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OUR UNDERAPPRECIATED INTERNATIONAL RESERVE SYSTEM

Serkan Arslanalp
Barry Eichengreen
Chima Simpson-Bell

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ABSTRACT

We document some underappreciated aspects of the recent evolution of the international reserve system. These include the growing share of gold in global central bank reserves, the continuing emergence of nontraditional reserve currencies, and the stalling share of renminbi in reserves. These trends are consistent with our findings in our earlier papers. In addition we look to the future, pondering the potential implications of dollar-linked stablecoins, the expansion of the BRICS grouping of countries and their de- dollarization plans, the development of blockchain-based platforms such as Project mBridge for the direct exchange of central bank digital currencies, and questions about the dollar's safe-haven status.

Serkan Arslanalp
International Monetary Fund
sarslanalp@imf.org

Chima Simpson-Bell
International Monetary Fund
csimpson-bell@imf.org

Barry Eichengreen
University of California, Berkeley
Department of Economics
and NBER
eichengr@econ.Berkeley.edu

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1. Introduction

The foreign reserves of central banks and governments continue to evolve in underappreciated ways.[2] Discussion continues to focus on the share of the U.S. dollar in international reserves and the currency's role in the international monetary and financial system more generally (see e.g. Blustein 2025, Rogoff 2025). But while the dollar's share in global foreign reserves has declined gradually over the last quarter century, reflecting the ongoing fall in the share of the United States in global GDP, there is no sign of an acceleration in that declining trend.[3] To date, other underappreciated developments have been more important in reshaping the international monetary order. These include:

- The resurgence of gold, which has overtaken the euro as the second most important international reserve asset.
- The growth in holdings of nontraditional reserve currencies, by which we mean currencies other than the Big 4 (the dollar, the euro, the pound sterling, and the yen).
- Within the nontraditional reserve currency category, the declining importance of the Chinese renminbi.

In what follows, we further document these trends, analyze what lies behind them, and speculate about what they imply for the future. In doing so we update the patterns highlighted in our earlier papers (Arslanalp, Eichengreen and Simpson-Bell 2022, 2023). Specifically, we show that gradual diversification away from dollar reserves has continued. Some of this diversification is in the direction of nontraditional reserve currencies and some in the direction of gold, driven by both quantity and valuations effects. Specifically, gold has been actively purchased by emerging market central banks and passively acquired by advanced country central banks, which have not rebalanced their portfolios away from gold in response to increases in its price. One important difference from our earlier analysis is evidence of a declining share of global reserves held in renminbi, which has lost market share to the Singapore dollar and South Korean won since the war in Ukraine.

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[2] By "underappreciated" we mean less than adequately appreciated or recognized, not less than appropriately revalued on the foreign exchange market. As we describe below, reserve assets can be accumulated by central banks as well as ministries of finance and sovereign wealth funds; hence the reference to "central banks and governments."

[3] Thus, the U.S. share of global GDP declined from 30 percent in 2000 to an estimated 26 percent of GDP in 2025 (according to the IMF World Economic Outlook database), and from 20 percent to 15 percent when measured at purchasing power parities (according to this same source).

In addition, we discuss the importance of other developments too recent to show up in the reserve statistics but with possible implications for the future. These include the GENIUS Act authorizing the licensing and issuance of dollar-denominated stablecoins by the United States, the expansion of the BRICS grouping of countries and their de-dollarization plans, the development of platforms such as Project mBridge for the direct exchange of central bank digital currencies, and finally new questions about the dollar's safe-haven status.

To anticipate, we argue that none of the first three developments is likely to have a first-order impact on the structure of the international reserve system in the short run. Dollar-based stablecoins could gain ground as a new set of rails for cross-border retail payments. But they are unlikely to compete with existing structures for wholesale payments or figure importantly in the international financial transactions that prompt central banks to hold foreign exchange reserves. Whether governments will permit the use of dollar-based stablecoins by their residents, given the scope for currency substitution and risks to the effectiveness of monetary policy, is uncertain. The BRICS are a heterogeneous collection of countries, even more heterogeneous now than before given the grouping's recent expansion, making creation of a common currency or transactions using a common currency basket awkward and unlikely. A platform for the direct exchange of central bank digital currencies, whose technical feasibility is proven, gets around this last set of issues, but must surmount difficult governance problems if it is to process more than a handful of cross-border transactions.

In contrast, a significant erosion of the dollar's safe-haven status could have major impacts on the short- as well as longer-term evolution of the international monetary and financial system. It is too early to say with confidence that recent policy and geopolitical uncertainties have begun to diminish the dollar's safe-haven status such that there will be major implications for the structure of the international monetary and reserve system. But there are warning signs.

2. Resurgence of Gold

Motives for adding gold to central bank reserves are multiple, as we argued in Arslanalp, Eichengreen and Simpson-Bell (2023). Gold adds diversification benefits to an investment portfolio. Gold is traditionally regarded as a safe haven whose price rises in periods of stress and volatility. It can be posted as collateral, lent, and used in financial transactions when held at an internationally recognized repository. It is out of reach of sanctions and safe from being frozen or garnished when vaulted at home (even if it may be less liquid when stored at home).

Figure 1 shows how, after a long period when the share of gold in official reserve assets had fallen, central banks began accumulating gold around the time of the Global Financial Crisis. The decline in the share of gold in global reserves has typically been seen as an advanced country phenomenon, advanced country central banks inheriting large amounts of gold reserves seeking to diversify. But Figure 2 shows that the share of gold in the official reserves of emerging and developing economies also fell in the second half of the 20th century, despite not being as heavy with inherited precious metal. In more than a few cases – in Brazil in the 1960s, China in the 1980s, India in the 1990s, and Russia in the 1990s and 2000s – gold reserves were liquidated in response to financial pressures. See Figure 3.

The recent shift in portfolio composition back toward gold is now common to advanced countries and emerging and developing economies alike, albeit starting from different levels. Earlier analysis by the Bank for International Settlements (Zulaica 2020) and others (Arslanalp, Eichengreen and Simpson-Bell 2023) contrasted the behavior of advanced countries, which were characterized as not significantly altering the share of gold in their reserves following the conclusion of the fourth and final Central Bank Gold Agreement (CBGA) in 2019, with that of a group of emerging markets that kept adding significantly to their previously modest gold holdings since 2008.[4] Figure 2 shows that the advanced countries as a group are now full participants in this trend, although the increase in the gold share of their reserves reflects increases in gold prices, not active purchases.

Gold as a share of reserves (based on market valuation) increased from 17 percent to 25 percent during 2021-24 for advanced economies, and from 7 percent and 10 percent for emerging markets and developing economies. Given the nearly 50 percent increase in gold prices in the period, valuation effects rather than a widespread re-allocation from dollar assets to gold explain most of this increase (Weiss 2025). Specifically, since 2021, the rise in gold prices accounts for nearly all of the increase in the gold share for advanced economies and about 80 percent for emerging markets and developing economies.

That said, more than just valuation effects are at work. Figure 4 shows that gold holdings by central banks measured in millions of fine troy ounces reversed their fall after 2008, and their subsequent increase has continued unbroken. Figure 5 shows that the number of central banks purchasing versus selling at least 1 metric ton of gold has been positive in each post-2008 year with the exception of 2016, which saw an equal number of central banks buying and selling gold.[5] Importantly, no advanced economy central bank has sold gold in significant amounts since the conclusion of the CBGA in 2019, despite the run up in gold prices, given the inherent pressures from the private sector and other central banks. (Even under the CBGA, advanced economy gold sales were modest amid concerns that each central bank's gold sale would depress gold prices for everyone else.)

Table 1 lists the top 10 buyers and sellers of gold since 2021 (the date of our earlier study). Unsurprisingly, China, India and Türkiye still rank high on the list of buyers. These large countries face geopolitical risk. As does Poland, which became the second largest purchaser in volume terms and had one of the largest percentage increases in the gold share of official reserves. Economists at the National Bank of Poland cite the country's geographic proximity to the conflict in Ukraine, the tendency for gold prices to rise in periods of heightened market tensions, and its ability to serve as a hedge against elevated inflation and declines in other

[4] The CBGA was a pact limiting the amount of gold that advanced country central banks could sell in one year. It was an effort to maintain orderly market conditions and not impose capital losses on residual gold holdings. China is also reportedly planning to establish the Shanghai Gold Exchange as a custodian for central banks and others, but that it a topic for a future paper.

[5] The IMF's *International Financial Statistics* and the World Gold Council (WGC) provide different series for gold purchases by the official sector. A principal difference is that the WGC includes purchases not only by central banks but also by sovereign wealth funds and related official agencies. The two series track one another fairly closely through 2021, after which the WGC provides numbers that are much higher. Another complication to bear in mind is that a few central banks invest in gold ETFs in addition to holding physical gold (Invesco 2025, p.44). Having said that, official gold still accounts for a relatively small share of the gold stock above ground (OMFIF, 2024).

asset prices (Domagalska et al. 2024). As shown in the bottom panel of the table, Kazakhstan and Bolivia were the largest sellers over the period in percentage-of-reserves terms. The Kazakh central bank had previously purchased large amounts of gold to support the country's mining industry; it then announced plans to rebalance its reserves from 70 to 50 percent gold. Bolivia sold gold to finance imports of fuel and support its currency in the face of foreign exchange shortages.[6]

Gold reserves are most conveniently used in transactions when vaulted at the Federal Reserve Bank of New York or the Bank of England, the institutions that traditionally act as gold custodians for central banks.[7] Gold warehoused there can be lent at interest, swapped, and posted as collateral. Figure 6 shows that the share of global gold reserves held at these two institutions combined has been declining since 2013.[8] The share held at the New York Fed has been trending downward continuously, whereas the share held at the Bank of England fell sharply in 2013-15, coincident with Russia's annexation of Crimea. This points to the high likelihood that central banks have been repatriating gold to insulate their reserves from sanctions. 60 percent of respondents to the Invesco Global Sovereign Asset Management Survey in 2023 cited the G7 decision to freeze Bank of Russia reserves following Russia's 2022 invasion of Ukraine as an event making gold as a reserve asset more attractive and as incentivizing central banks to vault it at home (Invesco 2023).[9] As the list in Table 2 shows, both Russia and China have announced that they hold 100 percent of their gold reserves at home.

Gold repatriation is not only a response to sanctions risk, however. The last decade and a half have also seen a number of other instances where central banks repatriated gold for other reasons. Table 3 lists what is known about these repatriation cases. France reportedly repatriated some 221 tons of gold between 2013 and 2016, mainly from London, to promote Paris as a gold trading center. The French authorities may have also faced political pressure from Marine Le Pen, who penned an open letter to Bank of France Governor Christian Noyer demanding gold repatriation. The Netherlands repatriated 4 million ounces of gold in 2014. The Netherlands Bank explained that "in times of financial crisis, it was better to have the gold near at hand" (Dutch News 2016). Germany announced plans to repatriate gold sufficient to raise the amount

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[6] Since 2021, five more countries (China, India, Jordan, Poland, Thailand) have joined our list of active diversifiers into gold, while Bolivia has dropped from the list. An update of our list includes 18 emerging market countries, as of end-October 2025: Argentina, Belarus, China, Egypt, Hungary, India, Iraq, Jordan, Kazakhstan, Kyrgyz Republic, Mauritius, Mongolia, Poland, Qatar, Serbia, Thailand, Türkiye, Uzbekistan. As before, Argentina would be replaced by Russia if we use 2008 as the starting year (instead of 1999).

[7] Central banks also hold limited amounts of gold in other centers including Paris, Zurich and Ottawa. The World Gold Council publishes a survey of central banks annually (most recently World Gold Council 2025) documenting these behaviors; its most recent survey elicited responses from 73 central banks (a 49 percent response rate). In addition, central banks sometimes hold gold in commercial vaults approved by the London Bullion Market Association (LBMA) and operated by the likes of JPMorgan and HSBC. Doing so is convenient when a central bank wishes to lease or swap gold or to engage in gold-backed repo operations. Trading in the gold futures and swap market is significant—about $150 billion per day, according to the World Gold Council. The LBMA publishes monthly data on total gold and silver held in LBMA-approved vaults but does not disaggregate these by owner type.

[8] The Bank of England also holds limited amounts of gold on behalf of commercial banks to facilitate the liquidity of the gold market (not so the New York Fed). Because these holdings are not separated in the data published by the Bank of England, they are included in Figure 6.

[9] In Invesco (2025), 39 recent of 46 responding central banks cited concern over freezing of central bank assets as a factor important to ongoing reserve accumulation.

stored at home to 50 percent of its total in 2013; Austria did likewise in 2015. The German central bank described the practice of vaulting gold at home as a measure "to build trust and confidence domestically" (Deutsche Bundesbank 2013). Recent reports cite popular pressure for gold repatriation in Germany and Italy, linking this to political tensions with the United States and threats to Federal Reserve independence (e.g. Zadeh 2025). Table 2 lists what is known about the location of official gold reserves for the G7, Switzerland and the BRICS countries as of the end of 2024.

Tables 4-6 report fixed-effects regressions of the share of gold in total reserves; these show the results for all countries, for the advanced countries, and for emerging markets and developing countries, respectively. The model is estimated by a Tobit regression to account for the bound on the dependent variable, with year fixed effects. Our baseline specification follows Arslanalp, Eichengreen and Simpson-Bell (2023). This specification is re-estimated including two additional years of data, now spanning the period 1980-2023.

The choice of explanatory variables is motivated by the literature on gold as an investment generally and that on gold in central bank reserves specifically. Both literatures suggest that gold is a hedge against economic, financial and political shocks, so we expect its share in reserves to be negatively associated with measures of economic stability such as high growth, low inflation, and fiscal strength. The results in Table 4 (column 1) are consistent with this presumption: inflation has a positive effect on the gold share of reserves, while the two measures of fiscal strength – the budget surplus and the debt/GDP ratio – display negative and positive coefficients, respectively. GDP growth has no significant effect on the gold share, as in our earlier analysis. Two measures of the state of the external sector, namely trade openness and currency appreciation/depreciation, have no impact on the gold share of reserves. In Tables 5 and 6 we perform the same analysis separately for advanced economies and emerging market and developing economies (EMDEs). The results for the fiscal variables continue to hold in these subsamples. However, as in our previous work, we find that the inflation effect changes sign for advanced economies, becoming persistently negative. Trade openness is strongly associated with lower gold holdings for advanced economies.

Central banks operating floating exchange rates similarly hold more gold, consistent with the presumption that they have less need to use their reserves in foreign exchange market interventions. (This is mostly driven by emerging markets and developing countries (Table 6); it is not simply a function of the fact that the United States, which floats and holds the vast majority of its reserves in gold, or of the fact that advanced countries, many of which float their currencies, also inherited considerable amounts of gold from the past.) Central banks of countries with gold mining industries hold more gold, reflecting pressure to support gold prices and the mining sector, consistent with our earlier conjecture.[10] Countries that accumulate additional reserves add them in the form of financial assets, not gold; the coefficient on reserve asset growth is not significantly different than zero.

We consider two extensions of our earlier analysis (Table 4, columns 2-3). The first considers the effect of sanctions and military alliances on the gold share of reserves. We find that

[10] See the discussion of Kazakhstan above. Note that we exclude this variable from the specifications in Table 5 on the grounds that gold mining is relatively unimportant in the advanced economies.

U.S. financial sanctions increase the gold share, particularly for EMDEs – we are unable to test this robustly for advanced economies since there are very few instances in which they have been the target of US financial sanctions. A defense pact with the U.S. also increases the gold share, which may be explained by the importance of New York as a market where gold can be conveniently held, lent and otherwise used in financial transactions.[11]

A second extension adds a measure of central bank independence to our earlier specification. Other recent work (Bartels et al. 2025) suggests that more independent central banks take more balance-sheet risk. Results in Table 4 (columns 4-5) are consistent with this presumption, insofar as the coefficient on central bank independence is positive. This is also true when we consider advanced economies and EMDEs separately. This result is robust to the inclusion of an index of financial development, suggesting that central bank independence is not simply proxying for the sophistication of the financial system. (Table 5 indicates that this relationship is driven by advanced-country central banks. Note that the results in Bartels et al. (2025) are similar for advanced-country central banks.)

Looking to the future, there is reason to think that the share of central bank gold holdings at the Bank of England and Federal Reserve Bank of New York will continue to decline, as centers other than London and New York seek to establish themselves as gold repositories for other countries, whether for geopolitical or purely financial reasons. The People's Bank of China is working with the Shanghai Gold Exchange to establish "offshore" vaults in Hong Kong and possibly other centers to vault gold and offer yuan-denominated gold contracts that offer physical delivery. Singapore has established a gold vaulting facility that caters to private banks and family offices but which might ultimately provide storage services to central banks. The existence of these alternative centers and especially the practice of vaulting gold at home raise the question of whether London and New York will continue to be regarded as the main repositories for central bank gold.

3. Decline of the Dollar and Rise of Nontraditional Reserve Currencies

The IMF's Currency Composition of Official Foreign Exchange Reserves (COFER), as of 2025Q2, points to an ongoing decline in the dollar's share of allocated foreign reserves of central banks and governments. That said, statistical tests do not indicate an accelerating decline, contrary to claims that US financial sanctions or questions about the dollar's safe-haven status have accelerated this movement.[12] To be sure, it is possible that the same countries that are seeking to move away from holding dollars for geopolitical reasons do not report information on the composition of their reserve portfolios to COFER. However, the 149 reporting economies make up 93 percent of global foreign exchange reserves. In other words, non-reporters are only a very small share of the total.

[11] Further tests indicate that the defense pact result is mainly driven by advanced economies, as the effect for EMDEs is sensitive to the inclusion of the Philippines. We thank Colin Weiss for highlighting this point.
[12] As discussed later in the paper, this is the case even when we control for exchange rate (valuation) effects. Having said that, we do find a statistically significant association between financial sanctions and gold holdings in our regression analysis, as described earlier in the paper.

Analysis of the gradual decline in the dollar's reserve share has traditionally focused on the parallel gradual decline in the weight of the United States in global trade and GDP. (This is true of our own earlier analysis in Arslanalp, Eichengreen and Simpson-Bell 2022). Recent geopolitical tensions have highlighted the additional possibility that alliance politics are important for the dollar's reserve currency status. In the 1960s, West Germany and Japan maintained their dollar reserves, despite chatter about the possibility of a U.S. devaluation, because of the value they attached to U.S. troops stationed on their shores (Gavin 2004). In the 1970s, despite the collapse of the dollar's peg to gold, Saudi Arabia agreed to invest its export earnings in U.S. treasury bonds because of the value it attached to U.S. military protection (Spiro 1999). More recently, the Bank of Korea and Bank of Japan have been shown to hold a larger share of their reserves in dollars than their commercial and financial links with the United States and the typical behavior of other countries would lead one to expect (see Eichengreen, Mehl and Chitu 2019, Weiss 2022, Eichengreen 2025).[13]

In Table 7 we revisit our earlier analysis of the determinants of the dollar share of foreign exchange reserves but now adding measures of U.S. alliances. The results confirm that stronger economic ties with the United States are associated with an increase in the share of the dollar in a country's international reserves. A dollar peg increases the dollar share by about 10 percentage points, while a one percentage point increase in the U.S. trade share or share of dollar-denominated debt increases dollar reserve shares by 0.3 to 0.4 percentage points (columns 1-6). Pegs to the euro and other currencies correspondingly reduce the dollar's share of reserves. Similarly, trade with the Euro Area, Japan, and the U.K. are associated with a lower dollar share. Debt denominated in other Big Four currencies (where the U.S., UK, Euro Area and Japan comprise the Big Four) also tends to lower dollar reserve holdings, though there is some evidence of complementarity between euro denominated debt and dollar reserve assets, which may reflect the prevalence of Euro Area economies amongst euro debt issuers. Since Euro Area countries cannot hold euro assets as international reserves, they tend to have higher dollar shares, as confirmed by the coefficient on the Euro Area dummy.

We do not find strong evidence that imposition of U.S. financial sanctions reduces the dollar share, perhaps reflecting the scarcity of alternatives to reserve assets issued by the United States and its allies. Geopolitical alignment with the United States, proxied by the existence of a defense pact with the U.S., increases dollar reserves. Greater central bank independence is associated with lower dollar holdings. This result persists when we include the financial development index in the regression, indicating central bank independence is not just proxying for the sophistication of the financial system.[14] An interpretation is that governments grateful for U.S. military presence encourage their central banks to hold dollars as a show of good faith, but that they are less able to influence the behavior of more independent central banks.

[13] As discuss later, military alliances play an import additional role in determining the currency composition of reserves. Having said that, this argument should not be pushed too far. As shown in Table 9, military alliances have not stopped U.S. allies from diversifying into nontraditional reserve currencies. We argue that this can be explained by economic and financial risk-return motives (Arslanalp, Eichengreen, Simpson-Bell, 2022).

[14] As a further robustness check we also controlled for GDP per capita since central bank independence could be a proxy for more general economic development. This did not change the result.

Turning to broader macroeconomic variables included in the final specification, currency appreciation against the U.S. dollar reduces dollar holdings. Surprisingly, given our prior on the effect of reserve adequacy on reserve investment decisions, higher reserve asset growth increases the dollar share.

This analysis thus points to roles of both economics and geopolitics but also institutional arrangements in explaining changes over time in the dollar's reserve currency role.

Similar to the earlier period studied previously (2000-21), the reduced role of the US dollar since end-2021 has not been matched by increases in the shares of the other Big Four currencies. Rather, it has been accompanied by a rise in the share of what we have called nontraditional reserve currencies, including the Australian dollar, Canadian dollar, Chinese renminbi, South Korean won, Singaporean dollar, and the Nordic currencies (although we now find that the share of the renminbi, also included in this group, has declined—more on this below). We show this by supplementing COFER with data from the IMF's Special Data Dissemination Standard (SDDS) Reserve Template, also available online.[15]

These nontraditional reserve currencies are attractive to reserve managers because they provide diversification and yield, and because they became increasingly easy to buy, sell and hold with the advent electronic broking systems in the 1990s, which allowed dealers to offset foreign currency positions and pass the savings on to their customers, and then in the early 2000s, when large global banks rolled out electronic trading platforms on which clients could trade currencies while receiving streaming price quotes, guaranteed liquidity, and low cost execution. This trend should continue with the development of new digital financial technologies, such as automatic market-making and automated liquidity management systems. Figure 7 shows bid-ask spreads for traditional and nontraditional reserve currencies. It indicates that spreads for the major nontraditional reserve currencies – the Australian dollar, Canadian dollar and Chinese renminbi have largely converged to those for the euro, yen and sterling (all against the U.S. dollar).[16]

Some may suspect that what we have characterized as an ongoing decline in dollar holdings and rise in the reserve share of nontraditional currencies reflects the behavior of a small number of large reserve holders, led by Russia and Switzerland. Russia has geopolitical reasons to be cautious about holding dollars, euros, pounds and yen, while Switzerland, which accumulated substantial reserves over the last decade, has reason to hold a large fraction of its

[15] The IMF Reserve Template is required for all countries that subscribe to the IMF Special Data Dissemination Standard (SDDS) or Special Data Dissemination Standard Plus (SDDS Plus). Under these standards, reporters are required to disclose (under "memorandum items"), the currency composition of reserve assets, at least annually, by two groups of currencies: (i) "currencies in the SDR basket"; and (ii) "currencies not in the SDR basket." In addition, countries can voluntarily report the full breakdown of reserve currencies by separately identifying the five currencies in the SDR basket (the U.S. dollar, the euro, pound sterling, yen, and the renminbi). As of November 2025, there are 80 SDDS/SDDS Plus reporters. In addition, 15 reporters publish the template voluntarily. In total, 95 reporters—making up nearly $11 trillion of global reserves—publish the template.

[16] Another measure of the attractions of using different currencies as a means of payment and store of value is relative hedging costs. These depend heavily on interest rates. Bloomberg data on hedging costs over 3- and 12-month horizons show that hedging costs for the Australian dollar, Canadian dollar and offshore renminbi have generally been little different from those on traditional reserve currencies over the last five years.

reserves in euros rather than dollars, the Euro Area being a geographical neighbor and most important trading partner, and because the Swiss National Bank also has reason to want to diversify its reserve portfolio. It is true that the Bank of Russia and Swiss National Bank are the two largest holders of nontraditional reserve currencies after the People's Bank of China. But when we exclude Russia and Switzerland from the COFER aggregate, using data published by the Bank of Russia through 2021 and the Swiss National Bank through 2024, there is no significant change in the downward trend in the dollar share, as Figure 8 shows.

Table 8 shows that the Australian dollar, Canadian dollar, and Chinese renminbi remain the leading nontraditional reserve currencies, as before, followed by the Singapore dollar, Korean won, and the Scandinavian currencies. Having said that, since end-2020 (the date of our earlier estimate), the Australian dollar and Chinese renminbi have both lost market share (the Aussie dollar's share fell from 20 percent to 17 percent, the renminbi's share from 25 percent to 18 percent of the nontraditional reserve currency total). In contrast, the Singapore dollar and Korean won have both gained significant market share (from 6 percent to 13 percent and 8 percent to 11 percent of the nontraditional reserve currency total, respectively).

Exchange rate fluctuations can have a major impact on the currency composition of central bank reserve portfolios.[17] But adjusting for them does not alter the picture. Removing exchange rate fluctuations, the decline in Australian dollar's share is somewhat less (falling from 20 percent to 18 percent of the nontraditional reserve currency total). For the Chinese renminbi, the decline is even larger (from 25 percent to 17 percent). For the Korean won, the increase is even larger (from 8 percent to 12 percent).

Table 9 shows an updated list of economies reporting reserves held in nontraditional reserve currencies. Because not all economies report the IMF's SDDS Reserve Template, this list is almost certainly incomplete. Even so, it is lengthy. Including countries for which we can find data from central bank annual reports, 58 countries hold at least five percent of their foreign exchange reserves in nontraditional reserve currencies as of 2024. Seven more economies have become diversifiers since 2020 (the date of our earlier study): Israel, Netherlands, Seychelles, Slovak Republic, Slovenia, Uzbekistan, and West Bank and Gaza. The explanation is straightforward in some cases: Lesotho and Namibia trade mainly with South Africa, so they hold significant shares of their reserves in rand. The Baltics trade with the Scandinavian countries, inducing them to hold their currencies. Explaining the portfolio behavior of other countries is less straightforward, but many seem to be driven by a motivation to diversify their reserves so as to obtain a better mix of risk and return, as we described in our earlier paper (Arslanalp, Eichengreen, and Simpson-Bell, 2022).

Figure 9 provides a list of the world's main holders of nontraditional reserve currencies, as of 2024 (or latest available data). The largest holders are China, Russia, and India – large economies with large total reserves – followed by Switzerland, Singapore, Poland and Korea (based on publicly available information), but there are many others. Overall, we identify 24

[17] Reporting to COFER and the IMF Reserve Data Template are based on actual holdings of currencies, not exposure to a currency including the impact on positions of currency derivatives. However, exchange rate fluctuations still matter because the data are reported in U.S. dollars. This means that if a country holds reserves in euros or yen, the value of those holdings is first converted into dollars before being added to the total. So, when exchange rates shift—even if the central bank does not buy or sell anything—reported currency composition change.

advanced and emerging market economies that hold nontraditional reserve currencies in the amount of $5 billion dollars or more.

In sum, the gradual decline in the dollar's share of global reserves has continued in the three-plus years since we wrote our earlier paper, while diversification away from the dollar continues to be not in the direction of the euro, yen and sterling but rather toward nontraditional reserve currencies.

4. Retreat of the Renminbi

One nontraditional reserve currency that gained market share in the first two decades of this century is the Chinese renminbi. Beijing has been advancing policies on multiple fronts to promote renminbi internationalization, including the development of a cross-border interbank payment system, designation of an official renminbi clearing bank for each global financial center, the extension of renminbi swap lines, investing renminbi funds abroad through its Belt and Road program, and piloting a central bank digital currency. The renminbi's share of allocated foreign exchange reserves worldwide rose to 2.84 percent in the first quarter of 2022 (when we wrote our earlier paper), leading some to predict that its share was poised to rise still further and rival the dollar as a global reserve currency at some point.

It is thus striking that renminbi internationalization, at least as measured by the currency's reserve share, shows signs of stalling out. The most recent data, shown in in Figure 10, do not indicate a further increase in the renminbi's currency share. That share fell in every quarter but two between 2022 Q1 and 2025 Q2, at which point it was down to 2.1 percent Some observers may suspect that depreciation of the renminbi exchange rate in recent quarters has played a role in the decline. However, even adjusting for exchange rate changes, the renminbi share of reserves has declined since 2022 (in exchange-adjusted terms, it fell nine out of 13 quarters since 2022 Q1).[18]

China's continued maintenance of capital controls is sometimes cited as a deterrent to the further accumulation of renminbi reserves (see Frankel 2011, Prasad 2021). Here standard sources such as the IMF's Exchange Arrangements and Exchange Restrictions Annual do not show further liberalization of the country's capital account. The onshore/offshore interest differential (3-month SHIBOR minus 3-month HIBOR interest rate) has in fact increased from 50 to 70 basis points over the period (the increase is thus 40 percent of the initial level). To be sure, it has been argued that a currency can still acquire reserve currency status in the presence of capital-account restrictions, insofar as it is used for trade finance (Eichengreen et al. 2024). And the renminbi is used extensively for trade invoicing and settlement, most notably in China's own trade. But this is not to dispute that progress might be faster in the presence of active moves toward liberalizing the capital account.

Second, higher interest rates on alternative reserve assets may have encouraged their accumulation in lieu of the renminbi. Investing in renminbi reserves may have been especially

[18] Relatedly, the 2025 triennial survey of foreign exchange turnover of the Bank for International Settlements shows the growth of the renminbi share as slowing: up 1.5 percentage points from 2022, where it gained 3 percentage points between 2019 and 2022.

attractive in the years prior to 2022 when interest rates on many alternative reserve assets were at or near zero, and sometimes even negative, while Chinese interest rates were still positive. Ten-year government bond yields in China varied from 4 percent in early 2018 to a bit over 3 percent in 2019, consistently above U.S. levels. Since then, these international interest differentials have narrowed and, for some countries, reversed. From 2022, ten-year U.S. yields consistently exceeded their Chinese equivalent (Figure 11). Studies of the major reserve currencies find that interest differentials significantly influence central bank portfolio composition. Goldberg and Hannaoui (2024) show that relative interest rates can tilt central bank reserve composition between traditional and nontraditional reserve currencies, especially for central banks with large investment tranches in their portfolios. There is reason to think that the point carries over to the choice between the renminbi and other currencies.

Third, rising geopolitical tension between China and the West may have discouraged countries associated with the Western bloc, and even nonaligned countries, from accumulating renminbi reserves. They may have questioned whether China would permit free access if tensions ratcheted up further, or they may have feared being seen as sympathetic to the Chinese side in the event of a conflict. Observers have pointed to the possibility that China could be targeted with direct or indirect sanctions, in which case free access to and use of renminbi assets could be lost. Castelli (2024) observes that "geopolitical tensions and the risk of sanctions have somewhat dented the appetite of central banks for onshore yuan assets." He goes on to write that "The increase in direct and indirect sanction risks has undoubtedly impacted demand for the Chinese currency among reserve managers." Historical research (Eichengreen, Mehl and Chitu 2019, Eichengreen 2025) shows that countries traditionally hold the reserves of their alliance partners. Recent data analyzed by Liao and McDowell (2016) indicate that countries adding renminbi to their reserves tend to be geopolitically aligned with China rather than the West, as measured by voting patterns in the United Nations General Assembly. Our own analysis in Table 10 confirms this pattern. The 2025 UBS Reserve Manager Survey found that 30 percent of respondents believed that U.S.-China tensions had slowed the process of renminbi internationalization, while just 13 percent thought that such tensions had accelerated it (UBS 2025, p.24)

It is possible to observe such reactions directly for countries using the IMF's SDDS Reserve Template data. This shows Ukraine steadily liquidating its renminbi reserves after 2021 for self-evident reasons. It shows several European countries – Belgium, the Czech Republic, Portugal and Switzerland – moving in the same direction during 2022-24 amid perceived geopolitical risks and lower returns on the renminbi. There are also noticeable reductions at this time in renminbi reserves held by the central banks of Chile, Israel, and Morocco.

Relatedly, the rise and retreat in the share of the renminbi in global allocated reserves may be dominated by one country, Russia. Data from the Bank of Russia's annual report for 2021 shows that Russia was far and away the largest holder of renminbi reserves, accounting for fully a third of the reported total. (Figure 12 provides an update of the world's main holders of renminbi reserves, based on latest data available.) Russia is also among the list of countries reporting data to COFER, where the most encompassing tabulation of renminbi reserves is to be found. The Bank of Russia is known to have begun shifting the composition of its reserves toward the renminbi, presumably in anticipation of the imposition of sanctions, prior to the

country's invasion of Ukraine. Bank of Russia annual reports show the renminbi share of FX reserves as rising from 2 percent in 2017 to 17 percent in 2020, and 22 percent in 2021, after which the publication of the relevant breakdown stops. Russia's invasion of Ukraine occurred in the same quarter that the renminbi share of allocated reserves peaked, according to the IMF, perhaps indicating that the Bank of Russia's portfolio reshuffling was over. The Bank of Russia's foreign currency assets declined between the end of 2021 and end of 2022, as it intervened to support the ruble exchange rate. Given that its reserves of Western currencies were frozen, this points to the possibility that the Russian central bank was forced to liquidate a portion of its renminbi reserves.[19] All this said, it is important to acknowledge that we have limited visibility on the evolution of the Bank of Russia's foreign reserves, updates on their composition not having been published since the beginning of 2022.

Finally, slower economic growth in China itself may have slowed increases in both the supply and demand for renminbi reserves. On the supply side, the slowdown in Chinese economic growth from double-digit rates 15 years ago to the 4 to 5 percent range today makes for slower growth in the stocks of bank deposits and government bonds eligible to be held abroad as international reserves. On the demand side, slower economic growth makes for slower expansion of Chinese exports, imports and foreign investment than would be the case otherwise. That the currency composition of foreign exchange reserves is strongly connected to trade and financial flows between the reserve-currency issuer and its foreign partners is a well-established regularity (Eichengreen and Mathiesen 2000; see also our analysis of dollar shares above). That said, the renminbi is used as a vehicle not only for goods trade but also for cross-border transactions related to services, foreign direct investment, and portfolio capital flows, which suggests that the slowing growth of trade is not the only – or even, perhaps, the primary – factor at work.

One can explore some of these hypotheses using data from the IMF's SDDS Reserve Template and central bank annual reports where data are available (Italy, South Africa, Türkiye up to and including 2024, and Russia up to and including 2021). Table 10 shows the results, where we estimate equations on quarterly data in columns 1-4 and annual data in columns 5-6.[20] These estimates confirm that participation in the Belt and Road initiative and presence of a PBoC swap agreement are positively related to the renminbi share of reserves. A large share of trade with China enters positively; the coefficient is significantly different from zero in column 4 but not elsewhere. Trade openness is consistently positive and significant: countries that trade more hold a larger share of their reserves in renminbi, other things equal, presumably reflecting additional scope for diversifying the reserve portfolio including for trade with China.

In terms of political variables, we find that having a defense pact with the United States is negatively associated with the renminbi share of reserves. In contrast, being subject to US financial sanctions is positively associated with the renminbi share. These responses are striking; we are not aware that they have been systematically documented before.

[19] The Bank of Russia's reserves then held steady between early 2023 and mid-2024, after which reserve accumulation resumed.

[20] The constraint preventing use of quarterly data in columns 5-6 is inclusion of the central bank independence variable.

5. Prospective Developments

A further development too recent to show up in the reserve statistics is passage of the Guiding and Establishing National Innovation for U.S. Stablecoins (GENIUS) Act by the U.S. Congress in July 2025 and growing attention to digital stablecoins. The GENIUS Act is designed to provide a regulatory framework for dollar-linked stablecoins. Banks, nonbank financial firms and nonfinancial companies can prospectively obtain licenses from U.S. regulators authorizing them to issue stablecoins. Stablecoin issuance by banks and credit unions will be regulated by their respective federal banking agencies. Nonbank entities issuing stablecoins will be overseen by the Comptroller of the Currency.[21] There is an option for state banking authorities to license and oversee the operations of "small" stablecoin issuers (with a circulation of $10 billion or less), so long as their regulatory frameworks are substantially similar to federal rules. There will be a Stablecoin Certification Review Committee, with representatives of the Fed, the Treasury and the FDIC, to review state regulatory certifications.

The act requires issuers to hold 100 percent reserves in high-quality liquid assets to inspire confidence and ensure redeemability. Issuers are required to make disclosures about their balance sheets monthly and allow their accounts to be verified by a recognized auditing firm. Issuers are subject to standard anti-money-laundering rules.

Stablecoin circulation is currently on the order of $250 billion; some forecasts, such as one by U.S. Treasury Secretary Bessent, project this as rising as high as $2 trillion by 2028. The market is highly concentrated, with Tether, the leading stablecoin, accounting for 65 percent of the market, followed by USDC, which accounts for another 25 percent. Noteworthy for present purposes is that 99 percent of stablecoin circulation worldwide is in units linked to the U.S. dollar, reflecting the concentration of digital entrepreneurship and take-up in the United States.

This has given rise to speculation that take-up of stablecoins may help to reverse the gradual erosion of the dollar's dominant reserve-currency position. Stablecoins provide an alternative set of payment rails that may allow for lower cost and higher speed of cross-border transactions. There is ample evidence that use of a currency in commercial and financial payments and the tendency for a central bank to hold that currency as reserves go together (Gopinath and Stein 2021), since the central bank may need to provide that currency to banks and firms in its jurisdiction in periods of liquidity shortage. Relatedly, Waller (2025) suggests that stablecoins may solidify the dollar's dominance in the foreign exchange market, as the convenience of dollar-linked stablecoins gives rise to the "stablecoin sandwich," in which one national currency is first converted into a dollar stablecoin, and that stablecoin is then converted into a second national currency, but without the delays, cost and complexity of settling the transaction through the correspondent banking network. If the dollar continues to be on one side of the majority of global foreign exchange transactions, owing to this increased convenience,

[21] The Comptroller will also oversee the stablecoin operations of the subsidiaries of insured depository institutions.

then central banks will retain an incentive to hold dollar reserves for use in potential foreign exchange market intervention.[22]

The case that dollar stablecoins will solidify the greenback's position at the center of the international monetary and reserve system is provocative but unproven. It is not clear that stablecoins have pronounced advantages over the correspondent banking system. Payment instructions sent via a commercial bank are more expensive, but the balances from which they are withdrawn are federally insured.[23] Stablecoins, in contrast, are not backed by deposit insurance. Transactions by credit card involve payment of an interchange fee, but in return the entity making the payment receives a package of services, not only payment services but also fraud protection, the option of paying over time, and so forth. Other incumbents in the payments space, including Visa, Mastercard and SWIFT, are all experimenting with distributed ledger technology that promises cheaper and faster execution of transactions.

Then there is the question of whether other jurisdictions will permit their residents to hold and use dollar stablecoins. Easy availability of these units may give rise to currency substitution, especially in countries with relatively high and variable inflation, but also generally (Lannquist 2025). In turn this will diminish the leverage of monetary policy over domestic economic conditions. European Union officials may conclude that dollar stablecoins issued by U.S. entities do not satisfy the disclosure, governance and consumer protection requirements of the EU's Markets in Crypto-Assets Regulation (MiCAR) of 2023. This would not prevent EU residents from purchasing dollar stablecoins outside Europe, but it would prevent them from using them on EU-registered websites (van t'Klooster, Martino and Monnet 2025).

Finally, there are issues of interoperability and of stability. A proliferation of stablecoins may be corrosive to the singleness of money. Amazoncoin may not be useable at Walmart, Walmartcoin may not be useable at Amazon, and cryptocurrency exchanges may not make markets in all the relevant units. Limited fungibility may limit digital money's attractions. And if stablecoins are unstable, either because backing proves inadequate or because of fraud and scams, they may turn out to be a flash in the pan.[24]

Another possible option, the creation of a single BRICS currency, has always been problematic. To be sure, there are parallels between Europe's desire to free itself from dependence on the dollar, efforts that date back to the 1960s, and the BRICS's wish to de-dollarize. But there is also the sobering fact that it took nearly three decades to complete the transition from the first serious effort to create a single European currency (the Werner Plan of 1970) to the advent of the euro. The effort to create a common currency was part of a larger ongoing integration effort, entailing the creation of governance institutions (the European Commission, the European Parliament) that in turn made adoption of a single currency feasible. A single currency implies a single monetary policy, which has always created economic

[22] A final argument, arguably more tangential in the present context, is that a $2 trillion stablecoin market will significantly augment the demand for U.S. Treasury securities to be held as collateral, enhancing U.S. debt sustainability and thereby confidence in the dollar.

[23] Up to a limit, currently $250,000.

[24] Two caveats here are (i) that a very small number of stablecoins may ultimately dominate the market, as is the case currently, and (ii) that a handful of major exchanges may act as dealers and ensure the fungibility of stablecoins. Time will tell.

difficulties for a heterogeneous collection of European countries. And the BRICS, even before their expansion to include Egypt, Ethiopia, Iran and the United Arab Emirates, are an even more heterogeneous grouping. Thus, the Brazilian Government, upon assuming the presidency of the BRICS in early 2025, reportedly shelved the possibility of a single BRICS currency (Gupta 2025).

The alternative, still actively promoted by the Brazilian presidency, is local currency settlement, which would presumably encourage central banks to add those same BRICS currencies to their reserve portfolios. The most obvious local currency in this context is the Chinese renminbi, which is subject to the limitations discussed above. Other efforts to promote local currency settlement have not come to fruition. Thus, the Russian and Indian central banks engaged in extensive discussions between 2022 and 2024 about using the rupee and ruble in their bilateral settlements. These discussions ultimately went nowhere. India has consistently run a bilateral deficit with Russia, reflecting its dependence on imported oil. But Russian entities have had a limited appetite for accumulating rupee, since they purchase less from India than they sell to it and have a limited desire to hold other rupee-denominated assets. Moreover, the rupee (like the ruble) is not freely convertible, as it cannot be freely used to purchase financial assets in the rest of the world.

Project mBridge is closely related. This is a digital platform for the exchange of central bank digital currencies, currently under development by the People's Bank of China, the Hong Kong Monetary Authority, and the central banks of Saudi Arabia, Thailand, and the UAE. The argument that this technology will enhance the role of BRICS currencies in the international monetary system is analogous to the argument regarding dollar stablecoins, but this time with the opposite implications. Because Project mBridge will provide a more efficient, faster, lower-cost set of payment rails, it will promote use of the currencies of the five participating countries in their respective cross-border transactions. It may encourage the Saudi central bank to accept China's renminbi in payment for its oil exports, for example (as argued by Choyleva 2025). Using the currency in payments will in turn encourage Saudi Arabia to hold the renminbi as reserves.

In June 2024 the Bank for International Settlements declared that Project mBridge had reached "minimum viable product stage," meaning that it was ready to handle real-value transactions in a controlled environment.[25] It is reported that a limited number of real transactions are being conducted on the platform by participating central banks and select commercial banks. There would appear to be no purely technical obstacle to scaling up the volume of transactions significantly.

However, economic and political obstacles are likely to remain. Participating central banks would have to agree on governance rules for the platform. To have a significant impact on the international monetary and reserve system, additional central banks would have to join, creating the need for rules governing admission and membership. Other problems hindering local currency settlement would remain, specifically the reluctance of mBridge partners to accumulate claims denominated in one another's local currencies. The Saudi-Chinese application is appealing because Saudi Arabia not only exports petroleum to China but also

[25] Shortly thereafter, the BIS handed over the project to its partners.

imports the services of Chinese construction companies, and because Saudi entities may find it attractive to invest in Chinese assets. Whether the case is more general, only time will tell.

Finally, there is the possibility that any erosion of the dollar's safe-haven status may have a significant impact on the evolution of the international monetary and financial system. Safe-haven status is distinct from international currency and reserve currency status. An international currency is widely used for trade invoicing, cross-border investment and denominating international bonds, a reserve currency is held by central banks and monetary policies for purposes of settling international transactions and intervening in foreign exchange markets, whereas a safe haven currency is one that investors turn to in times of economic and geopolitical uncertainty. However, these roles are connected. A currency's safe-haven status – its tendency to hold its value or even appreciate in periods of heightened uncertainty and volatility – will buttress its use as an international and reserve currency. Firms and banks engaged in cross-border trade and financial transactions are more likely to hold and use a currency in normal times when they are confident that it will retain its utility and hold its value in times of exceptional volatility. Central banks will be reluctant to hold as reserves currencies that lose significant value just when reserves are most urgently needed, namely in periods of heightened volatility. They will be correspondingly more likely to hold currencies that gain value in such periods.

The dollar's safe-haven status rests on the liquidity of markets in U.S. reserve assets. Questions arose about the liquidity of those markets in 2020 and again in 2023. In March 2020 Treasury prices initially rose, reflecting flight to safety, but they then dropped sharply alongside equities from the middle of the month. Bid-ask spreads widened as dealers struggled to find buyers, and yields on off-the-run Treasury securities spiked alarmingly. In March 2023, with the failure of Silicon Valley Bank, Treasury yields initially dropped, again in typical flight-to-safety behavior, but then rose sharply as primary dealers, facing leverage ratio requirements and large security supplies, grew reluctant to hold large inventories. The Fed was forced to intervene on both occasions. If the dollar's safe-haven status rests on the liquidity of U.S. Treasury markets, that liquidity evidently rests on the presence of the Fed to provide backstopping functions.

In the first half of 2025, a period of heightened economic and geopolitical stress, and specifically in April, when the U.S. administration announced and then delayed "reciprocal" tariffs, the dollar weakened, again raising questions about whether its safe-haven status remained intact. A number of authors focusing on the immediate aftermath of "Liberation Day" (when the tariffs were announced) find that the dollar seemingly behaved like an "unsafe haven" (see e.g. Collyns and Klein 2025 and Grothe et al. 2025). However, Kamin (2025) documents that while the dollar shifted from rising in periods of market volatility to falling in such periods, it appeared to revert to its traditional flight-to-safety pattern subsequently, rising in periods of intensified volatility. Indeed, the correlation between the U.S. dollar index and the VIX measure of market volatility turned from positive to negative during April-May 2025, before reverting to positive territory in June 2025 (Figure 13).

Studies have found evidence that currencies issued by countries with highly independent central banks are most likely to display safe-haven characteristics (see e.g. Goldberg and Krogstrup 2023, Zhao 2020). Thus, recent debates on the independence of the Federal Reserve may also have had implications for the dollar's safe-haven status. Concretely, questions may be

asked about the willingness and ability of the central bank to respond aggressively in future episodes of Treasury market illiquidity as it did in 2020 and 2023. The answers are unclear.

For all these reasons, it is too early to know with confidence that recent policy and geopolitical uncertainties have begun to diminish the dollar's safe-haven characteristic such that there will be major implications for the structure of the international monetary and financial system. But there are warning signs.

One such warning sign is the term premium in the U.S. Treasury bond market (Figure 14). The term premium reflects the compensation investors demand for interest rate uncertainty. This uncertainty may itself be driven by uncertainty around the fiscal outlook, inflation risk, or worries about central bank independence. IMF estimates of the 10-year term premium for traditional reserve currencies point to a higher rise in the U.S. term premium in recent years, increasing steadily from its lows in 2020.[26] A rising term premium, indicating greater uncertainty about the future value of U.S. Treasury securities, could indicate growing doubts on the part of investors, both domestic and foreign, that the dollar will retain its traditional safe-haven status.

6. Conclusion

In this paper we have described and analyzed some underappreciated changes in the international monetary and reserve system. We first show that the gradual diversification of reserve shares away from the dollar has continued in recent years. Our analysis of the dollar share of reserves points to a role for economic and financial ties with the United States; if these ties weaken or loosen, we would expect the dollar share to decline further. We also find a role for geopolitical alliances with the U.S., as proxied by a bilateral defense pact, which encourage dollar reserve holding. If questions continue to be raised about the strength and stability of U.S. alliances, these too may come to be reflected in declining dollar shares.

Some of this diversification is in the direction of gold, which has been actively purchased by emerging market central banks and passively acquired by advanced country central banks. Our earlier analysis pointed to economic and financial volatility, choice of exchange rate regime, and presence of a domestic gold-mining industry as factors influencing the gold share of reserves. Here we find also a role for geopolitical alignment with the United States, perhaps reflecting New York's historic status as a gold-trading and warehousing center, as well as a role for central bank independence.

In addition, diversification continues to be in the direction of nontraditional reserve currencies (currencies other the Big Four – in addition to the U.S. dollar the euro, pound sterling and yen), reflecting greater ease of buying, selling and using these currencies, as well as their yield and diversification benefits. One important difference from our earlier analysis is evidence of a recent decline in the share of global reserves held in the Chinese renminbi, which has lost market share to the South Korean won and Singapore dollar. Why the renminbi gained reserve-currency market share in the preceding period is straightforward: countries had extended their trade and financial links with the Chinese economy, while U.S. financial sanctions and geopolitical tensions between the two countries encouraged nonaligned countries and countries

[26] While term premium estimates differ across various models, the trend tends to be the same.

in the China-leaning block to augment their renminbi holdings. Still, none of these factors obviously explains the recent fall in the renminbi's share of global reserves. Instead, perceived geopolitical risks and lower returns on renminbi appear to be driving this trend.

Finally, we discuss other developments too recent to show up in the reserve statistics but with potential implications for the future. These include the GENIUS Act authorizing the licensing and issuance of dollar-denominated stablecoins by the United States, the expansion of the BRICS grouping of countries and their de-dollarization plans, and the development of platforms such as Project mBridge for the direct exchange of central bank digital currencies. We conclude that none of these developments is likely to have an immediate impact on the evolution of the international monetary and reserve system in the immediate future.

The development with the greatest potential implications is doubt about the safe-haven status of the U.S. dollar. Holding dollar reserves is attractive, in part, because the dollar strengthens at times of economic and geopolitical stress, providing gains for holders exposed to other losses. This anti-cyclical behavior reflects the depth and liquidity of markets in U.S. Treasury securities – investors valuing liquidity in periods of political and financial stress – and the strength and stability of the issuer that lies behind them, stability being the other essential attribute of a safe-haven currency. However, episodes of strain in early 2020 and early 2023 have raised questions about the liquidity of those markets. Then, in the first half of 2025, a period of heightened economic and geopolitical stress, and specifically in April, when the U.S. administration announced and then delayed "reciprocal" tariffs, the dollar weakened, raising questions about whether its safe-haven status remained intact. Were there to be significant erosion of the dollar's status as a safe haven, the incentives for central banks to hold it could diminish accordingly. It is too early to know whether such a process is in fact underway. Analyzing the determinants of the dollar's safe haven status and determining whether this is changing is an important topic for future research.

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Table 1. Top 10 Buyers and Sellers of Gold in the Official Sector, 2022-24

	million troy ounces	percent of all buying/selling	change in gold share in official reserves
Largest buyers			
China	10.7	27%	2%
Poland	7.0	17%	9%
India	3.9	10%	5%
Türkiye	3.6	9%	6%
Singapore	2.2	5%	3%
Iraq	2.1	5%	5%
Qatar	1.7	4%	9%
Egypt	1.5	4%	12%
Czech Rep	1.3	3%	3%
Russia	1.0	2%	11%
Largest sellers:			
Kazakhstan	-3.8	57%	-16%
Philippines	-0.9	14%	2%
Bolivia	-0.6	10%	43%
Thailand	-0.3	5%	2%
Germany	-0.2	4%	8%
Finland	-0.2	3%	3%
Ecuador	-0.2	2%	9%
Cambodia	-0.1	2%	3%
Curacao & St Maarten	-0.1	2%	-2%
Sri Lanka	-0.1	1%	-5%
Memo items:			
Euro Area	-0.2	3%	11%

Source: IMF, International Financial Statistics.

Table 2. Official Gold Reserves by Location, end-2024

Country	Gold reserves (mil. fine troy ounces)	Own country	Overseas	New York Fed	Bank of England	Other overseas
France	78	100%	0%	0%	0%	0%
Germany	108	51%	49%	37%	12%	0%
Italy	79	45%	55%	43%	6%	6%
United Kingdom	10	100%	0%	0%	…	0%
United States	262	100%	0%	…	0%	0%
Switzerland	33	70%	30%	0%	20%	10%
China	73	100%	0%	0%	0%	0%
India	28	47%	53%	…	…	…
Russia	75	100%	0%	0%	0%	0%

Sources: National central banks; press articles; IMF Internatioal Financial Statistics (IFS).
Note: Canada does not hold gold reserves. Brazil and Japan do not disclose the location of their gold reserves.

Table 3. Repatriation of Gold Reserves by Central Banks, 2000-25

Country	Period	Amount (mtons)	Amount (mil troy ounces)	Repatriated from	Source
Advanced economies		**2038**	**65.5**		
Germany	Early 2000s	930	29.9	London	Financial Times
France	2013-16	221	7.1	London	The Gold Observer
Germany	2013-17	674	21.7	New York, Paris	Bundesbank
Netherlands	2014	123	3.9	New York	Central Banking
Austria	2015-18	90	2.9	London	Central Bank of Austria
Emerging markets		**453**	**14.6**		
Venezuela	2011-12	160	5.1	Various	Bloomberg News
Türkiye	2017	29	0.9	New York	Central Bank of Türkiye
Hungary	2018	3	0.1	London	Magyar Nemzeti Bank
Poland	2019	100	3.2	London	Bloomberg News
Romania	2019 onward	61	2.0	London	Reuters
India	2024	100	3.2	London	Reuters
Serbia	2025	5	0.2	Switzerland	Bloomberg

Sources: National central banks and press articles.

Table 4. Gold Share of Reserves

Variable	(1)	(2)	(3)	(4)	(5)
Gold share (%)					
CPI inflation	0.17***	-0.10	-0.09	-0.11	-0.09
Fiscal balance	-0.23***	-0.34***	-0.37***	-0.62***	-0.54***
Public debt	0.05***	0.05**	0.05**	0.11***	0.12***
Real GDP growth	0.02	0.09	0.12	0.05	0.09
Gold production	0.00***	0.00***	0.00***	0.00***	0.00***
Reserve assets growth	0.00	0.00	0.00	0.00	0.00
Currency appreciation	-0.01	-0.07	-0.08	-0.04	-0.03
Floating exchange rate	0.07***	0.08***	0.07***	0.09***	0.09***
Trade openness	0.00	-0.01	0.00	-0.06***	-0.07***
US financial sanction		0.00	0.00	0.05***	0.06***
US defense pact			0.01*	0.02***	0.03***
Central bank independence				0.20***	0.25***
Financial development					0.08**
Constant	0.00	0.00	-0.01	-0.09***	-0.17***
var(e)	0.02***	0.02***	0.02***	0.01***	0.01***
Statistics					
N	2143	1128	1128	909	889
AIC	-1515.51	-853.65	-853.64	-1002.01	-981.61
BIC	-1345.41	-697.77	-692.73	-833.58	-809.17

Table 5. Advanced Economies: Gold Share of Reserves

Variable	(1)	(2)	(3)	(4)	(5)
Gold share (%)					
CPI inflation	-0.65**	-1.42***	-1.39***	-2.00***	-0.38
Fiscal balance	-1.12***	-1.32***	-1.28***	-1.21***	-0.89***
Public debt	0.08***	0.19***	0.19***	0.16***	0.10**
Real GDP growth	0.11	-0.20	-0.22	-0.08	0.02
Gold production	0.00***	0.00***	0.00***	0.00***	0.00***
Reserve assets growth	0.02	0.04	0.04	0.01	-0.02
Currency appreciation	0.06	0.09	0.09	-0.05	0.05
Floating exchange rate	-0.11***	-0.06	-0.05	-0.01	-0.01
Trade openness	-0.01**	0.03***	0.03***	-0.07**	-0.12***
US financial sanction		0.02	0.01	0.26***	
US defense pact			-0.01	0.03	0.09***
Central bank independence				0.34***	0.59***
Financial development					0.25***
Constant	0.01	-0.01	-0.01	-0.12**	-0.43***
var(e)	0.02***	0.02***	0.02***	0.02***	0.02***
Statistics					
N	438	339	339	305	285
AIC	-219.16	-144.50	-142.72	-153.06	-176.26
BIC	-96.70	-25.90	-20.29	-30.29	-55.73

Table 6. Emerging Markets and Developing Economies: Gold Share of Reserves

Variable	(1)	(2)	(3)	(4)	(5)
Gold share (%)					
CPI inflation	0.17***	0.03	0.04	0.06	0.04
Fiscal balance	-0.05	0.11	0.09	-0.12	-0.18*
Public debt	0.06***	0.00	0.00	0.07***	0.07***
Real GDP growth	0.05	0.20	0.23*	0.08	0.06
Gold production	0.00***	0.00	0.00	0.00***	0.00***
Reserve assets growth	0.00	-0.01	-0.01	0.00	0.00
Currency appreciation	-0.01	-0.12*	-0.13*	-0.04	-0.04
Floating exchange rate	0.08***	0.03**	0.03**	0.05***	0.06***
Trade openness	0.01	0.00	0.01	0.01	0.01
US financial sanction		0.00	0.00	0.03***	0.03***
US defense pact			0.01*	0.02***	0.02***
Central bank independence				0.07***	0.06***
Financial development					-0.08***
Constant	-0.01	0.02	0.01	-0.07***	-0.05**
var(e)	0.01***	0.01***	0.01***	0.00***	0.00***
Statistics					
N	1705	789	789	604	604
AIC	-1388.81	-832.00	-832.56	-1196.31	-1207.28
BIC	-1225.57	-687.21	-683.09	-1050.99	-1057.56

Table 7. US Dollar Share of Foreign Exchange Reserves

Variable	(1)	(2)	(3)	(4)	(5)	(6)
USD share (%)						
Peg USD	0.08***	0.08***	0.10***	0.13***	0.11***	0.10***
Peg EUR	-0.41***	-0.40***	-0.39***	-0.35***	-0.34***	-0.28***
Peg Other	-0.16***	-0.16***	-0.15***	-0.18***	-0.15***	-0.09
Trade USD	0.42***	0.45***	0.04	0.03	0.00	0.34**
Trade EUR	-0.26***	-0.25***	-0.22***	-0.18*	-0.12	-0.35***
Trade JPY	0.09	0.11	-0.28	0.17	0.42	0.79***
Trade GBP	-1.12**	-1.15**	-0.72	-1.40**	-1.06*	-0.46
Debt USD	0.06	0.06	-0.05	0.34***	0.41***	0.38***
Debt EUR	-0.01	-0.01	-0.17*	0.34***	0.39***	0.47***
Debt GBP	-3.65*	-3.65*	-3.30*	-8.25**	-8.11**	-9.24**
Debt JPY	-0.14	-0.13	-0.21*	0.03	0.00	0.05
EA dummy	0.28***	0.28***	0.27***	0.26***	0.29***	
US financial sanction		-0.02	-0.01	-0.01	-0.04	-0.04
US defense pact			0.13***	0.11***	0.15***	0.08**
Central bank independence				-0.23***	-0.26***	-0.24***
Financial development					-0.23***	-0.29***
Reserve assets growth						0.10*
Currency appreciation						-0.33**
Floating exchange rate						-0.05
Trade openness						-0.07
Constant	0.58***	0.58***	0.61***	0.31***	0.32***	0.40**
var(e)	0.04***	0.04***	0.03***	0.03***	0.03***	0.03***
Statistics						
N	676	676	676	507	507	386
AIC	-249.58	-248.05	-282.86	-197.14	-202.70	-213.13
BIC	-91.51	-85.47	-115.76	-28.00	-29.33	-43.03

Table 8. Nontraditional Reserve Currencies in Global FX Reserves, end-2024

	in bil US$	as % of Total	Change from 2020 (in ppt)	Change from 2020 (in ppt; FX adjusted)
Total	1357	100%	0%	0%
Australian dollar	235	17%	-3%	-2%
Canadian dollar	318	23%	0%	-1%
Chinese renminbi	250	18%	-7%	-8%
Swiss franc	20	2%	0%	-1%
Other	533	39%	10%	12%
Singapore dollar	179	13%	8%	8%
Korean won	148	11%	3%	4%
Swedish krona	71	5%	-1%	0%
Norwegian krone	68	5%	1%	1%
Danish krone	27	2%	-2%	-2%
Hong Kong dollar	21	2%	1%	0%
New Zealand dollar	20	1%	0%	0%

Sources: IMF, COFER and CPIS.
Note: The breakdown of "other" currencies is estimated based on Arslanalp and Tsuda (2014).

Table 9. FX Reserves in Nontraditional Reserve Currencies by Holder, end-2024 (or latest)

		Reserves in nontraditional currencies (bil US$)				
	Foreign exchange reserves (bil US$)	Total	Chinese renminbi	non-SDR currencies	Share of reserves in nontraditional currencies	Last observation
Total	**7967.8**	**937.7**	**135.0**	**802.8**	**12%**	
Lesotho	0.9	0.5	0.0	0.5	61%	2024
Luxembourg	0.0	0.0	0.0	0.0	59%	2024
Malta	1.0	0.6	…	0.6	58%	2024
Vanuatu	0.6	0.3	0.0	0.3	54%	2023
Namibia	3.1	1.6	…	1.6	51%	2024
Brunei	1.0	0.5	0.0	0.5	51%	2023
Kyrgyz Republic	1.4	0.7	0.3	0.4	46%	2024
Estonia	1.6	0.6	0.0	0.6	36%	2024
Ireland	5.1	1.8	0.5	1.3	36%	2024
Nepal	13.9	4.7	1.4	3.3	34%	Jul-24
France	29.6	8.0	0.0	8.0	27%	2024
Russia	463.9	119.9	93.9	26.0	26%	2021
Malaysia	103.7	26.1	…	26.1	25%	2024
Poland	178.6	40.7	0.0	40.7	23%	2024
Türkiye	83.5	18.8	1.1	17.7	23%	2024
Lithuania	6.0	1.3	0.0	1.3	22%	2024
Papua New Guinea	3.8	0.8	0.0	0.8	20%	2023
Botswana	3.1	0.6	0.1	0.5	20%	2024
India	547.5	107.3	…	107.3	20%	2024
United Kingdom	119.3	23.1	0.5	22.5	19%	2024
Chile	40.4	7.7	2.4	5.3	19%	2024
New Zealand	14.6	2.8	0.3	2.4	19%	2024
Slovak Republic	9.7	1.8	…	1.8	19%	2024
Indonesia	140.2	25.9	…	25.9	19%	2024
Singapore	358.0	64.4	…	64.4	18%	2024
Uzbekistan	9.9	1.8	1.4	0.4	18%	2023
Costa Rica	13.5	2.2	…	2.2	16%	2024
Tanzania	5.8	0.9	0.5	0.5	16%	Jun-24
Australia	42.8	6.6	1.6	5.0	16%	2024
Czech Republic	137.9	20.7	0.0	20.7	15%	2024
South Africa	48.3	7.0	3.9	3.1	14%	2024
Latvia	4.0	0.5	0.0	0.5	13%	2024
Romania	61.0	7.6	0.0	7.6	12%	2024
Colombia	57.5	6.5	0.9	5.6	11%	2024
West Bank and Gaza	1.3	0.1	0.0	0.1	11%	2024
Sweden	41.6	4.3	…	4.3	10%	2024
Germany	35.3	3.7	0.3	3.4	10%	2024
Greece	3.8	0.4	0.3	0.1	10%	2024
Switzerland	808.0	79.3	6.6	72.7	10%	2024
Mozambique	3.3	0.3	0.1	0.2	10%	2023
Mongolia	4.8	0.5	0.5	0.0	9%	2024
Spain	63.5	5.7	0.6	5.1	9%	2024
Netherlands	6.1	0.5	…	0.5	9%	2024
Madagascar	2.5	0.2	0.2	0.0	8%	2023
Italy	49.9	4.2	0.0	4.2	8%	2024
Korea	390.8	30.1	0.0	30.1	8%	2024
Brazil	296.7	22.5	16.3	6.2	8%	2024
Georgia	3.4	0.3	0.1	0.2	8%	2024
Seychelles	0.8	0.1	0.0	0.0	7%	2024
China	3238.0	236.4	0.0	236.4	7%	2023
Kazakhstan	19.8	1.4	0.2	1.2	7%	2024
Thailand	210.1	15.1	…	15.1	7%	2024
Israel	210.1	14.9	0.2	14.7	7%	2024
Slovenia	1.3	0.1	0.1	0.0	6%	2024
Mauritius	7.1	0.4	0.3	0.1	5%	2024
Zambia	1.2	0.1	0.0	0.1	5%	2023
Bangladesh	22.8	1.1	0.2	0.9	5%	Jun-24
Hungary	34.6	1.7	…	1.7	5%	2024

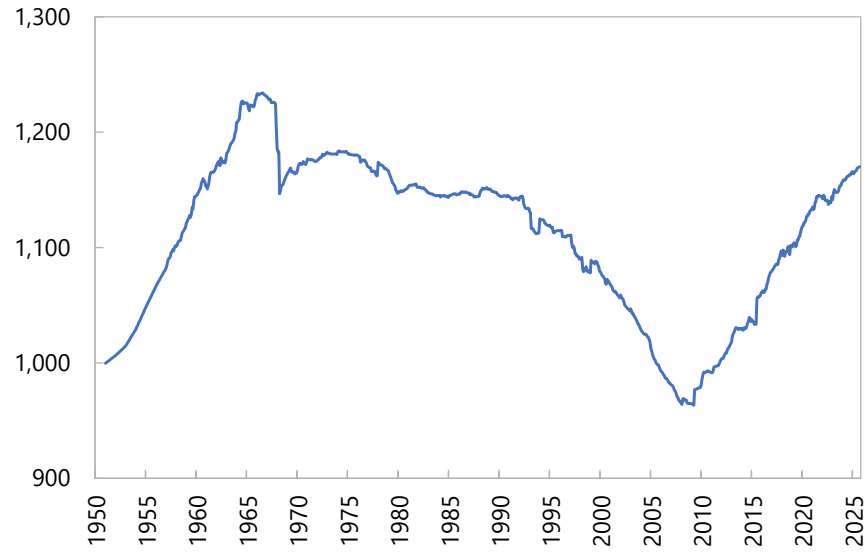
Sources: IMF Reserve Data Template; Central Bank Annual Reports.
Note: Foreign exchange reserves do not include monetary gold, SDR holdings, and reserve position in the IMF. Missing figures are shown as "…".

Table 10. Chinese Renminbi Share of FX Reserves

Variable	(1)	(2)	(3)	(4)	(5)	(6)
CNY share (%)						
Peg USD	-0.10***	-0.10***	-0.12***	-0.10***	-0.01	-0.01
Peg EUR	-0.04***	-0.03***	-0.03***	-0.03***	-0.04	-0.05
Peg Other	-0.07***	-0.04**	-0.04**	-0.04**		
Trade USD	-0.11***	-0.08***	-0.08***	-0.09***	-0.32***	-0.31***
Trade EUR	0.13***	0.09***	0.09***	0.08***	-0.01	-0.01
Trade JPY	1.99***	1.54***	1.55***	1.65***	3.14***	3.11***
Trade GBP	0.48***	0.41***	0.43***	0.47***	0.51***	0.50***
Debt USD	-0.08***	-0.05	-0.06	-0.08*	0.83***	0.84***
Debt EUR	-0.11***	-0.09**	-0.10***	-0.11***	0.81***	0.82***
Debt JPY	0.01	-0.04	-0.07	0.13	3.06***	3.03***
Debt GBP	11.43***	10.43***	9.77***	10.69***	19.75***	19.72***
EA dummy	-0.10***	-0.09***	-0.09***	-0.09***	-0.01	-0.01
Trade CHN		0.02	0.02	0.08***	0.12	0.11
PBOC swap		0.01***	0.01*	0.01***	-0.01	-0.01
Belt and Road		0.02***	0.01***	0.01***	0.00	0.00
US financial sanction			0.01***	0.01***	0.00	0.00
Reserve growth				0.00	0.01	0.01
Currency appreciation				0.02***	0.00	0.00
Trade openness				0.08***	0.08***	0.08***
US defense pact					-0.04**	-0.04**
Central bank independence					-0.07***	-0.07*
Financial development						0.03
Constant	-0.02	-0.04	-0.03	-0.04	-0.93***	-0.95***
var(e)	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Statistics						
N	556	519	519	517	187	187

Figure 1. Gold Holdings in Official Reserve Assets, 1950-2025

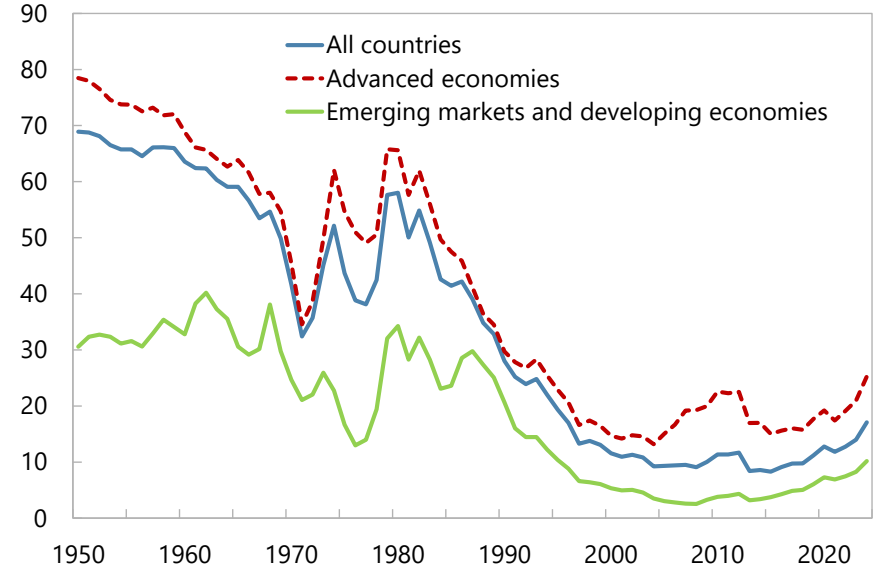
(million fine troy ounces)



Source: Arslanalp, Eichengreen, and Simpson-Bell (2023, updated).

Figure 2. Share of Gold in Official Reserve Assets, 1950-2024

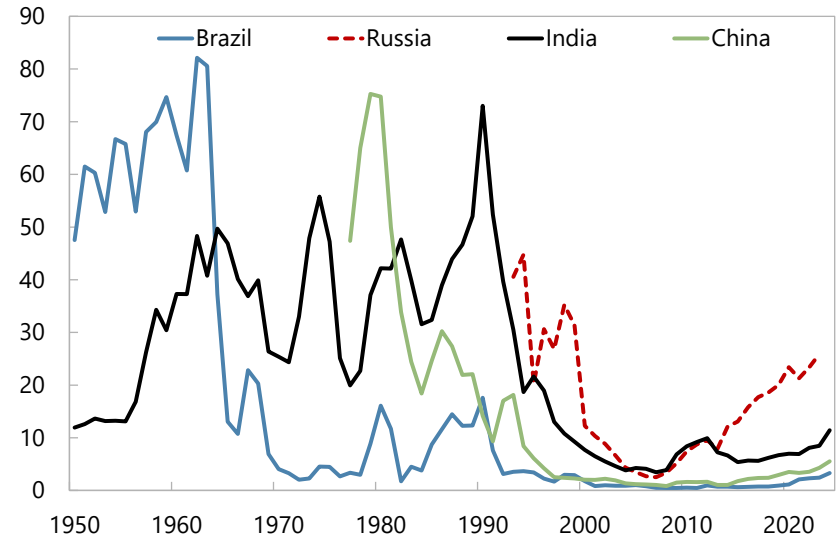
(percent; based on market value of gold)



Source: Arslanalp, Eichengreen, and Simpson-Bell (2023, updated).

Figure 3. BRICs: Share of Gold in Official Reserve, 1950-2024

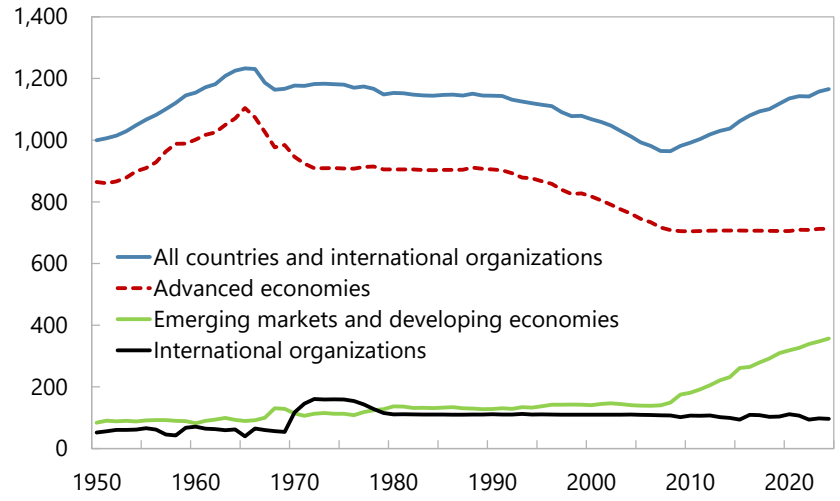
(percent; based on market value of gold)



Source: Arslanalp, Eichengreen, and Simpson-Bell (2023, updated).

Figure 4. Gold Held by the Official Sector, 1950-2024

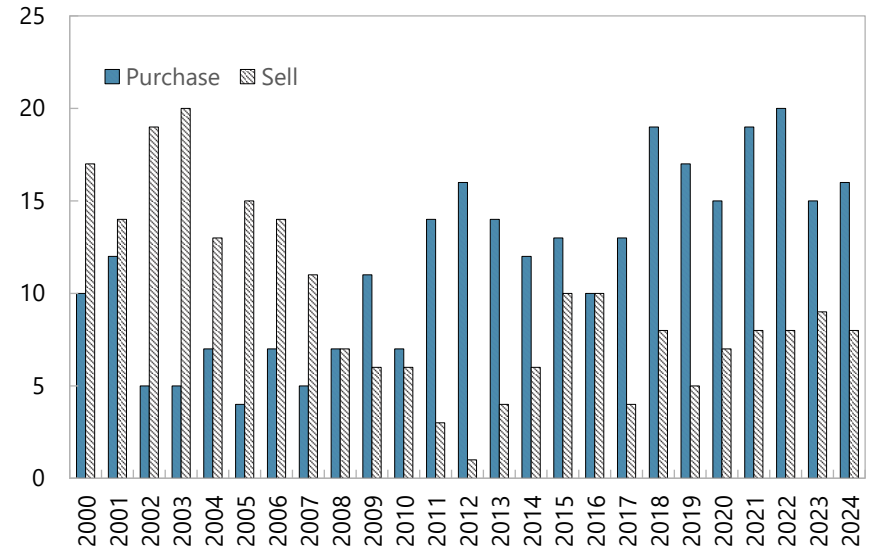
(million fine troy ounces)



Source: IMF, International Financial Statistics.
Note: Advanced economies include the European Monetary Cooperation Fund (EMCF).

Figure 5. Number of Countries Purchasing/Selling Monetary Gold, 2000-24

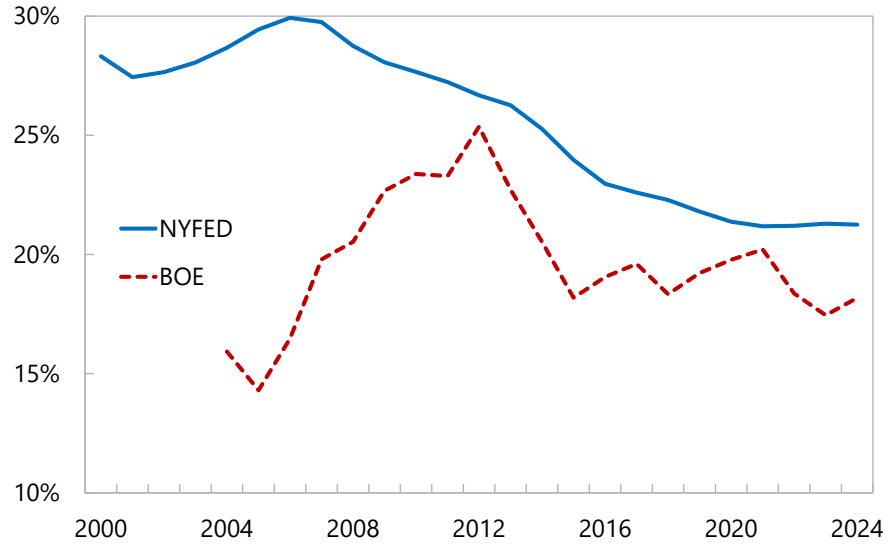
(one metric ton of gold or more in a given year)



Source: IMF, International Financial Statistics.

Figure 6. Gold Held in Custody at the Bank of England and New York Fed, 2000-24

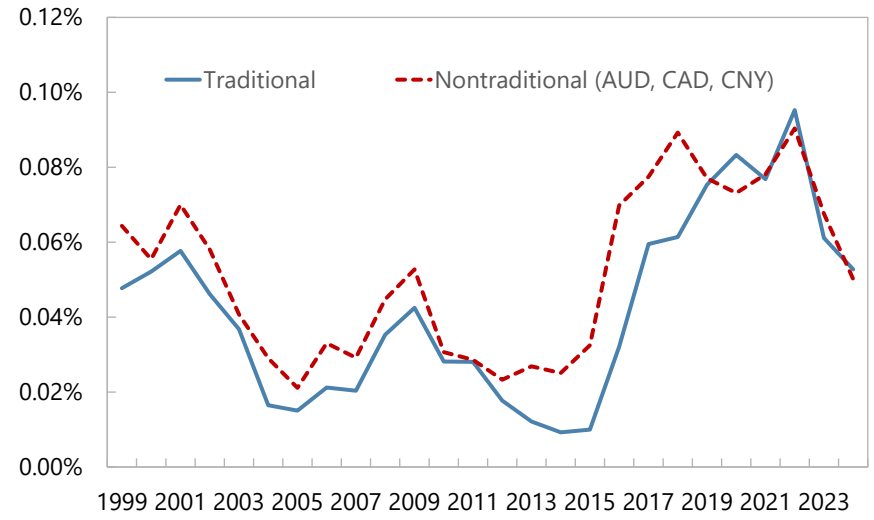
(as percent of gold held by the official sector excluding the UK and US)



Sources: Bank of England; Federal Reserve Board; IMF, International Financial Statistics.
Note: BOE offers custodial gold accounts primarily to central banks, but also some commercial banks.

Figure 7. Bid-Ask Spread of Reserve Currencies, 1999-2024

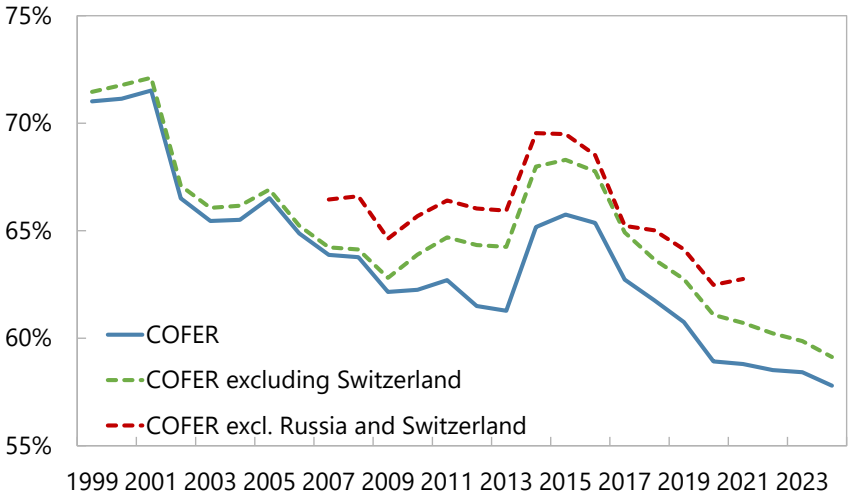
(in percent; for transactions against the U.S. dollar)



Source: Bloomberg.
Note: Traditional currencies include EUR, JPY, GBP. Nontraditional currencies include AUD, CAD, CNY.

Figure 8. U.S. Dollar Share of Global FX Reserves, with and without Russia and Switzerland, 1999-2024

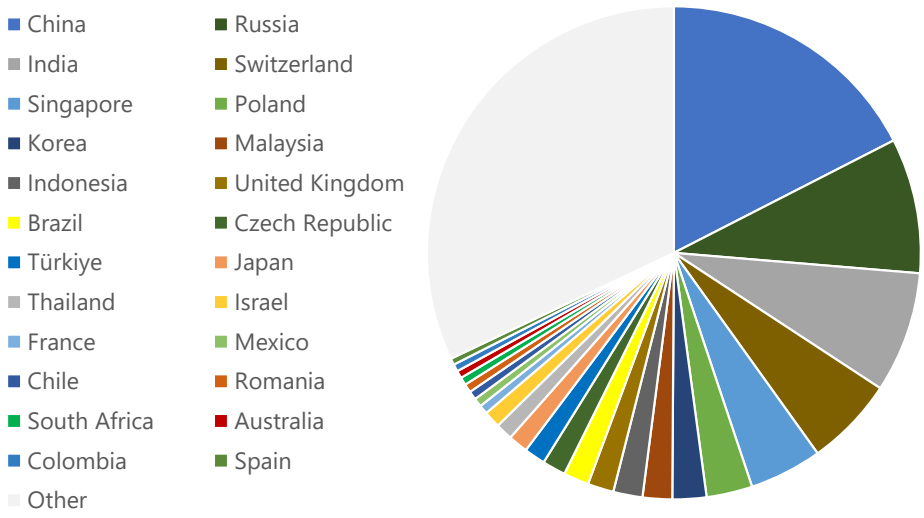
(Percent)



Sources: IMF COFER; Bank of Russia and Swiss National Bank (SNB).
Note: The red dashed line is calculated by removing Bank of Russia's and SNB's FX reserves from the COFER aggregate based on data disclosed by these two central banks.

Figure 9. Countries Holding Nontraditional Currencies in Official Reserves, end-2024 (or latest)

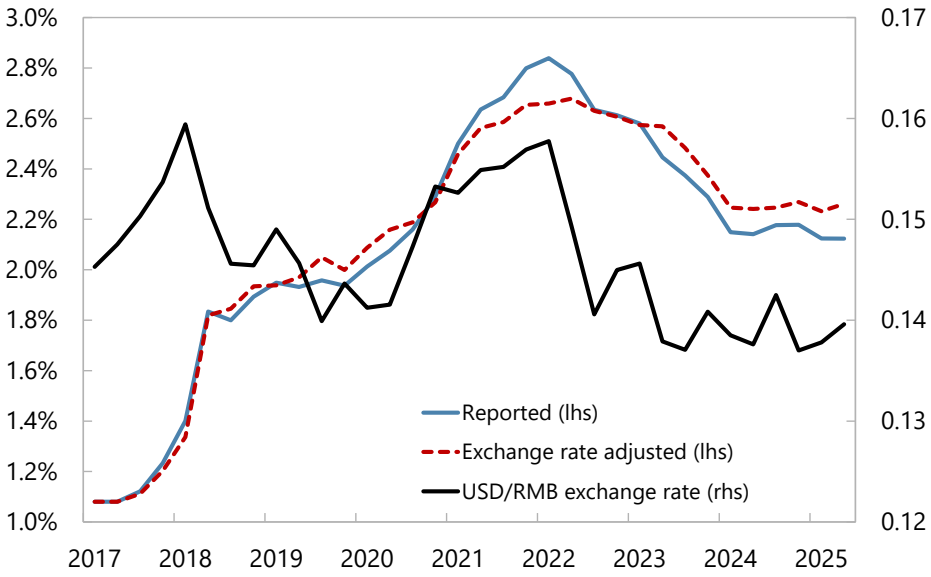
(as a share of all nontraditional currency holdings in reserves, 2024 or latest)



Sources: IMF COFER, IMF Reserve Data Temple, and Arslanalp, Ito, Gomis, Lauwers, and Mehl (forthcoming).
Note: The chart shows countries that report holding US$5 billion or more of nontraditional reserve currencies in reserves.
Data for China, Japan, Russia, and South Africa are for Dec 2023, Mar 2024, Dec 2021, and Mar 2024, respectively.

Figure 10. Renminbi Share of Global Foreign Exchange Reserves and the Renminbi Exchange Rate, 2017-25Q2

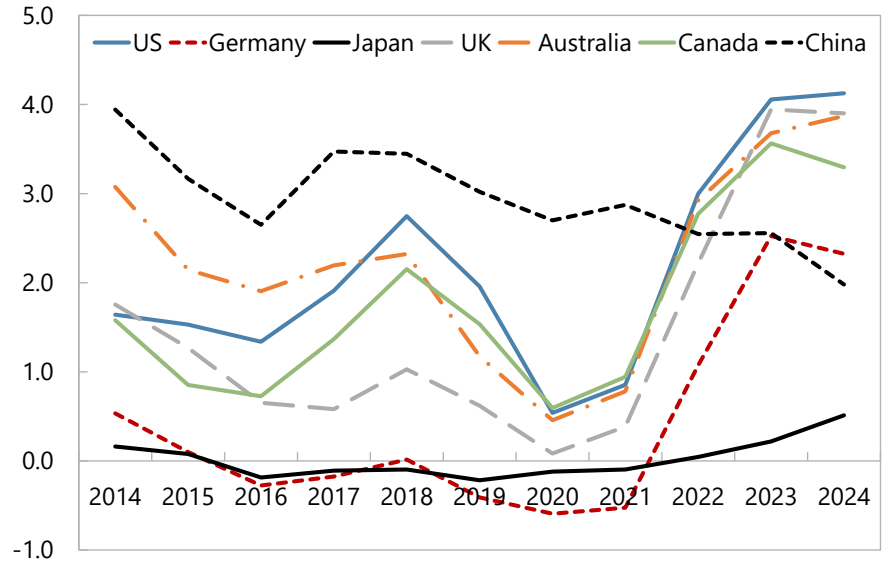
(in percent; dollar per renminbi)



Sources: IMF, COFER and International Financial Statistics.

Figure 11. Government Bond Yields, 2014-24

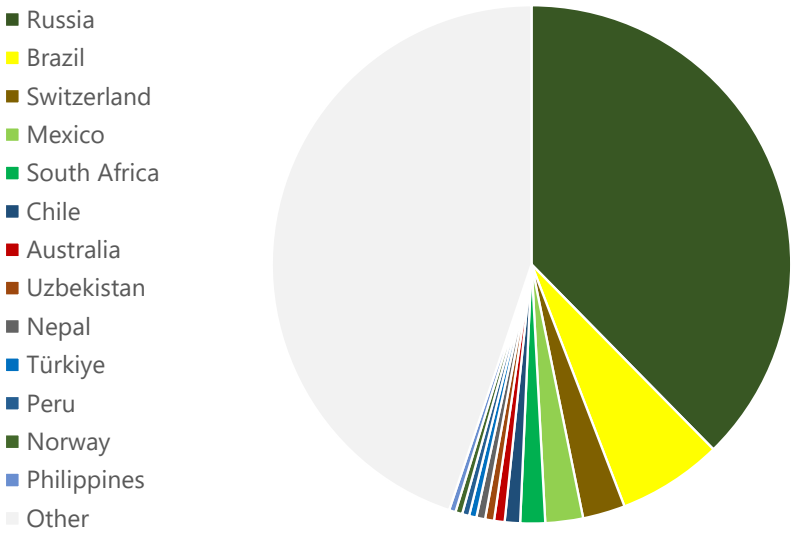
(percent; 5-year maturity)



Source: National authorities.

Figure 12. Countries Holding Chinese Renminbi in Official Reserves, end-2024 (or latest)

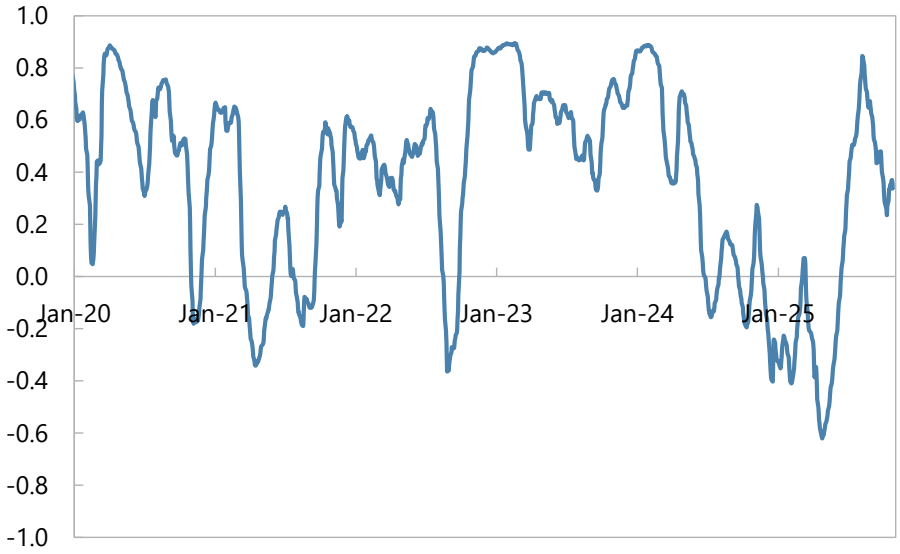
(as a share of all RMB holdings in reserves, end-2024 or latest)



Sources: IMF COFER, IMF Reserve Data Temple, and Arslanalp, Ito, Gomis, Lauwers, and Mehl (forthcoming).
Note: The chart shows countries that report holding US$1 billion or more of RMB in reserves. Data for the Philippines and Uzbekistan are for end-2023. Data for Nepal, Russia, South Africa are for Jul 2024, Dec 2021 and Mar 2024, respectively.

Figure 13. Correlation Between the US Dollar Index and VIX, 2020-25

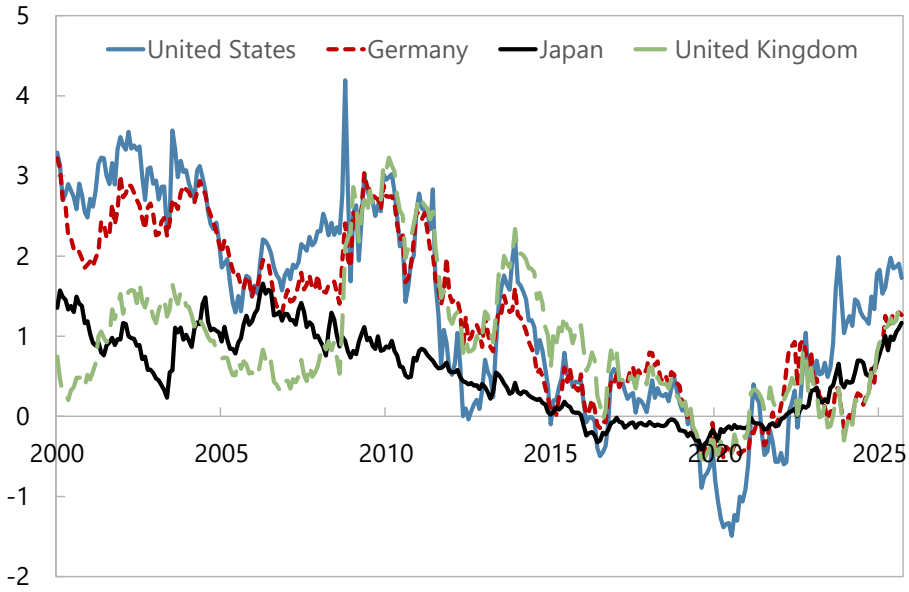
(90-day moving average)



Sources: Federal Reserve Board (Nominal Broad Trade-Weighted Dollar Index), Chicago Board Options Exchange (Volatility Index).

Figure 14. Big Four Currencies: Term Premia in Government Bond Markets, 2000-25

(percent; 10-year maturity)



Source: IMF staff estimates following Adrian, Crump and Moench (2013) and Malik and Meldrum (2016).