113** (0.048)	-0.096*** (0.033)	-0.106*** (0.021)	-0.051** (0.023)	-0.087*** (0.025)	-0.098** (0.038)
Covid	0.092 (0.073)	0.020 (0.050)	0.015 (0.032)	0.003 (0.036)	-0.000 (0.038)	0.028 (0.059)
Observations	28	28	28	28	28	28
R ²	0.39	0.43	0.63	0.36	0.23	0.57

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 9. Euro area portfolio debt flows to BRICS: security-level analysis including offshore securities

VARIABLES	(1)	(2)	(4)	(5)
	Onshore only		All BRICS	
Euro	-0.028 (0.024)	-0.008 (0.013)	-0.037* (0.020)	-0.030 (0.020)
US dollar	-0.004 (0.012)	-0.010 (0.008)	-0.008 (0.008)	
Sovereign in local currency	0.042*** (0.009)	0.041*** (0.008)	0.038*** (0.008)	0.043*** (0.009)
Sovereign in foreign currency	0.041*** (0.010)	0.048*** (0.009)	0.048*** (0.008)	0.046*** (0.008)
GDP growth forecast revision	0.002 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Offshore Issuance		0.025*** (0.006)	0.016*** (0.006)	0.014** (0.006)
Offshore * Euro			0.045*** (0.015)	0.046*** (0.015)
Offshore * growth forecast revision			0.000 (0.001)	0.000 (0.001)
Observations	55,670	122,875	122,875	122,875
R ²	0.033	0.030	0.031	0.031
Holder country-sector FE	yes	yes	yes	yes
Bilateral country FE	yes	yes	yes	yes
ISIN FE	no	no	no	no
Time FE	yes	yes	yes	yes

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1