The United States and Its Creditors: Assessing Foreign Demand for U.S. Assets

Anusha Chari
University of North Carolina at Chapel Hill, CEPR and NBER*

Gian Maria Milesi-Ferretti
The Brookings Institution
Hutchins Center on Fiscal and Monetary Policy and CEPR†

First draft: November 7, 2025

This draft: July 27, 2026

Abstract

This paper analyzes foreign demand for U.S. assets, with particular emphasis on U.S. Treasury securities. It documents compositional shifts in U.S. bilateral external positions across geographic regions and asset classes, providing estimates of creditor positions closer to a nationality-based concept. While rising U.S. equity prices explain a sizable share of the deterioration in the net external position, foreign purchases of U.S. Treasury securities have been the largest source of U.S. current account financing. The share of these securities held by foreign official investors has declined sharply during the past decade, while the share held by foreign private investors (especially through financial centers) has risen. The decline in foreign official holdings is well explained by lower reserve accumulation, increased Federal Reserve holdings, and dollar appreciation against other reserve currencies. The evidence is consistent with central banks rebalancing their portfolios to avoid large swings in currency shares. Geoeconomic fragmentation is negatively correlated with official demand for U.S. Treasuries, while foreign private demand remains sensitive to safe-haven dynamics. Overall, the paper assesses how these structural shifts affect portfolio preferences for U.S. assets and their potential implications for the U.S. external position amid heightened geopolitical and fiscal uncertainty.

JEL Codes: F21, F32, F34, G15, H60, H63

Keywords: U.S. Net international investment position (NIIP), international capital flows, valuation effects, U.S. Treasury securities, foreign investors, geoeconomic fragmentation.

* Anusha Chari: Professor of Economics and Finance at the University of North Carolina at Chapel Hill, NBER & CEPR. Email: achari@unc.edu.
† Gian Maria Milesi-Ferretti: Senior Fellow at The Brookings Institution Hutchins Center on Monetary and Fiscal Policy & CEPR. Email: gmilesiferretti@brookings.edu.
We thank Emine Boz, Jesus Fernandez-Villaverde, our discussant Phillipe Bacchetta, Kristin Forbes, Helene Rey, and participants at the IMF's 26th Jacques Polak Annual Research Conference for helpful comments and suggestions. We are also grateful to Roland Beck, Antonio Coppola, Matteo Maggiori, Martin Schmitz, and Jesse Schreger for sharing their 2023 updates to the data presented in Beck et al. (2024). We thank Yue Ji and Tristan Loa for excellent research assistance.

1. Introduction

The United States has a large net debtor position vis-à-vis the rest of the world, with its net international investment position exceeding -70% of GDP at the end of 2025. The steady increase in U.S. net external liabilities, coupled with higher interest rates, has eliminated the surplus in the U.S. investment income balance, which had reached 1.4 percent of GDP in 2017. These developments come at a delicate juncture. U.S. fiscal policy remains highly expansionary, keeping debt on a rising path. The international economic order is undergoing profound shifts amid rising geoeconomic tensions, including between the U.S. and its traditional allies and trading partners. The rules-based system that has long governed international trade and finance is increasingly under strain. These developments are reshaping international capital flows, raising questions among policymakers and market participants about the resilience of key institutions and assets underpinning the international financial system. These include the future of the dollar as the world's dominant reserve currency, the continued reliability of U.S. Treasuries as a global safe asset, and the United States as an investment destination.

Market developments in April 2025 provide a potential signal of diminished trust in U.S. policymaking. Traditionally, "risk-off" periods, even when triggered by shocks originating in the U.S., such as the 2007-09 global financial crisis (GFC), were associated with rising demand for U.S. safe assets, implying lower U.S. long-term interest rates and a stronger dollar. In contrast, following the "Liberation Day" tariff announcements, the U.S. dollar weakened and U.S. long-term interest rates rose. While valuation changes from a weaker dollar benefit the U.S. external position, the high U.S. net debt position (around 50 percent of GDP) implies that higher interest rates weigh on both fiscal accounts and the current account balance.

To put these issues in context, this paper analyzes the changing structure of the U.S. external portfolio and the factors underpinning foreign demand for U.S. assets, in particular U.S. Treasury securities. It explores shifts in the composition of the United States' external creditors both geographically and by investor class, and what these shifts could imply for the impact of shocks on the U.S. external position. By mapping out these dynamics, the paper aims to provide a timely and rigorous framework for understanding the vulnerabilities of the U.S. external financial position in an era of heightened geoeconomic uncertainty.

We start by characterizing the U.S. international investment position (IIP) by asset class, highlighting the role of financial flows and valuation changes in shaping its evolution since the end of the GFC. As documented in Milesi-Ferretti (2024a) and Atkeson et al (2025) among others, the IIP deterioration was driven by the spectacular rise in US stock prices over the past decade, which has boosted the value of U.S. equity held by foreign investors; dollar appreciation, which reduced the dollar value of U.S. claims in foreign currency; and persistent net external borrowing (even though more modest in relation to GDP compared to the pre-GFC period). While equity valuation changes explain most of the IIP deterioration, we document how net borrowing has been mostly in bonds, leading to a steady increase in US external debt, despite the fall in the market value of bonds triggered by higher interest rates after COVID.

A burgeoning literature is re-examining global imbalances in light of the widening of the U.S. current account deficit and the Chinese current account surplus after COVID, drawing parallels and contrasts with the pre-GFC episode (see, for instance, Rey et al., 2026).[1] While flow imbalances are smaller as a share of U.S. or global GDP than those in the 2000s, the still-substantial U.S. reliance on net foreign borrowing, especially in debt instruments, and the massively higher U.S. net external liabilities highlight the crucial importance of understanding the drivers of external demand for U.S. assets. We therefore investigate which countries are the largest U.S. creditors across different financial instruments. This is an important question for assessing the riskiness of the external position, particularly in an environment of heightened geopolitical tensions. Building on work by Milesi-Ferretti (2024) and Chari, Converse, et al. (2025), we undertake a detailed exercise to trace bilateral holdings of U.S. financial instruments by nonresidents and their evolution. An important part of this exercise is an effort to address the "financial center bias" implicit in the residence-based balance of payments and IIP statistics by providing estimates of creditor positions closer to a nationality-based concept, following the seminal contributions of Bertaut et al (2019), Coppola et al. (2021), and Beck et al (2024).[2] In

[1] Two notable features of this episode are the much larger share of global current account deficits accounted for by the U.S. and the rise in global real interest rates, which undermines explanations relying on a global savings glut.
[2] Work by Bertaut, Bressler, and Curcuru (2019) and Coppola, Maggiori, Neiman, and Schreger (2021) provides nationality-based statistics for U.S. portfolio assets, while Beck et al (2024) provide a nationality-based restatement of the euro area position in portfolio instruments. We provide nationality-based estimates for other components of the U.S. external position, albeit partially, highlighting also areas where uncertainty remains pervasive. Chari, Converse et al. (2025) document the geographical pattern of U.S. net liabilities on a residence and partial nationality basis following the same methodology.

particular, we provide novel evidence on holders of U.S. gross external liabilities by financial instrument on a (partial) nationality basis. As geopolitical and geoeconomic tensions reshape global financial relationships, shifts in portfolio preferences may have significant implications for the role of U.S. assets in global financial markets.

We find that advanced economies dominate US gross financial exposures. While the U.S. bilateral position with China in 2023 did not change much relative to 2017, liabilities to advanced economies in Asia and Europe rose sharply, reflecting these economies' large current account surpluses but also favorable valuation effects: their large U.S. portfolio equity positions have appreciated as stock prices have risen. In contrast, most emerging markets, including China, hold primarily U.S. bonds, whose market value has declined as interest rates have risen. Furthermore, China has been diversifying its allocation of external assets since the end of the GFC, reducing its relative exposure to the U.S. while increasing claims elsewhere, including toward other emerging markets. Importantly, the growing share of investment intermediated by financial centers has increased uncertainty about the identity of ultimate U.S. creditors.

What are the risk implications of these findings? While IIP statistics show rising liabilities in the form of equity (both portfolio investment and FDI), the steadily increasing external debt position is arguably more relevant from an external risk perspective. Rising U.S. stock prices have boosted U.S. wealth, as U.S. residents still hold the lion's share of U.S. equities. A sizable U.S. stock market correction would have negative macroeconomic consequences for the U.S. but would also trigger external adjustment. It would reduce the value of U.S. equity held abroad, and lower U.S. wealth would weigh on U.S. domestic demand, narrowing the U.S. current account deficit. Rising external debt poses more serious challenges, made more salient by unfavorable U.S. fiscal dynamics and higher real interest rates, which increase external debt service costs.

The last part of our paper focuses on foreign holdings of U.S. Treasury securities. These account for around 60 percent of foreign holdings of U.S. bonds and close to 40 percent of U.S. Treasury securities outstanding as of end-2024. We document a large shift in foreign holders, with a diminishing role for foreign official investors, which played a central role during the pre-GFC global imbalances episode, offset by a rising role for private investors. In this context, we highlight the substantial undercount of U.S. Treasuries held by Cayman-based hedge funds,

which was recently documented by Barth et al. (2025), implying a larger role for nonresident private investors than is currently reflected in BEA and Treasury statistics.

Our empirical analysis sheds light on the factors driving foreign demand for U.S. Treasury securities, including macroeconomic and financial variables and measures of geopolitical tensions, whose impact on cross-border flows was discussed more generally in Chari, Converse, et al. (2025). We distinguish between demand from official investors and that from private investors, in light of changes in the composition of external demand for U.S. Treasury securities from these two sources since the GFC. We show that the decline in the share of foreign official Treasury holdings is well explained by much-reduced reserve accumulation during the past decade, the increase in holdings from the Federal Reserve, and the appreciation of the dollar against other reserve currencies, which has led central banks to rebalance their portfolios to avoid large swings in currency shares. We also document how geopolitical fragmentation dampens foreign official demand. This suggests that, absent a renewed push to accumulate reserves or a sizable dollar depreciation, official demand would be unlikely to rise substantially.

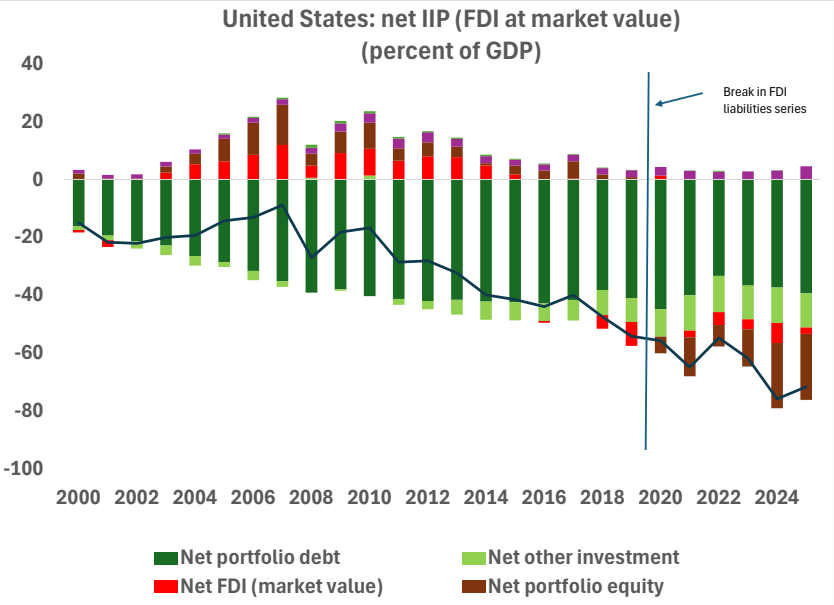
We also study the factors that drove foreign private demand for U.S. Treasuries and compare them to those driving foreign official holdings. Lagged U.S. dollar real appreciation is strongly positively correlated with Treasury purchases. Declining home bias (rising holdings of bonds issued by other jurisdictions) also played a role. Unlike foreign official holdings, private holdings have increased during global "risk-off" episodes, highlighting the safe-haven appeal of Treasuries in periods of heightened uncertainty. The growing importance of holdings by economies that act as financial intermediaries makes it more difficult to assess who the ultimate investors are, and in some cases, most notably the Cayman Islands, points to leveraged investors with high sensitivity to overall market conditions.

The paper proceeds as follows. Section 2 examines the evolution of the U.S. net investment position by financial instrument and the geographical patterns of investment by asset class to identify the main creditors of the United States by country and geographic areas. Section 3 presents stylized facts on foreign ownership of U.S. Treasuries and studies the determinants of foreign official and private demand for U.S. Treasury assets. Section 4 concludes.

2. The U.S. Net Investment Position: Aggregate and Bilateral Evidence

The United States has been a net debtor since the late 1980s, a consequence of persistent current account deficits. For much of the 2000s, the negative NIIP remained modest relative to GDP, as net borrowing was offset by favorable valuation effects, driven by dollar depreciation and US equity prices underperforming their foreign counterparts.[3] However, over the past decade, the U.S. NIIP has shifted significantly into negative territory, exceeding -70 percent of GDP by the end of 2025, reflecting, in large part, the exceptional rise in U.S. equity valuations and dollar appreciation (Atkeson et al., 2025; Milesi-Ferretti, 2024a).[4] While the U.S. external balance sheet was traditionally "long equity, short debt," surging U.S. equity valuations have driven the net equity position into negative territory, magnifying the deterioration in the NIIP (Figure 1).

Figure 1. The U.S. Net International Investment Position by Financial Instrument
(percent of GDP)



Source: authors' calculations based on data from the US Bureau of Economic Analysis.

With rising equity prices, portfolio equity liabilities are now larger than foreign holdings of U.S. bonds; however, as discussed, for instance, in Milesi-Ferretti (2024a), purchases of U.S. bonds have been the main source of U.S. current account deficit financing (FDI inflows and outflows

[3] For the US, dollar weakness raises the US dollar value of those external assets denominated in foreign currency relative to its external liabilities which are denominated in US dollars.
[4] IIP figures were revised in late June 2026 following an improvement in the methodology used to estimate FDI liabilities at market value (so far adopted starting with figures for the end of 2020).

have been similar).[5] The increase in external debt (calculated at market value in the IIP) has been moderated by the decline in bond prices following COVID, triggered by higher interest rates.

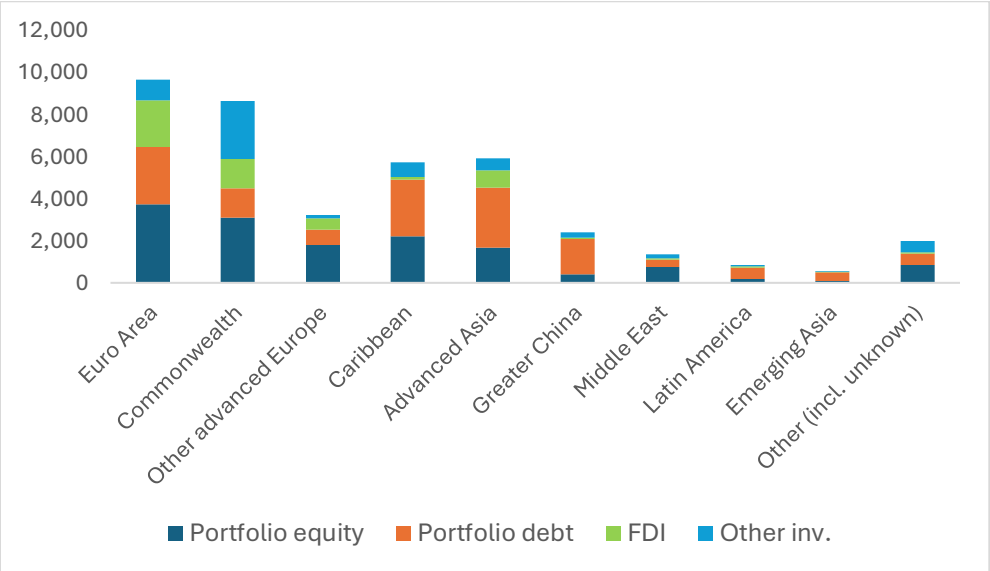
Which countries/geographical areas are the main U.S. creditors? This issue has become more salient amid rising geopolitical tensions over the past few years. We complement evidence on a residence basis with estimates of U.S. debtor exposures on a nationality basis, albeit partially, building on preliminary work presented in Chari, Converse, et al. (2025). This allows for a more meaningful measure of cross-border financial linkages. For the remapping of portfolio holdings, we build on pioneering research by Bertaut et al. (2019), Coppola et al. (2021), and Beck et al. (2024). The ease of identifying the countries investing in the U.S. varies across asset classes, with more information on portfolio investment and less on other investment liabilities and FDI. We discuss data sources in Appendix 2.1.

2.1 Residence-based Exposures

Figure 2 summarizes the evidence for U.S. liabilities on a residence basis, showing liabilities by instrument and creditor region as of the end of 2023. The bulk of U.S. liabilities is owed to other advanced economies—particularly the euro area, the Commonwealth (Australia, Canada, New Zealand, and the United Kingdom), and advanced Asia (Japan, Korea, Singapore, Taiwan). Of note are also the very large portfolio positions held by Caribbean financial centers. In terms of financial instruments, Asian countries hold primarily bonds, while advanced economies in the euro area and the Commonwealth hold more substantial positions in equity instruments.

[5] For instance, during 2010-19 average annual foreign purchases of U.S. portfolio equity were only 0.2 percent of GDP, compared to 2.6 percent of GDP in bond purchases. During 2020-25 annual equity purchases rose to 1.1 percent of GDP, but bond purchases were 3 percent of GDP.

Figure 2: The Geographical Composition of US Gross External Liabilities by Asset Class, 2023
(billions of US$)



Source: authors' calculations based on Chari, Converse, et al. (2025).

An important caveat to the observed bilateral patterns of U.S. external liabilities is that financial centers often obscure the financial linkages between the U.S. and its partners. Offshore affiliates of multinational corporations frequently issue international securities. Investment funds domiciled in these jurisdictions may be owned by investors around the world. In the Caribbean, most positions represent pass-through investment. In Europe, Belgium and Luxembourg host large securities custodians, and Ireland and Luxembourg are domiciles for funds investing on behalf of non-euro area residents. The United Kingdom is a major financial center managing assets for foreign clients. To partially address these distortions, we apply nationality-based corrections to the data on U.S. external liabilities.[6]

2.2 Nationality-based Exposures

For U.S. FDI liabilities, we use bilateral data published by the Bureau of Economic Analysis on the source of direct investment in the United States on an ultimate beneficial owner (UBO) basis.

[6] Chari, Converse et al. (2025) discuss corrections to the asset side of the U.S. external balance sheet and present evidence on net bilateral positions.

Changes are less dramatic than those for portfolio instruments and primarily involve a reduction in liabilities to euro area countries and Caribbean economies, with some of these reallocated to domestic investors and others to investors from Canada, Japan, and emerging market economies.

For U.S. portfolio liabilities, we seek to address the bias arising from large investments in U.S. securities by Irish- and Luxembourg-based investment funds, as well as by Cayman Islands-based funds. For the (substantial) U.S. portfolio instruments held by Irish and Luxembourg funds, we use data constructed by Beck et al. (2024) that identify U.S. portfolio instruments belonging to Irish and Luxembourg funds owned by euro area residents vs. nonresidents. The U.S. equity and debt securities held by funds owned by euro-area nonresidents are subtracted from euro-area claims on the U.S. Unfortunately, the data do not allow the identification of the residence or nationality of these investors outside the euro area, and hence the holdings in question are reattributed to unidentified international investors. For Cayman Islands-based funds, we make use of data from the CPIS, the Cayman Islands Monetary Authority (CIMA), and the U.S. Securities and Exchange Commission, together with estimates by Coppola et al. (2021) to estimate rough equity positions in Cayman-based funds (see Appendix 2.1 for details). We then re-attribute the CPIS- and CIMA-reported holdings of portfolio instruments by such funds around the world (including in the U.S.) to these investors, in proportion to their estimated holdings of Cayman Islands fund shares.[7]

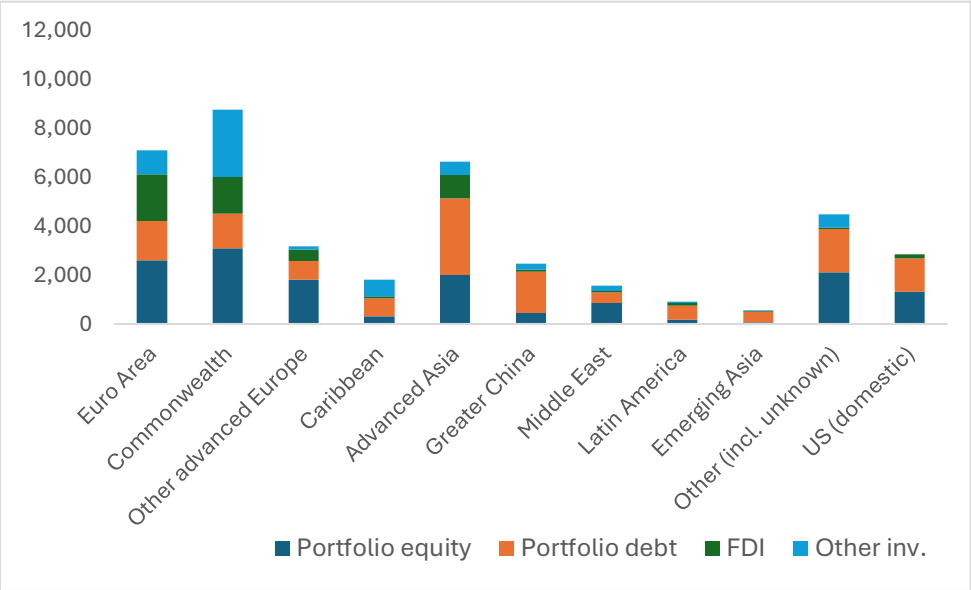
The results for U.S. liabilities are shown in Figure 3, which uses the same scale as Figure 2 for comparability. There are several notable differences. The first is the reduction in euro area claims on the U.S., especially in portfolio equity, with a corresponding large increase in U.S. portfolio liabilities vis-à-vis investors of unknown nationality (penultimate column). These changes capture the role of international investors holding Irish and Luxembourg funds with U.S. exposures. The second is the large reduction in claims on the U.S. from Caribbean financial centers, reflecting the remapping of holdings by Cayman funds.[8] Most of these claims are ultimately held by U.S. residents investing in Cayman funds and hence treated as domestic

[7] We do not attempt a nationality-based correction for the other investment category, which remains on the agenda for future research.

[8] Re-allocating the remaining claims on the U.S., mainly by entities in Bermuda and the British Virgin Islands, is more complex and on the agenda for future research. These are considerably smaller than Cayman holdings.

liabilities from a nationality perspective (last bar). But Japanese investors also have large holdings of Cayman fund shares, exceeding $650 billion in 2023 (see the bar for advanced Asia).

Figure 3. U.S. bilateral liabilities, 2023 (partial nationality basis)
billions of U.S.$



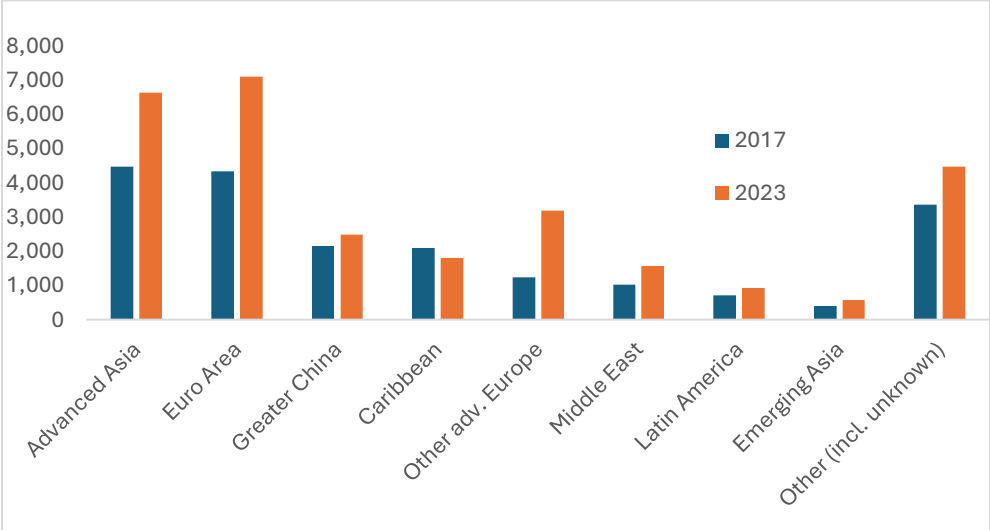
Source: authors' calculations based on Chari, Converse et al, 2025 (see Appendix 2.1).

One of the more striking patterns in Figures 2 and 3 is the asymmetry in instrument composition between advanced and emerging markets. This asymmetry is primarily a sectoral story: Asian and emerging market investors hold U.S. assets predominantly through official reserve managers, whose mandates restrict them to safe, liquid, fixed-income instruments, with U.S. Treasuries as the dominant choice. The euro area and Commonwealth countries have primarily private institutional investors, including pension funds, insurance companies, and investment funds, whose mandates permit and indeed encourage equity exposure. The nationality-based corrections in Figure 3 are informative on this point, since they reassign holdings of Irish-, Luxembourg-, and Cayman-domiciled funds to their ultimate beneficial owners, sharpening the contrast between the official-reserve-driven bond holdings of Asian economies and the private-institutional-driven equity holdings of advanced economies. The valuation dimension reinforces the pattern over our sample period, where rising U.S. equity prices have mechanically increased the dollar value of advanced economy holdings relative to emerging market holdings.

The large "unknown/unidentified" counterpart share in our nationality-adjusted data reflects data limitations that increase opacity for researchers and policymakers. The rise comes directly from our correction method, which reassigns holdings in Irish and Luxembourg investment funds owned by non-euro area residents away from the euro area, but cannot identify the nationality of those non-euro area investors, thereby forcing their reattribution to an unidentified residual category. This limitation of the data is inherent in the remapping of Beck et al. (2024) and is concentrated in portfolio equity and portfolio debt instruments rather than in FDI or other investments. It also reflects Euroclear's role in Belgium as a custodian of U.S. securities held by nonresidents. As noted by Setser (2023), China has increased the routing of its foreign exchange reserves through third-party custodians, such as Euroclear in Belgium, over the past decade. This likely reflects a desire to limit the use of U.S. custodians and to limit transparency regarding its reserve management strategy. Hence, a portion of what U.S. TIC data record as private holdings by Belgian residents is in fact official Chinese reserve assets—and our graphs of bilateral holdings attribute them to China, based on Setser's estimates. However, other sizable holdings at Euroclear that are not attributed to China (or Belgium) contribute to the large share of investment in U.S. securities from unknown counterparts. Our empirical analysis of Treasuries in the next section, which uses monthly TIC data, does not include this correction for Chinese holdings of Treasuries because we lack sufficient information about their time-series evolution. Hence, the data understate the foreign official share and overstate the foreign private share: the structural shift we document is somewhat less pronounced than the raw data indicate.

Finally, Figure 4 shows how the gross external liabilities of the United States vis-à-vis different countries and regions have changed since 2017, a period when geopolitical tensions have been rising. The picture shows how rising liabilities are primarily vis-à-vis advanced economies and that claims for which the investor's origin is unknown have increased further. The increase in liabilities vis-à-vis China is instead relatively modest. While China has run large current account surpluses vis-à-vis the U.S. during the period 2017-23, it has allocated its increased external claims primarily to other countries (Chari, Converse et al, 2025).

Figure 4. United States: gross external liabilities with nationality correction (2017 vs 2023), billions of U.S.$



Source: authors' calculations based on Chari, Converse et al., 2025.

2.3 The Riskiness of the External Financing Position

Rising U.S. stock market valuations have pushed the U.S. net portfolio equity position into negative territory since 2020, with portfolio equity liabilities exceeding foreign holdings of U.S. bonds since 2023. What are the risk implications of this shift? Despite rising nonresident holdings of U.S. stocks, over 80% of U.S. stocks are still domestically owned as of the end of 2025, according to the Federal Reserve's Financial Accounts. Rising U.S. stock prices translate primarily into higher U.S. household wealth. Foreign ownership of U.S. stocks provides some risk sharing—the NIIP worsens when U.S. equity valuations increase and improves when they fall, partially cushioning the impact on domestic wealth. A sharp stock market correction would impose macroeconomic costs on the U.S. economy and could threaten financial stability. There are scenarios in which actions by non-residents could trigger a stock market correction—the unwinding of leveraged carry trades invested in US equity markets (e.g., August 5th, 2024) is arguably one such example. Nevertheless, U.S. portfolio equity liabilities do not compound the challenges posed by a sharp stock market correction to the U.S. economy. Foreign holdings of U.S. equities do provide risk sharing: part of the repercussions of wealth destruction in a U.S. stock market correction scenario will be borne by partner countries. For FDI, the valuation of

assets and liabilities also lines up with risk sharing. The value of FDI in the U.S. reflects, to a significant extent, the prospects for the U.S. economy and is likely to rise when U.S. asset prices strengthen. Ditto for the valuation of U.S. FDI abroad.[9,10]

We contend that the overall external debt position is the most important source of external risk. The share of Treasury securities held by foreign investors is much larger than in the U.S. stock market, and bond inflows have been the main source of U.S. current account financing. The macroeconomic implications of a protracted decline in foreign residents' willingness to hold U.S. Treasuries can be very costly. While periods of higher global risk aversion have normally been accompanied by a strengthening dollar and declining U.S. long-term yields, the combination of unfavorable U.S. debt dynamics and rising geopolitical tensions suggests that such correlations cannot be taken for granted, as events in April 2025 have shown. In our view, this calls for a more detailed understanding of the factors driving foreign demand for U.S. Treasury securities.

3. The External Demand for U.S. Treasuries

We first present stylized facts on the evolution of foreign holdings of US Treasuries by investor type and country, before turning to an econometric analysis of external demand for Treasuries.

3.1 Stylized Facts

3.1.1 Official vs. Non-Official Holdings

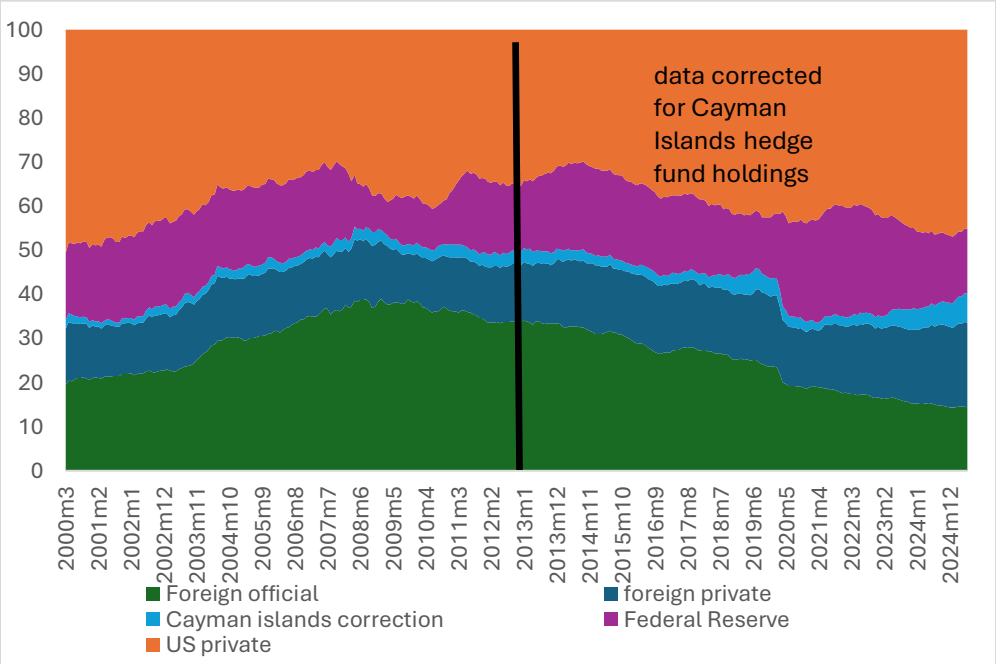
A wide range of investors hold U.S. Treasuries. The share of foreign holdings in publicly held marketable Treasuries peaked at over 50 percent around the time of the GFC. In 2024, foreign investors accounted for about one-third of U.S. Treasury holdings, according to U.S. Treasury

[9] We had argued (Milesi-Ferretti, 2024a) that the U.S. net FDI position at market value likely overstated the value of foreign FDI in the U.S. because it assumes that its value rises with U.S. stock prices, even though rising U.S. stock market valuations have been tied to the technology sector, while foreign FDI is concentrated in chemicals, trade, and finance. The BEA has started addressing this methodological issue in their June 2026 data release, leading to a sizable downward adjustment in estimates of US FDI liabilities at market value for 2020-25.

[10] Over the past 35 years, FDI inflows and outflows have been roughly balanced. Because new FDI also includes reinvested earnings, a mechanical examination of the weight of FDI in total inflows and outflows can overstate its role relative to portfolio flows and other flows.

statistics.[11] Figure 5 shows a large shift in foreign holdings of U.S. Treasuries: a diminishing role for official investors, who accounted for the predominant share in 2008, offset by a rising role for private investors. Our formal analysis studies the determinants of the shares of Treasuries held by foreign official and foreign private holders. A recent paper by Barth et al. (2025) highlights a substantial undercount of U.S. Treasury securities held by hedge funds domiciled in the Cayman Islands. Correcting for this undercount boosts the foreign private share significantly, bringing the total foreign share to over 39 percent by early 2025.

Figure 5. Holders of U.S. marketable Treasury securities, 2000-2025
(share of total, in percentage points)

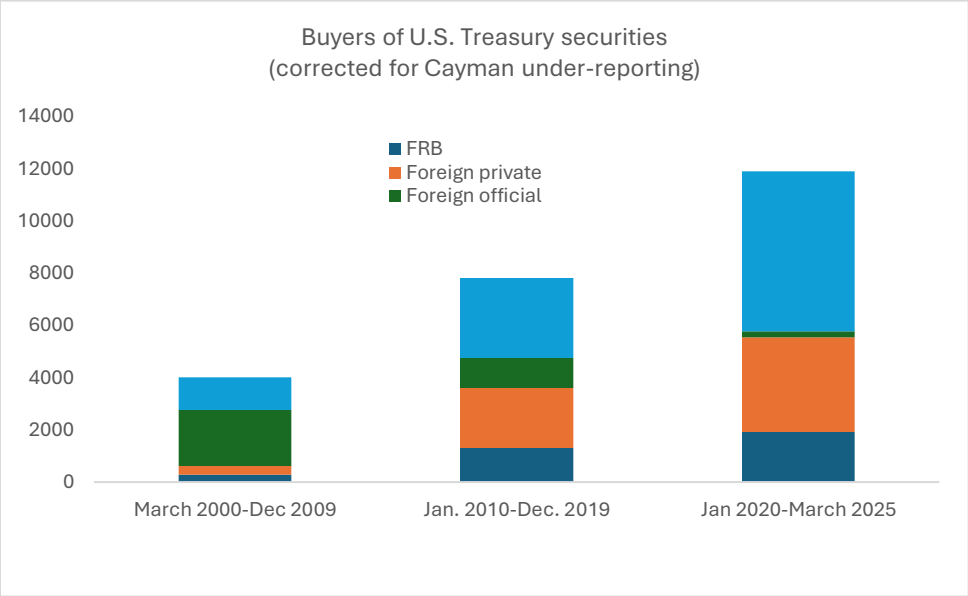


Note: Shares are calculated by dividing foreign holdings at market value by US Treasury debt at market value. The Fed. Reserve's share is calculated using the par value as the denominator because Fed holdings are reported at par.

Figure 6 shows net issuance and purchases of U.S. Treasury securities during the past 25 years, including the correction for Cayman holdings suggested by Barth et al. (2025). We have extended the correction from 2019-2024 back to 2012 and forward to the first quarter of 2025, using the methodology the authors suggest, based on publicly available data.

[11] Foreign holdings of U.S. Treasuries are reported at market value while U.S. marketable federal debt is normally reported at par value (including in the Federal Reserve's Financial Accounts). We therefore use estimates of marketable U.S. debt at market value published by the Federal Reserve Bank of Dallas (available through FRED).

Figure 6. Net issuance and purchases of U.S. Treasuries, 2000-2025



Source: authors' calculations based on data from the U.S. Treasury and Barth et al. (2025).

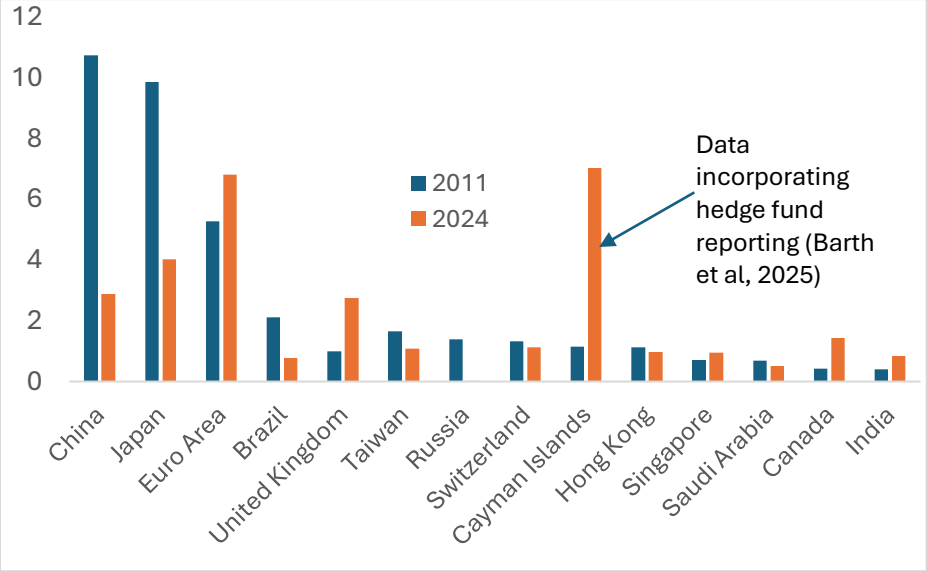
The boom in net issuance during and after the COVID pandemic is particularly striking, even after controlling for the net purchases by the Fed (dark blue bars) which reduce net market supply. Foreign net purchases (green bars for official and orange bars for private) show a notable shift toward private purchases relative to the 2000s, especially since the onset of the pandemic. As a result of these purchases, foreign private holdings of U.S. Treasury securities in mid-2025 ($6.7 trillion, including the Cayman Islands correction) vastly exceed official holdings of $3.9 trillion. Even allowing for the fact that some official U.S. Treasury holdings are held in custody in financial centers and recorded as private in U.S. statistics, the shift remains remarkable.

3.1.2 Partner Countries

The cross-country pattern in U.S. Treasury holdings has also changed substantially. Figure 7 illustrates the largest changes in country shares during the period from end-2011 to end-2024, ordered by the size of holdings in 2011. During this period, chosen to maximize data availability, the share of Treasury securities held by nonresidents declined by around 10 percentage points,

from about 48 percent to about 38 percent.[12] The figure shows the importance of China and Japan in explaining the decline in the share of Treasury securities held outside the U.S. The decline for China is particularly dramatic: US-reported Chinese holdings of U.S. Treasuries in 2024 were some $400 billion lower than in 2011, despite broadly stable Chinese holdings, even as Treasury securities outstanding increased by over $17 trillion. [13] For Japan, Treasury holdings were broadly unchanged during this period; hence, their share fell sharply.[14] Russia is another notable decline, albeit much smaller than those in China and Japan, having sold most of its Treasuries in 2018, following the imposition of U.S. sanctions (Goldberg and Hannaoui, 2024).

Figure 7. Largest holders of U.S. Treasury securities: 2011 and 2024
(share of Treasury securities outstanding at market value)



Source: authors' calculations based on data from the U.S. Treasury and Barth et al. (2025).

Among countries with an increased share of U.S. Treasury securities, only India has official holdings that are dominant. During this period, its reserves held in securities tripled, and its holdings of U.S. Treasuries increased more than 5-fold. The remaining countries with a larger

[12] The foreign share in 2011 is likely to be under-estimated—our measures of the undercount of the share of Treasuries held by Cayman funds start at the end of 2012 and was around 3 percentage points at that date.
[13] As noted earlier, China's share in 2024 is under-estimated because of rising holdings through foreign custodians, such as Euroclear in Belgium, which U.S.-source data attribute to Belgian investors (Setser 2023). But even including realistic estimates of this undercount the Chinese share of U.S. Treasuries has declined very sharply.
[14] Stable Japanese Treasury holdings are consistent with some decline in official holdings (total reserves held in securities fell by $200 billion) and an offsetting increase in private holdings.

share of U.S. Treasuries are primarily advanced economies and financial centers. This is evident in the large increases in holdings by the Cayman Islands, the United Kingdom, and the euro area, with the latter increase largely due to holdings by Irish and Luxembourg investment funds.

3.1.3 The Maturity Composition of Treasury Holdings

A seminal paper by Tabova and Warnock (2026), based on security-by-security information on holdings of U.S. Treasury bonds, provides a clear picture of the differences and similarities in the structures of Treasury portfolios held by domestic and foreign investors. They document how the maturity structure and returns of private foreign investor holdings resemble those of domestic investors—they hold longer-duration Treasuries with higher interest rates. In contrast, foreign official holdings are mostly of shorter duration with lower interest rates. They also document how differences in Treasury returns across investor groups also depend on the timing of their purchases, with foreign official investors earning, on average, higher returns ex post. Our analysis relies on aggregate data and hence cannot examine the maturity structure of the portfolios of different investors, nor provide a meaningful analysis of their Treasury returns.

3.2 Foreign Official Holdings of U.S. Treasuries

These stylized facts raise the question of which factors triggered the sharp change in the composition of foreign buyers of Treasury securities. Providing an answer to this question can also help assess the possible future evolution of external demand for Treasury securities. We focus first on foreign official holdings, which were dominant for most of the sample period, and discuss their main drivers. We then add evidence on the dynamics of country-specific Treasury holdings by large holders through the official sector.

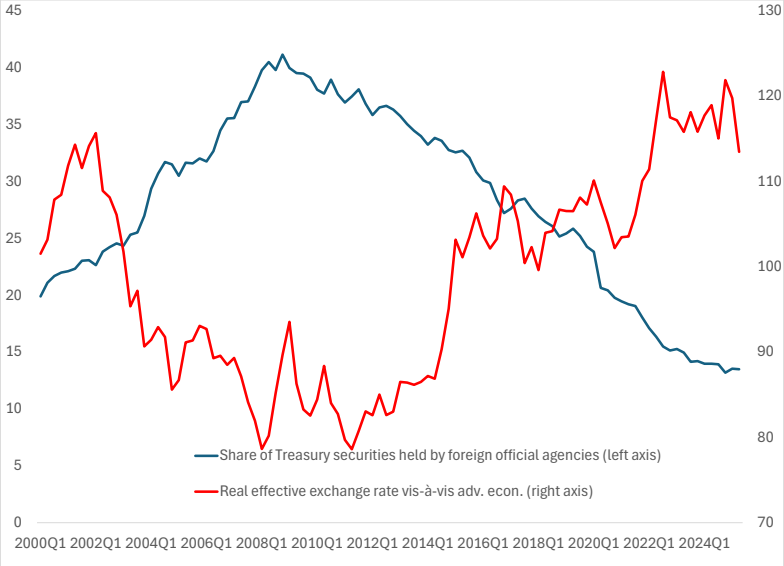
3.2.1 The Aggregate Foreign Official Holdings Share

Foreign official investors hold U.S. Treasury securities primarily as foreign exchange reserves.[15] This suggests that the evolution of such holdings is related to demand for global reserves and their currency composition. We therefore construct a quarterly measure of global reserves as a

[15] The U.S. definition of foreign official investors also encompasses other official investors, such as sovereign wealth funds, but central banks account for the vast majority of holdings of Treasury securities. Holdings of sovereign wealth funds are large, but more concentrated in other financial instruments, such as equity,

ratio of world GDP as a scaling variable for Treasury demand from the official sector.[16] As for the currency composition of reserves, reserve managers are likely to aim for broadly stable currency shares in their reserves portfolio. Since Treasury securities are the main component of dollar reserve assets, a desire to stabilize currency shares would imply a decline in foreign official holdings when the dollar appreciates against other reserve currencies (overwhelmingly issued by other advanced economies) and increase when the dollar weakens, as official portfolios are rebalanced. Figure 8 suggests that this is indeed the case. The Figure shows a very strong negative correlation between the foreign official holdings share in U.S. Treasuries and the U.S. real effective exchange rate vis-à-vis other advanced economies (US REER): dollar appreciation is associated with a decline in the foreign official share and vice versa. [17] We therefore include this exchange rate measure in our set of drivers of foreign holdings of Treasuries.

Figure 8. Real effective exchange rate and foreign official share of U.S. Treasuries, 2000-2025



Source: authors' calculations based on data from the Federal Reserve Board and the U.S. Treasury.

Another factor plausibly affecting foreign holdings is the share of Treasury securities held by the Federal Reserve, since the pool of available U.S. Treasuries that other investors can purchase is

[16] Quarterly world GDP is constructed by linearly interpolating annual world GDP from the IMF's World Economic Outlook.

[17] Chinn et al. (2022) provide aggregate evidence on central bank portfolio rebalancing by focusing on the evolution of the share of dollars in foreign exchange reserves reported by the IMF's COFER statistics.

mechanically reduced by the Federal Reserve's holdings share. Related to Treasury securities' safe asset characteristics, the literature finds that capital flows into Treasuries during risk-off states of the world (Chari, Dilts Stedman, and Lundblad 2022). To explore the role of market sentiment as a determinant of U.S. Treasury demand, we include a measure of risk-on risk-off shocks in the baseline. Finally, rising geopolitical fragmentation could materially impact the share of U.S. Treasuries in official reserve portfolios. To examine this hypothesis, we include a measure of geopolitical fragmentation (Fernandez-Villaverde et al., 2025) as an explanatory variable in our baseline specification. Building on these considerations, our baseline specification for Treasury demand from foreign official investors is as follows:

$$s_{FO,t} = \alpha + \beta_1 REER_{US_{AE},t} + \beta_2 s_{FRB,t} + \beta_3 \frac{FX\ Reserves}{World\ GDP}_t + \beta_4\ RORO_t + \beta_5\ GFI_t + \epsilon_t, \quad (1)$$

Where $s_{FO,t}$ is the share of foreign official holdings of U.S. Treasuries in total marketable Treasury debt at market value[18], $REER_{US_{AE},t}$ is the real effective exchange rate of the United States vis-à-vis advanced economies (in log terms), the $s_{FRB,t}$ is the share of Treasury securities held by the Federal Reserve, $\frac{FX\ Reserves}{World\ GDP}_t$ is a scaling variable, $RORO_t$is the risk-on risk-off index from Chari et. al. (2025)[19] and GFI_t is a geopolitical fragmentation index from Fernandez-Villaverde (2025). We estimate this specification with quarterly data. We use data on Treasury holdings from March 2000 to mid-2025, but the estimation period ends in the first quarter of 2024 because the *GFI* variable is not available beyond that point.[20] Table 1 presents the regression estimates of the baseline specification in Equation (1). All specifications include robust standard errors.

[18] We follow the guidelines provided by Bertaut and Judson (2023) to merge datasets and construct the foreign official holdings of U.S. Treasuries outstanding. See also McCallum et al. (2026).

[19] The Risk-on Risk-off (RORO) index is a multifaceted measure designed to capture the realized variation in global investor risk appetite. It uses daily data from asset markets in the United States and the Euro area. It presents an aggregation of risk-on risk-off states of the world based on four broad categories reflecting variation in advanced economy credit risk, equity market volatility, funding conditions, and currencies and gold. To infer the overall risk bearing capacity of international investors, the RORO index comprises the first principal component of the daily changes in these series (Chari et al, 2025). See https://www.kansascityfed.org/data-and-trends/risk-on-risk-off-index/

[20] To construct a quarterly series for the ratio of global foreign exchange reserves to global GDP we linearly interpolate the annual series for global GDP.

Table 1. Foreign Official Demand for Treasury Securities

Quarterly data, 2000-2024

	Dependent Variable: Foreign Official Holdings Share (%)					
VARIABLES	(1) 2000-2024	(2) 2000-2024	(3) 2000-2024	(4) 2000-2024	(5) 2000-2011	(6) 2012-24
Real Exchange Rate (US vs. AEs)	-52.28*** (2.24)	-47.04*** (2.70)	-47.65*** (2.68)	-22.25*** (1.98)	-8.22* (4.49)	-19.18*** (2.24)
FX Reserves Ratio (% World GDP)	0.18* (0.10)	0.17* (0.10)	0.31** (0.13)	0.55*** (0.06)	1.26*** (0.24)	0.89*** (0.27)
Fed Treasuries share		-0.42*** (0.08)	-0.44*** (0.08)	-0.40*** (0.05)	-0.32*** (0.10)	-0.24*** (0.07)
RORO index			-0.00 (0.04)			
Geopolitical Fragmentation Index				-8.30*** (0.53)	-9.07*** (1.00)	-8.17*** (0.67)
Constant	265.17*** (10.66)	248.44*** (11.94)	249.80*** (11.70)	127.98*** (9.16)	56.49** (23.04)	106.10*** (12.84)
Observations	101	101	88	96	47	49
R^2	0.82	0.86	0.87	0.96	0.96	0.97

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The real exchange rate is the (log) average of the exchange rate over the quarter. The RORO index is only available from the second quarter of 2003.

Explanatory variables beyond reserves and the real exchange rates are added one by one in columns (2)-(5). Given that the RORO index is available only since May 2003 and is statistically insignificant, it is dropped in regression (4) to increase the sample size. Columns (5) and (6) provide separate estimates for the first and second part of the sample. The real exchange rate coefficient is negative and statistically significant across all specifications. With an average foreign official share of around 28 percent, the coefficient in the model of column 4 implies that a 10 percent dollar appreciation vis-à-vis other reserve currencies would reduce the foreign share by about 8 percent (2.2 percentage points), which would substantially offset the exchange rate impact on the share of U.S. Treasuries in reserves. This result is hence consistent with the hypothesis that foreign official institutions have a desired target for US dollar reserves, implying that when the U.S. dollar strengthens vis-à-vis other reserve currencies foreign official investors

reduce their share of U.S. Treasuries. There is a further potential source of the negative correlation between the exchange rate and foreign official holdings: risk-off episodes, during which emerging market currencies may weaken, warranting FX intervention (sales), and vice versa when the dollar weakens and flows to emerging markets increase. We explore this hypothesis further in our country-level analysis below.

The coefficient on the FX reserves ratio is positive and significant across all specifications, with a point estimate of 0.55 in column 4. The coefficient implies that as the stock of official reserves expands by one standard deviation (around 3 percent of world GDP), the share of foreign official holdings in U.S. Treasuries increases by 1.6 percentage points. The coefficient is on the low side, considering that world GDP is about 4 times as large as U.S. Treasury debt, but it roughly doubles when the sample is split into two periods. The coefficient on the Federal Reserve share of U.S. Treasury holdings variable is consistently negative and significant across specifications, likely reflecting a crowding-out effect: greater absorption of Treasuries by the Fed reduces available Treasury securities for other investors. The point estimate suggests that a one percentage-point increase in the Fed share reduces the foreign share by around 0.4 percentage points (column 4), which is higher than the average foreign official share of 0.28. Indeed, periods of rapid changes in the foreign official share (such as the increase between mid-2007 and mid-2009 or the decline during the COVID period) have coincided with sharp movements in the opposite direction of the Fed share.

The RORO index (Z-score), capturing global risk-on/risk-off sentiment, is statistically insignificant (Column 3). In contrast, the Geopolitical Fragmentation Index exhibits a strong negative and highly significant relationship with foreign official holdings, which is also robust in magnitude across sub-periods (Columns 4-6). The index drops sharply during the second half of the 2000s, when the foreign official share of Treasuries was rising rapidly, and then rises sharply between 2017 and 2020, and then again in the aftermath of the Russian invasion, both periods of decline in the foreign official share. The coefficient implies that a one standard deviation increase in the index (about 0.4, or about a third of the increase between the early 2010s and the latest available period) reduces the share of official holdings by about 3.2 percentage points, over 10 percent of its average value during the sample period. This result suggests that increasing

geopolitical and economic fragmentation prompt official investors to diversify away from U.S. assets. The magnitude of the effect, together with the rise in geopolitical fragmentation, points to the growing influence of geopolitical dynamics on reserve management decisions.

The goodness of fit of our model specifications is high. Taken together, the observed patterns in Table 1 show that movements in the U.S. real exchange rate, global reserve accumulation, and Federal Reserve Treasury asset purchases appear to be key determinants of foreign official holdings of U.S. Treasuries. The significant negative association with geoeconomic fragmentation suggests that official demand for U.S. assets is sensitive to geopolitical tensions.

3.2.2 The Country-Specific Treasury Holdings Share

Having established the aggregate findings on foreign official holdings of U.S. Treasuries, we next explore systematic differences in total demand for Treasuries across countries in a panel setting. This allows us to consider the impact on Treasury holdings of factors that vary across countries, such as their geopolitical distance from the U.S., their bilateral exchange rate vis-à-vis the dollar, and their foreign exchange reserves. Unfortunately, the publicly available U.S. source data only provides aggregate statistics on foreign holder types (e.g., official or non-official) to preserve the confidentiality of individual country data. To overcome this issue and conduct an analysis of official holdings using country-level information, we first identify a set of 40 countries, listed in Appendix 1, that have been, on average, the largest holders of U.S. Treasuries, accounting for about 94 percent of total holdings. We then classify those countries in four categories, based on data on their U.S.-reported Treasury holdings, country-reported holdings of U.S. bonds excluding those of the Central Bank, foreign exchange reserves held in securities, and other data sources discussed in Appendix 2.2. 19 of these countries—almost all emerging economies, such as Brazil, China, and India—are classified as “mostly official” investors, with our analysis suggesting that Treasury holdings are overwhelmingly held by public institutions. A second group of 8 countries (including Japan, Switzerland, and Taiwan) has meaningful official as well as private holdings. The remaining two groups are countries (such as Australia and Canada) with mostly private holdings by domestic residents, as well as financial centers (such as the Cayman Islands, Ireland, or Luxembourg), where a large share of holdings reflects intermediation activity on behalf of nonresidents. To capture the behavior of official

investors, we combine the mostly official and hybrid official-private categories to run our cross-country panel regression using monthly data, from March 2000 to June 2025, presenting results for both groups combined as well as for countries where official holdings are dominant. Inevitably, given the nature of the data, the broader sample cannot precisely isolate changes in official holdings:[21]

$$s_{i,t} = \alpha + \beta_1 REER_{US_{AE},t} + \beta_2 BEX_{i,t} + \beta_3 s_{FRB,t} + \beta_4 \frac{FX\ Reserves}{World\ GDP}_{i,t} + \\ + \beta_5\ GFI_t + \beta_6\ IPD_{i,t} + \epsilon_{i,t}, \qquad (2)$$

where $s_{i,t}$ is the share of a country's holdings of US marketable debt at time *t*, $BEX_{i,t}$ is the bilateral real exchange rate vis-à-vis the dollar in log terms, $\frac{FX\ Reserves}{World\ GDP}_{i,t}$ is a country-specific scaling variable that measures a country's FX reserves as a share of world GDP, and $IPD_{i,t}$ is a time-varying bilateral geopolitical distance measure referred to as the Ideal Point Distance.[22] The bilateral exchange rate is meant to capture the effect of reserve accumulation to stem currency appreciation pressures and vice versa. It is the ratio of domestic CPI expressed in dollars to the US CPI, and hence an increase indicates a real appreciation of the country's currency. The remaining variables ($REER_{US_{AE},t}$, $s_{FRB,t}$, GFI) are those defined earlier in equation (1).[23]

Table 2 presents the results from cross-country panel regressions based on Equation (2) that examine the determinants of U.S. Treasury (UST) holdings shares among mostly official and hybrid (official-private) investors. All regressions include country fixed effects to control for unobserved time-invariant country-specific characteristics, while specifications (2), (4), (6), and (8) also include time fixed effects (which absorb the effect of country-invariant series such as the U.S. real exchange rate vis-à-vis other AEs, the geopolitical fragmentation variable *GFI*, and the share of Treasuries held by the Federal Reserve).

[21] In addition, as noted earlier, some private holdings held through financial centers such as Luxembourg and Belgium, inevitably include some official holdings from third countries that we cannot transparently ascertain.
[22] A widely used methodology, developed by Bailey et al. (2017), employs a spatial voting model to estimate each country's "ideal point" on a policy spectrum. The geopolitical distance between two countries, called the Ideal Point Distance (IPD), is calculated as the absolute difference between their ideal points. Smaller values for IPD distance indicate closer geopolitical alignment.
[23] We have excluded the risk-on, risk-off measure RORO—it is statistically and economically insignificant in the regressions and reduces sample size because it is only available from mid-2003.

Table 2. Cross-Country Panel Regression (Mostly Official and Official Private Hybrid UST Holders)
Monthly data, January 2000-March 2024

	Dependent variable: foreign share by country (%)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	All	All	Mostly official	Mostly official	All excl. CHN & JPN	All excl. CHN & JPN	Mostly official excl. CHN	Mostly official excl. CHN
US REER vis-à-vis other AEs	-0.28*		-1.04***		0.49***		0.47***	
	(0.15)		(0.14)		(0.04)		(0.05)	
Bilateral RER vis-à-vis US	0.11	0.72***	-0.51***	-0.52***	0.59***	0.63***	0.55***	0.61***
	(0.09)	(0.09)	(0.08)	(0.09)	(0.03)	(0.03)	(0.03)	(0.03)
Reserves/world GDP	1.66***	1.81***	1.60***	1.62***	1.02***	1.11***	1.60***	1.77***
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.05)	(0.06)
FRB share of Treasuries	-0.01***		-0.03***		-0.01***		-0.01***	
	(0.00)		(0.00)		(0.00)		(0.00)	
Geopolitical fragmentation index	-0.58***		-0.34***		-0.10***		-0.08***	
	(0.04)		(0.04)		(0.01)		(0.02)	
Geopolitical distance (ideal points)	-0.11	-0.43***	-0.32***	-0.22**	0.05**	0.04	0.10***	0.12***
	(0.08)	(0.09)	(0.07)	(0.09)	(0.02)	(0.03)	(0.03)	(0.03)
Country fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Time fixed effects	N	Y	N	Y	N	Y	N	Y
Observations	6,346	6,700	4,698	4,954	5,768	6,088	4,409	4,648
R^2	0.893	0.886	0.882	0.869	0.737	0.742	0.708	0.716

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Sample period: January 2000-March 2024. The group "All" includes both countries with meaningful holdings by both official and private investors as well as countries with mostly official investors (see Appendix 2.2 for details). Real exchange rate variables are expressed in log terms. Hong Kong and Taiwan are dropped from the regression because data on geopolitical distance from the U.S. is not available. Exchange rate measures are expressed in log terms and ratios as percentage points.

With regard to the exchange rate variables, the results show that the negative conditional correlation between the Treasury share and the U.S. real exchange rate vis-à-vis other advanced economies documented in Table 1 is primarily explained by the two largest holders of official reserves (China and Japan), while the correlation turns negative once these countries are excluded.[26] Once China is excluded, the bilateral real exchange rate is positively correlated with the Treasury share, a result buttressed by country-by-country evidence presented in our online Annex Table 3. The Federal Reserve's share of Treasuries continues to exhibit a negative and statistically significant coefficient in the panel setting, consistent with the crowding-out effect discussed in relation to the findings in Table 1. Not surprisingly, the most important variable in explaining the share of Treasuries is the country's stock of reserves. The coefficient is high because the ratios of individual countries' reserves to global GDP is relatively small. The largest ratio is for China (about 3 percent of world GDP). A 1 percentage point increase in that ratio would imply an increase of Chinese reserves by about 1/3 (over $1 trillion). This would lead to an increase in their share of Treasuries of about 1.7 percentage points (over $500 billion).

After controlling for reserves, we find evidence of lower Treasury holdings when geopolitical fragmentation (*GF*) increases. China and Japan play an important role in explaining the magnitude of this result—once they are dropped, the coefficient becomes much smaller in absolute terms, even though it remains statistically significant. The reduction in the coefficient is easy to understand: the countries in our sample have different shares of Treasury securities (the denominator is all Treasury securities outstanding), and once we drop the largest holders, the quantitative impact of the change in the variable on the average change in the share of Treasuries is going to drop.[27] In country-by-country regressions (online Annex Table 3), this coefficient is negative and significant for the vast majority of countries in the "mostly official" group. The change in our *GF* variable between the early 2010s and the most recent period is above 1. If we take the coefficient for the sample excluding China (0.12), this change implies a decline in the share of Treasuries of over 0.12 percentage points, which is very large considering that the average share of Treasuries in early 2024 for our group of mostly official investors (excluding

[26] Annex Tables 1 and 2 reproduce regression (3) dropping one country at the time from the sample.
[27] The regression does include country fixed effects, but first differences will still vary considerably across countries.

China) was 0.31, while it was 0.4 if we also include countries with large private and official holdings.[28] Finally, the coefficient on our measure of geopolitical distance from the U.S. is also very sensitive to the inclusion of China in the sample: it is negative and statistically significant when China is included, but switches sign when it is excluded. We explored this issue further in the country-by-country regressions presented in the Annex tables: not surprisingly, these show a particularly strong negative association between geopolitical distance and Treasury holdings for China and Russia, but for the remaining countries the evidence is mixed. Finally, our results, including the relation between Treasury shares and exchange rates, are robust to the inclusion in the regression of the direct measures of foreign exchange intervention assembled by Adler et al. (2025), as documented in Annex Table 8.

To summarize, consistent with the aggregate patterns documented in Table 1, the country-level evidence in Table 2 corroborates that exchange-rate dynamics, global reserve accumulation, and the Fed share remain significant macro-financial drivers of the demand for U.S. Treasury securities. The significance of the geopolitical fragmentation measure highlights that strategic and political factors shape foreign demand for U.S. sovereign debt holdings. Variations over time in bilateral geopolitical distance are highly meaningful in some cases—for example, China and Russia—but not systematically across other official reserve holders.

3.3 Foreign Private Holdings of U.S. Treasuries

Next, we investigate the determinants of aggregate foreign private demand for U.S. Treasuries and compare them with foreign official demand. Our dependent variable is the ratio of foreign non-official holdings of U.S. Treasury securities to U.S. Treasury marketable debt at market value (s_{FP}). We use a similar set of controls to those used for the official share, including the real effective exchange rate vis-à-vis other advanced economies $REER_{US_{AE}}$, the share of Treasuries held by the Fed s_{FRB}, the index of geoeconomic fragmentation *GIF*, and the risk-on, risk-off indicator *RORO*. But we replace the stock of foreign reserves as a scaling variable with a measure of countries' propensity to hold bonds issued by nonresidents. The variable,

[28] Rolling regressions document how the coefficient on geoeconomic fragmentation is negative and broadly stable as the sample period is lengthened when China is included (Annex Tables 4-5) while it becomes negative since 2022 when China is excluded (Annex Table 6).

$\frac{Total\ Portfolio\ Debt\ Securities}{world\ GDP}_t$, is constructed as the ratio of world holdings of foreign bonds (excluding holdings by central banks and by the United States) to world GDP. For this calculation, we treat the euro area as one country and hence net out intra-euro area holdings of bonds, which have fluctuated sharply during the sample period. The data on holdings of foreign bonds is obtained from the portfolio debt assets series in the External Wealth of Nations database (Milesi-Ferretti, 2026). Portfolio debt assets exclude foreign bonds held as reserves by central banks.[29] We also control for the foreign official share $s_{Fo,}$ as there is some uncertainty about the attribution of holdings to official versus private holders, as noted earlier for China in particular. Finally, as a control, we add a dummy for the COVID period (2020Q1-2021Q1) to account for the large impact of the March 2020 Treasury market disruptions and their aftermath on the private share. We therefore estimate the following specification:

$$s_{FP,t} = \alpha + \beta_1 REER_{US_{AE},t} + \beta_2 s_{FRB,t} + \beta_3 \frac{Total\ Portfolio\ Debt\ Securities}{Global\ GDP}_t + \beta_4 s_{F0,t} + \beta_5\, GFI_t + \beta_6\, RORO_t + \beta_7\, COVID_t + \epsilon_t, \quad (3)$$

Table 3 presents the results, where the variables $s_{F0,t}$, *GFI, RORO*, and *COVID* are added one by one in specifications (2)-(5). The difference in results between columns (3) and (4) is due to the change in sample size, rather than the addition of the variable *RORO*. The results identify a very strong positive relation between the foreign private share and the real exchange rate between the U.S. and other advanced economies: a 10 percent appreciation is associated with an increase in the foreign private share of about 1 percentage point in the fully specified model—albeit smaller in absolute terms than the (opposite) impact on the official share. The specification includes lagged values of the real exchange rate to mitigate reverse causality concerns.

The portfolio debt securities ratio has a positive and highly significant coefficient in the first three specifications, an effect still present, albeit weakened, for the shorter sample period of regression (5). As home bias declines, private foreign investors allocate a larger share of their

[29] Portfolio debt securities are domestic holdings of short- and long-term bonds issued by nonresident entities. While there is some overlap with foreign official holdings of U.S. Treasuries since the latter include those by sovereign wealth funds, which balance of payments statistics classify as portfolio debt assets, the results in Table 3 are robust to the exclusion of holdings by countries with major sovereign wealth funds from global holdings of foreign bonds.

portfolios to Treasuries. Our interpretation of the weaker result in the fully specified model is that private holders of Treasuries are heterogeneous, driven by different motivations and mandates. Heterogeneity weakens the relation with our measure of home bias.

Table 3: Determinants of Foreign Private Holdings of US Treasuries Outstanding

	(1)	(2)	(3)	(4)	(5)
Dependent variable ⟶	Private Foreign Holdings of Treasury Securities (% of US marketable debt at market value)				
Sample period ⟶	2000-24	2000-24	2000-24	2003Q2-24	2003Q2-24
Log REER(t-1)	6.58***	7.31***	7.86***	11.50***	9.44***
	(1.008)	(1.897)	(1.859)	(1.433)	(1.322)
Federal Reserve share	0.06	0.07	0.11***	0.05	0.07*
	(0.040)	(0.042)	(0.037)	(0.042)	(0.037)
Portfolio debt/world GDP	0.31***	0.31***	0.31***	-0.02	0.09*
	(0.050)	(0.049)	(0.055)	(0.059)	(0.051)
Foreign official share		0.02	0.03	0.02	-0.01
		(0.042)	(0.054)	(0.048)	(0.044)
GEF		-0.64	-0.64	-0.39	-0.64
		(0.640)	(0.527)	(0.468)	(0.640)
Z-RORO				0.57*	0.87***
				(0.295)	(0.276)
COVID dummy					-2.33***
					(0.329)
Constant	-22.72***	-26.62***	-30.59***	-39.66***	-31.56***
	(4.435)	(9.336)	(9.284)	(7.113)	(6.471)
Observations	99	99	96	84	84
R^2	0.562	0.562	0.538	0.681	0.785

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The sample in column (4) includes only observations for which the variable Z-RORO is available.

We find no systematic conditional correlation between the foreign private share and the foreign official share, and between the foreign private share and the measure of geoeconomic fragmentation. The positive correlation with the Fed share is boosted in our last regression by our highly significant dummy for the COVID period, which is characterized by a ramp-up in Fed purchases and a large decline in the foreign private share. Finally, we find that over the sample periods, risk-off episodes are associated with increased foreign private holdings of Treasuries,

consistent with the view of U.S. Treasuries as safe and liquid assets, attractive during risk-off periods.[30] This effect, which is boosted in the last specification by the COVID dummy (a risk-off period during which foreign private holdings declined), is driven to an important extent by the earlier period of the sample, including the financial crisis—a period during which private flows into Treasuries were strongly positively correlated with the RORO variable. Overall, the evidence suggests that it is harder to explain the behavior of private investors compared to official investors. This is not surprising, considering the much more heterogeneous set of private investors compared to foreign central banks noted above.

3.4 Implications

What do these results suggest moving forward? Our results attribute the recent decline in foreign official purchases to the plateauing of foreign exchange reserves, dollar strength, and increased geoeconomic fragmentation. This suggests that, in the absence of a renewed period of rapid reserve accumulation at a pace exceeding global GDP or U.S. public debt growth, or a sizable downward adjustment in the value of the dollar vis-à-vis other reserve currencies, a strong recovery in official Treasury purchases is unlikely. Moreover, compositional trends in global reserves indicate a gradual decline in the U.S. dollar's share (as shown in the IMF's COFER data) and a shift away from U.S. Treasuries within official portfolios (based on BEA data on foreign official holdings). These developments suggest structural moderation in official-sector demand for U.S. government debt.

In contrast, a different set of factors appears to drive private foreign demand. One of our contributions is to show that the geographic composition of private investors differs systematically from that of official creditors, displaying greater concentration from countries more closely geopolitically aligned with the United States. While in principle this development should make Treasury holdings less sensitive to geopolitical tensions (consistent with the findings of our regression analysis, which finds official holdings more sensitive to

[30] Note that the coefficient on RORO was not significant as a determinant of foreign official demand for Treasuries. The evidence on risk-off episodes leading to portfolio rebalancing into US Treasuries is consistent with the observed mutual fund rebalancing out of emerging markets and into Treasury money market funds in Chari, Dilts Stedman, and Lundblad (2024).

geoeconomic fragmentation), the increased geopolitical frictions within the Western bloc could result in more volatile external private demand (Chari, Converse, et al, 2025). Furthermore, increasing U.S. debt may make it riskier, and the marginal absorption by foreign private investors become more volatile. Private foreign private demand has increased over the past decade. Our regression results suggest that private foreign demand for U.S. Treasuries is consistent with the safe-haven status of the U.S. dollar and dollar assets, with holdings rising in risk-off states of the world. However, the turmoil during the COVID episode and the capital outflows from the U.S. after Liberation Day in April 2025 (a six-sigma risk-off shock) offer a glimpse of how this safe-haven status may be eroded.

A second contribution concerns the opacity risk and measurement of foreign private holdings. With regard to opacity risk, we highlight how the identification of ultimate holders is increasingly obscured by the growing role of financial-center intermediaries—such as entities domiciled in the Cayman Islands, Luxembourg, or Ireland, or custodians in Belgium and the United Kingdom on behalf of international investors. This lack of information on the nationality and sector of these investors complicates the task of assessing how they may react to shocks. Indeed, foreign private demand for U.S. Treasuries varies by investor class. For example, due to institutional mandates requiring investments in safe assets, investors such as pension funds, mutual funds, and insurance companies can serve as a stable investor base, akin to foreign official holders. Investments by retail investors or hedge funds can, however, be more volatile. Finally, in a more fragmented world, the nationality of ultimate investors may become a more important variable in explaining external demand.

The growing importance of non-bank financial institutions and the limitations of reporting requirements have also increased measurement challenges, as vividly shown by the estimated $1.4 trillion underreporting of Cayman-held Treasury holdings in official data (Barth et al., 2025). While most of the underreporting reflects the offshore management of assets ultimately owned by U.S. investors through Cayman Islands-based hedge funds, it also points to the rising importance of leveraged investors whose positions are sensitive to shifts in global risk sentiment and funding conditions, as severe risk shocks can trigger margin calls leading to a rapid unwinding of Treasury holdings, as witnessed in March 2020 (Kashyap et al, 2025).

Beyond concerns about abrupt portfolio reallocation, there are broader macro-financial implications of rising U.S. federal debt. A sustained rise in U.S. external liabilities implies larger future income transfers abroad, especially in an environment of positive real interest rates. In addition, the historical pattern in which global downturns coincided with falling U.S. yields may no longer hold. If foreign official demand remains subdued and private demand becomes more sensitive to risk or geopolitical factors, U.S. interest rates could become less countercyclical. On the other side of the ledger, demand for (short-term) Treasury securities could be boosted by a rapid development of the stablecoin market. For instance, El Salvador (the current domicile of Tether, issuer of the USDT stablecoin) held some $88 billion of short-term U.S. Treasury securities in mid-2025, according to the 2026 annual survey of U.S. portfolio liabilities conducted by the Treasury and the Fed. However, the total size of this demand remains very modest compared with outstanding Treasury securities.

A large empirical literature, beginning with important contributions of Bernanke et al. (2004) and Warnock and Warnock (2009), examines the relationship between foreign official (FO) purchases of U.S. Treasury securities and U.S. yields. These early studies document that large-scale FO purchases, primarily associated with reserve accumulation by emerging markets and oil exporters during the 2000s, reduced the supply of long-duration safe assets available to private investors, compressing term premia and lowering long-term interest rates. Several later studies also find that FO demand exerts downward pressure on long-term yields, with reductions ranging from 13 to 62 basis points in 10-year yields (Beltran et al., 2013; Krishnamurthy and Vissing-Jorgensen, 2012; Bertaut et al., 2012; and Craine and Martin, 2009). More recent research by Wolcott (2020) finds evidence that foreign official purchases have depressed medium-term Treasury yields, while Ahmed and Rebucci (2024) estimate that the short-run impact of reductions in foreign official demand for Treasuries can have a notable impact on Treasury yields.

Our empirical analysis focuses on low-frequency movements in foreign demand, rather than on sources of short-term volatility. Future research could examine foreign demand for U.S. Treasuries using higher-frequency flow data. In addition, the term structure of Treasury

maturities determines the degree of rollover risk, with a larger share of short-term debt exposing the financing of the U.S. external position to greater vulnerability. In this sense, the term structure of external debt is, in principle, a central factor in determining the vulnerability of the U.S. external position. As a significant fraction of U.S. debt contracted in the pre-pandemic period matures over the next few years, the higher the proportion of short-term liabilities held by foreigners, the greater the refinancing pressure and associated rollover risk.

4. Concluding remarks

This paper investigates the evolution of the U.S. external balance sheet and the vulnerabilities in its debtor position. The external financing structure has changed significantly, with a rising share of external liabilities concentrated in portfolio instruments. Our evidence shows that advanced economies are the dominant creditors to the United States. While financial dependence on allies can in principle be less vulnerable to geopolitical tensions, the fraying relations within the Western bloc raises the potential for financial and geopolitical shocks to transmit through to U.S. funding conditions. The gradual worsening of the primary income balance highlights that the buildup of net external debt exposes the U.S. to rising debt-service costs, particularly in a higher global interest-rate environment.

Our empirical analysis shows that macro-financial and geopolitical factors shape the overall demand for U.S. sovereign assets. Foreign official demand for U.S. Treasuries remains closely tied to global reserve accumulation and portfolio rebalancing actions in the face of dollar valuation changes. However, foreign official demand has leveled off over the past decade, as evidenced by slower reserve growth and greater geopolitical fragmentation, triggering a sharp decline in their ownership share of Treasuries. Given the structural moderation in official-sector demand for U.S. government debt, a strong recovery in official Treasury purchases is unlikely absent a renewed period of rapid reserve accumulation or a sizeable dollar depreciation.

Foreign private demand, on the other hand, has become an increasingly significant external source of Treasury financing, including because of declining home bias in investment in debt securities, likely tied to the increased size and importance of institutional investors such as pension funds and investment funds. The rapid build-up in leveraged holdings of Treasuries by

Cayman-based hedge funds has also played an important role. It is harder to pinpoint the factors driving private demand for Treasury securities by different financial partners, including the role of financial centers in intermediating such flows. While time series evidence suggests that foreign private Treasury holdings rise during risk-off periods, the relation is driven by the period surrounding the global financial crisis. In current times, the investor base may well be more sensitive to risk sentiment and geopolitical shocks and quicker to respond to them, posing more challenges to market stability during stressed times. If foreign official demand for Treasuries remains subdued and private demand becomes more sensitive to risk or geopolitical factors, U.S. interest rates could become less countercyclical.

Overall, the vulnerability of the U.S. external position will depend on the interaction between current and expected U.S. fiscal policy, the frequency and magnitude of geopolitical and other shocks, and global portfolio preferences. Even though the foreign share of U.S. Treasuries has declined since the global financial crisis, changes in overall U.S. indebtedness and the other factors we have discussed imply that foreign investor behavior continues to play an important role in the stability of the U.S. Treasury market and the U.S. external position more generally.

References

Adler, Gustavo, Kyun Suk Chang, Rui C. Mano, and Yuting Shao, 2025, "Foreign Exchange Intervention: A Data Set of Official Data and Estimates," *Journal of Money, Credit, and Banking* 57 (5), 1241-73.

Ahmed, Rashad and Alessandro Rebucci, 2024, "Dollar reserves and U.S. yields: Identifying the price impact of official flows," Journal of International Economics 152, November.

Airaudo, Florencia S., François de Soyres, Keith Richards, and Ana Maria Santacreu (2025). "Fragmentation? Revisiting the Ideal Point Distance measure of geopolitical distance," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, March 21, 2025, https://doi.org/10.17016/2380-7172.3749.

Arslanalp, S., Eichengreen, B. and Simpson-Bell, C., 2022. The stealth erosion of dollar dominance and the rise of nontraditional reserve currencies. Journal of International Economics, 138, Article 103656.

Atkeson, Andrew, Jonathan Heathcote, and Fabrizio Perri, 2025, "The End of Privilege: A Reexamination of the Net Foreign Asset Position of the United States," *American Economic Review* 115 (7): 2151–2206.

Bailey, M. A., Strezhnev, A., and Voeten, E. (2017). Estimating dynamic state preferences from United Nations voting data. *Journal of Conflict Resolution*, 61(2):430–456.

Barth, Daniel, Daniel Beltran, Matthew Hoops, Jay Kahn, Emily Liu, and Maria Perozek (2025). "The Cross-Border Trail of the Treasury Basis Trade," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, October 15, 2025, https://doi.org/10.17016/2380-7172.3939.

Beck, Roland, Antonio Coppola, Angus Lewis, Matteo Maggiori, Martin Schmitz, and Jesse Schreger (2024), "The Geography of Capital Allocation in the Euro Area". NBER Working Paper 32275, March.

Beltran, D. O., M. Kretchmer, J. Marquez, and C. P. Thomas. 2013. "Foreign Holdings of U.S. Treasuries and U.S. Treasury Yields." *Journal of International Money and Finance* 32, no. 1 (February): 1120–1143. https://dx.doi.org/10.2139/ssrn.2014172.

Bernanke, B., V. Reinhart, and B. Sack (2004). Monetary policy alternatives at the zero bound: An empirical assessment. *Brookings Papers on Economic Activity* 2004, 1–100.

Bertaut, Carol, and Ruth Judson (2023). "Measuring U.S. Cross-Border Securities Flows: New Data and A Guide for Researchers," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, October 02, 2023, https://doi.org/10.17016/2380-7172.3392.

Bertaut, Carol, Beau Bressler and Stephanie Curcuru, 2019, "Globalization and the Geography of Capital Flows," Feds Notes.

Bertaut Carol and Ruth Judson, 2014, "Estimating U.S. Cross-Border Securities Positions: New Data and New Methods." Board of Governors of the Federal Reserve System International Finance Discussion Paper 1113. https://www.federalreserve.gov/pubs/ifdp/2014/1113/ifdp1113.pdf."

Bohn, Henning, and Linda L. Tesar, 1996. "U.S. Equity Investment in Foreign Markets: Portfolio Rebalancing or Return Chasing?" The American Economic Review 86, 2: 77–81.

Chari, Anusha, Karlye Dilts Stedman, Christian Lundblad, 2025. "Risk-on/risk-off: Measuring shifts in investor risk bearing capacity." *Journal of International Money and Finance*, 159, 103438.

Chari, Anusha, Nathan Converse, Arnaud Mehl, Gian Maria Milesi-Ferretti and Isabel Vansteenkiste, 2025, "Geopolitical tensions and international financial fragmentation: evidence and implications", Geneva Report on the World Economy no.28.

Chari, Anusha and Dilts Stedman, Karlye and Lundblad, Christian T., Global Fund Flows and Emerging Market Tail Risk (February 27, 2024). Available at SSRN: https://ssrn.com/abstract=4245851 or http://dx.doi.org/10.2139/ssrn.4245851

Chinn, Menzie D. & Ito, Hiro & McCauley, Robert N., 2022. "Do central banks rebalance their currency shares?" Journal of International Money and Finance, Elsevier, vol. 122(C).

Coppola, A., M. Maggiori, B. Neiman, and J. Schreger, 2021, "Redrawing the Map of Global Capital Flows: The Role of Cross-Border Financing and Tax Havens," *Quarterly Journal of Economics* 136(3), 1499–1556.

Craine, R., and Martin, V. L. (2009). Interest Rate Conundrum. UC Berkeley: Center for Risk Management Research. Retrieved from https://escholarship.org/uc/item/0409193t

Fernández-Villaverde, Jesús, Tomohide Mineyama, Dongho Song, 2024. "Are We Fragmented Yet? Measuring Geopolitical Fragmentation and Its Causal Effect," NBER Working Paper 32638.

Goldberg, Linda S. and Oliver Hannaoui. 2024. "Drivers of Dollar Share in Foreign Exchange Reserves." Federal Reserve Bank of New York *Staff Reports*, no. 1087, revised February 2026. https://doi.org/10.59576/sr.1087.

Ito, H. and McCauley, R.N., 2020. Currency composition of foreign exchange reserves. Journal of International Money and Finance, 102, Article 102104.

Judson, Ruth, 2024, "Demand for U.S Banknotes at Home and Abroad: A Post-Covid Update,", International Finance Discussion Paper 1387, Federal Reserve Board, March.

Judson, Ruth, and Nyssa Kim (2026). "Measuring Cross-Border Securities Positions: Explaining Asymmetries between U.S. Treasury TIC and IMF PIP (formerly CPIS) Data," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, February 13, 2026, https://doi.org/10.17016/2380-7172.4004.

Kashyap, Anil, Jeremy Stein, Jonathan Wallen and Joshua Younger, 2025, "Treasury Market Disfunction and the Central Bank," Brookings Papers on Economic Activity, forthcoming.

Krishnamurthy, A. and A. Vissing-Jorgensen (2012). The aggregate demand for Treasury debt. *Journal of Political Economy* 120, 233–267.

McCallum, Andrew, Laura DeMane, Angela Garcia, Josie Gillette, Tanya Grover, Henry Haw, Hudson Hinshaw, Nyssa Kim, and Andrew Loucky (2026). "The CSLT: Unifying U.S. Cross-Border Securities Holdings and Transactions Data," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, May 21, 2026, https://doi.org/10.17016/2380-7172.4084.

Milesi-Ferretti, Gian Maria, 2024a, "Many Creditors, One Large Debtor: Understanding the Buildup of Global Stock Imbalances after the Global Financial Crisis," *IMF Economic Review* vol. 72, pp. 509-553.

Milesi-Ferretti, Gian Maria, 2024b, "Missing Assets: Exploring the Sources of Data Gaps in Global Cross-Border Holdings of Portfolio Equity," CEPR Discussion Paper 19253.

Milesi-Ferretti, Gian Maria, 2026, "The External Wealth of Nations Database," the Brookings Institution.

Rey, Hélène, Beatrice Weder di Mauro Jeromin Zettelmeyer (eds.), 2026, "P398 Paris Report 4: The New Global Imbalances', CEPR Press, Paris & London.

Setser, Brad, 2023, "China Isn't Shifting Away from the Dollar or Dollar Bonds," Follow the Money, Council on Foreign Relations, October 3. Available at: <www.cfr.org>.

Tabova, Alexandra and Frank Warnock, 2025, "Exorbitant Privilege in Three Parts." NBER Working Paper 34372.

Tabova, Alexandra and Frank Warnock, 2026, "Preferred Habitat and Timing in the World's Safe Asset," Journal of International Economics, forthcoming.

Voeten, Erik, 2009, "United Nations General Assembly Ideal Points," https://doi.org/10.7910/DVN/LEJUQZ, Harvard Dataverse, V37, UNF:6:1CMqSxsE5nOfylDPJckCqQ== [fileUNF]

Warnock, Francis and Veronica Warnock, 2009, "International Capital Flows and U.S. Interest Rates." *Journal of International Money and Finance* 28, no. 6 (October): 903–19. https://www.sciencedirect.com/science/article/abs/pii/S0261560609000461.

Weiss, Colin, 2022, "Foreign Demand for U.S. Treasury Securities during the Pandemic." Board of Governors of the Federal Reserve System: FEDS Notes. https://www.federalreserve.gov/econres/notes/feds-notes/foreign-demand-for-us-treasurysecurities-during-the-pandemic-20220128.html.

Wolcott, E. L. (2020). Impact of foreign official purchases of U.S. Treasuries on the yield curve. *AEA Papers and Proceedings*, Volume 110, pp. 535–40.

Appendix 1: Country Groupings

Country groups for bilateral analysis of the US external liabilities position:

1. Euro Area: Austria, Belgium, Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovak Republic, Slovenia, Spain.
2. Advanced Asia: Japan, Korea, Singapore, Taiwan
3. Commonwealth: Australia, Canada, New Zealand, United Kingdom (plus Isle of Man, Guernsey, and Jersey)
4. Other advanced economies: Czech Republic, Denmark, Iceland, Israel, Norway, Sweden, Switzerland
5. Greater China: Mainland China, Hong Kong, Macau.
6. The remaining groups (Caribbean, emerging Asia, Middle East, Latin America) are regional.

Country groups for cross-country panel analysis (Section 3.2):

Mostly Official: Norway, Brazil, Chile, Colombia, Mexico, Iraq, Kuwait, Saudi Arabia, United Arab Emirates, China, India, Indonesia, Korea, Philippines, Thailand, Vietnam, Russia, Turkey, Poland.

Official Private Hybrid: Hong Kong, Israel, Japan, Singapore, Spain, Sweden, Switzerland, Taiwan.

Mostly Private: Australia, Canada, France, Germany, Italy, Netherlands.

Financial Centers: Belgium, Bermuda, British Virgin Islands, Cayman Islands, Ireland, Luxembourg, United Kingdom.

Appendix 2. Data construction and sources

2.1 Bilateral residence-based and nationality-based data

While the availability and quality of U.S. data is very high by international standards, compiling bilateral data consistent with aggregate U.S. investment statistics is hampered by a variety of challenges. The most salient one concerns the role of financial centers as intermediaries for global capital flows, which mask the ultimate residence and nationality of investors on the liability side and the ultimate destination of investment flowing through these centers on the asset side. Data reliability also varies by asset class. For example, security-level surveys provide precise information on the counterpart to U.S. portfolio asset holdings (since they identify the issuer of the security being held by U.S. investors) but suffer from custodial bias on the liabilities side. For instance, a Treasury security may be held in custody by a U.K. entity, but the ultimate holder of the asset may be a resident of a different country with an investment account in the United Kingdom. Bilateral FDI statistics are reported at historical cost and on an immediate host and destination basis. Because U.S. multinationals often use holding companies in financial centers from which investment flows to their ultimate destination, large investment positions will be recorded in these financial centers instead of the countries where meaningful economic activity ultimately takes place. Other investment positions rely on a combination of U.S. bank data and partner-country statistics on cross-border positions between U.S. nonbanks and foreign banks, and include large intra-bank cross-border positions.

In the paper, we provide bilateral estimates of U.S. liabilities on a residence basis but complement these estimates with measures (albeit imperfect and partial) of U.S. exposures on a nationality basis. Our methodology for both sets of data, described below, follows the one outlined in Chari, Converse et al (2025).

Residence-based statistics

For **U.S. portfolio investment liabilities** (equity and debt), we have the results of an annual security-level survey conducted by the Fed and the U.S. Treasury. However, the survey suffers from an important "custodial bias": it is difficult for U.S. statisticians to infer the ultimate holder of U.S. financial instruments held in custody outside the United States, which tend to inflate

reported U.S. liabilities vis-à-vis certain financial centers. For this reason, we complement the U.S. liability survey with partner-country data on portfolio holdings in the United States, from the IMF's Coordinated Portfolio Investment Survey (CPIS), and integrate the latter with estimates of foreign exchange reserves held in U.S. securities, since those are not included in the portfolio debt holdings reported by CPIS.

To illustrate the custodial bias, U.S.-source statistics report some $800 billion in US debt securities held by Belgium in 2023, while Belgian statistics report holdings of U.S. debt securities which are just above $20 billion. Adding an estimate of the modest foreign exchange reserves held in U.S. securities keeps the total under $30 billion. The difference reflects the presence in Belgium of Euroclear, a very large custodian, holding securities on behalf of a variety of international if investors, including official ones.[31] As discussed in Milesi-Ferretti (2024b), the United Kingdom is another notable example of a country with large discrepancies between U.S.-reported liabilities and foreign-reported claims on the U.S. While for other countries some of these discrepancies are offset in the opposite direction, one overall consequence of using partner-country data to complement the U.S. liability survey is that some holdings of U.S. equity and debt securities are classified as having an unknown foreign counterpart, even though U.S. statistics provide a complete geographical breakdown of (immediate) holders of U.S. securities.

For **FDI liabilities,** we rely on U.S. bilateral data from the Bureau of Economic Analysis, which—as is the case for assets—is reported at historical cost. This implies a sizable difference with the headline FDI statistics reported in the U.S. IIP, which are estimated at market value but not available on a bilateral basis.

Finally, for **other investment liabilities** we rely on bilateral data on loans and deposits liabilities of U.S. banks as reported to the Bank of International Settlements (BIS) and add claims on U.S nonbanks reported by partner countries' banks to the BIS. One important item of U.S. other investment liabilities which is not included in this bilateral breakdown is U.S. currency holdings, estimated at almost $1.5 trillion in 2023 (see Judson, 2024). Countries such as Argentina,

[31] Most holdings of euro area bonds by the Russian central bank at the time of the Russian invasion of Ukraine in 2022, which were subsequently frozen, were held at Euroclear.

Mexico, Russia, and Venezuela likely account for an important share of these holdings but reliable estimates are difficult to assemble.[32]

Bilateral data on a nationality basis

As mentioned in the introduction, these data have known shortcomings. For portfolio data, two are particularly salient. The first is that it is difficult for U.S. statisticians to infer the ultimate holder of U.S. financial instruments held in custody outside the United States. The second is that residence-based statistics can fail to capture bilateral exposures properly: for instance, if a U.S. resident buys a bond issued in the Netherlands by the Brazilian oil company Petrobras, U.S. statistics will record a claim on the Netherlands, rather than on Brazil. Similarly, if she purchases a share of a Cayman-domiciled hedge fund she will hold a claim on that economy in the statistics, even though the fund in question may be investing in the U.S. We try to address these shortcomings, albeit in a partial way for portfolio investment and for FDI.

For **U.S. portfolio liabilities**, we try to address the bias resulting from large investment in U.S. securities from investment funds based in Ireland, Luxembourg, and the Cayman Islands.

- For Irish and Luxembourg funds, we use data constructed by Beck et al. (2024) which identify those U.S. portfolio instruments belonging to funds owned by euro area residents vs nonresidents (via Irish and Luxembourg funds). The equity and debt securities indirectly held by euro area nonresidents are hence subtracted from euro area claims on the U.S. and re-attributed to (unfortunately unidentified) international investors.
- For Cayman Islands-based funds, we use data from the CPIS, the Cayman Islands Monetary Authority (CIMA), the U.S. Security and Exchange Commission, together with estimates constructed by Coppola et al. (2022), to estimate rough equity positions in Cayman-based funds (see Chari et al, 2025 for details). We then re-attribute the CPIS- and CIMA-reported holdings of portfolio instruments by such funds around the world

[32] Other components of other investment liabilities are not included in the bilateral data are liabilities for the SDR as well as some liabilities of the general government (to the extent that they are not captured in partner-country banking data).

(including, importantly, in the United States) to these investors, in proportion to their estimated holdings of Cayman Islands fund shares.

Overall, these adjustments "re-map" holdings of $6 trillion in U.S. portfolio instruments by investment funds around the world.

For **U.S. FDI liabilities**, we use bilateral data published by the Bureau of Economic Analysis on direct investment in the United States from an ultimate beneficial owner (UBO) basis. This allows to identify the domicile of the entity that ultimately controls the affiliate investing in the United States, even if it does so indirectly. Changes are less dramatic than those for portfolio instruments and involve primarily a reduction in liabilities to euro area countries and Caribbean economies, with some of these re-allocated to domestic investors and others to investors from Canada, Japan, and emerging market economies.

2.2 Country classification for holders of Treasury securities

To undertake the country-by-country analysis in Section 3.2, we first identify a group of 40 countries that have, on average, held the largest portfolio of Treasury securities since 2000 (see Appendix 1). These account for over 94 percent of total holdings of U.S. Treasuries during the sample period. In this group, we then identify 19 countries for which official holdings represent the lion's share of their total Treasury holdings, using three sources of data:

- U.S. data on holders of Treasury securities.
- The CPIS data on holdings of U.S. portfolio debt securities (which excludes holdings by the central bank). Some countries also report portfolio debt holdings by sector of issuer, which allows us to pin down more precisely their holdings of Treasury securities excluding those of the central bank.
- IMF data on foreign exchange reserves held in securities, as well as information on the share of reserves held in U.S dollars, are available from the IMF and from estimates provided in Arslanalp et al. (2022) and Ito and McCauley (2020).

The clearest cases are those of countries for which the U.S. reports holdings of Treasury securities much in excess of holdings of U.S. debt securities by the private sector reported to

CPIS, and in which Treasury holdings are consistent with the size of foreign exchange reserves held in U.S. dollars. Examples are countries like Brazil and India: the US reports average holdings of Treasuries of $184 billion on average, while Brazil reports average private sector bond holdings (not just Treasuries) of $3.3 billion. Most other cases of dominant official holdings are similarly straightforward: they include Chile, Colombia, and Mexico in Latin America, Poland, Russia, and Turkey in Europe (all reporting very low private sector holdings of US bonds), China, Indonesia, Philippines, Thailand, and Vietnam in emerging Asia, Iraq, Kuwait, Saudi Arabia, and the United Arab Emirates in the Middle East (some with very large holdings of their sovereign wealth funds), and Norway in Europe (total Treasuries held by its sovereign wealth fund, which is included in CPIS reporting, are very close to U.S.-reported holdings of Treasuries by Norwegian residents).

The last country classified as having mostly official holdings is South Korea. Its average holdings of Treasuries are broadly in line with average private sector holdings of U.S. bonds. However, US-source data also reports very large Korean holdings of agency and corporate bonds, almost as large as total private sector-held U.S. bonds, which in turn suggests that private sector Treasury holdings are low. This is consistent with the large reserves held by the central bank, mostly in securities and reportedly with a large percentage of dollar holdings.

Following the same methodology, we classify another 8 countries as having both sizable official and sizable private holdings. These include Israel, Japan, Spain, Sweden, Switzerland, Hong Kong, Singapore, and Taiwan. Japan has large foreign exchange reserves and large holdings of U.S. Treasuries (both over $900 bn on average during the sample period), and similarly large private sector holdings of U.S. bonds. U.S.-reported holdings of agency and corporate bonds are over 40 percent of the holdings of Treasuries. This suggests that Treasuries held as reserves are likely most of their holdings, given that some agency bonds could also be held as reserves, but non-official holdings are likely meaningful as well. Three of these countries—Hong Kong, Singapore, and Switzerland—are financial centers, but they hold substantial foreign exchange reserves, including an important portion in U.S. dollars. Spain reports its holdings of U.S. government securities to CPIS, and these average about half of the US-reported Spanish holdings of Treasuries. Sweden's Treasury holdings are slightly higher than the reported total private sector holdings of U.S. bonds, and Sweden holds foreign exchange reserves in dollar securities,

which suggests that official holdings of Treasuries are meaningful. Taiwan (which does not report to CPIS) held over $570 billion in reserves and over $1 trillion in bonds at the end of 2024, with US data reporting over $650 billion of holdings of U.S. bonds, including over $280 billion in Treasuries. Finally, Israel reports holding an average of $31 billion in Treasuries, while its CPIS holdings average $24 billion and the US reported holdings of agency and corporate bonds are around $8.5 billion. With reserves in securities averaging over $80 billion, official holdings of Treasuries are likely the majority but the data on overall holdings of US bonds and US data on agency and corporate bonds suggests also some private sector Treasury holdings.

Of the remaining countries, Bermuda, the British Virgin Islands, the Cayman Islands, Belgium, Ireland, Luxembourg, and the United Kingdom are classified as financial centers. In Belgium's case, this reflects the importance of holdings of U.S. Treasuries at Euroclear on behalf of international investors. The remaining countries (Australia, Canada, France, Germany, Italy, and the Netherlands) are classified as having mostly private holdings.

Appendix 3. Summary statistics

Table 1 Variables

	N	Mean	SD	Min	Max
Foreign Official Share of U.S. Marketable Treasury Securities (%)	102	27.37	7.37	14.36	38.84
Ln Real Exchange Rate (US vs. AEs))	101	4.59	0.13	4.36	4.80
FX Reserves (% of World GDP)	102	11.18	2.96	5.30	15.37
Federal Reserve UST share (%)	102	17.23	3.64	7.58	25.02
RORO index (Z-score)	89	0.01	0.27	-0.46	1.27
Geopolitical Fragmentation Index	97	-0.33	0.40	-0.96	0.76

Note: The table reports summary statistics for the quarterly observations used in Table 1.

Table 2 variables

	N	Mean	SD	Min	Max
Foreign Official Share of U.S. Marketable Treasury Securities (%)	7,489	1.18	2.43	0.00	17.37
Ln Real Exchange Rate (US vs. AEs))	7,503	4.59	0.13	4.36	4.82
Bilateral Real Exchange Rate	7,375	4.59	0.17	3.86	5.12
FX Reserves (% of World GDP)	7,546	0.36	0.66	0.02	5.13
Federal Reserve share of U.S. Marketable Treasury Securities (%)	7,574	17.36	3.61	7.58	25.02
RORO index (Z-score)	6,667	0.00	0.26	-0.78	1.61
Geopolitical Fragmentation Index	7,142	-0.31	0.41	-0.96	0.76
Geopolitical Index (Ideal Points)	6,918	2.40	0.79	0.13	4.37

Note: The table reports summary statistics for the monthly observations used in Table 2.

Table 3 Variables

	N	Mean	SD	Min	Max
Foreign Private share of U.S. Marketable Treasury Securities (%)	102	14.12	1.78	10.69	19.18
Ln Lagged Real Exchange Rate (US vs. AEs)	101	4.59	0.13	4.36	4.81
U.S. Marketable Debt Ratio (% of Global Bond Market)	102	17.23	3.64	7.58	25.02
Federal Reserve share of U.S. Marketable Treasury Securities (%)	100	17.94	2.89	10.82	22.43
Foreign Official share of U.S. Marketable Treasury Securities (%)	102	27.37	7.37	14.36	38.84
Geopolitical Fragmentation Index	97	-0.33	0.40	-0.96	0.76
RORO index (Z-score)	89	0.01	0.27	-0.46	1.27

Note: The table reports summary statistics for the quarterly observations used in Table 3.