Passive Recyclers and Strategic Holders: Foreign Sovereign Demand and U.S. Treasury Yield Dynamics, 2003–2026

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Abstract

The Global Savings Glut hypothesis posits that foreign sovereign recycling of trade surpluses into U.S. Treasury markets suppresses American long-term interest rates. We provide a comprehensive country-level empirical test of this hypothesis using quarterly Treasury International Capital data for six major sovereign holders from 2003Q1 to 2026Q1. Employing OLS regression and Granger causality analysis, we find that aggregate foreign demand significantly suppresses U.S. ten-year yields even after controlling for Federal Reserve policy and dollar strength, validating the core savings glut mechanism. However, country-level results reveal sharp heterogeneity. We identify two distinct behavioral categories: passive recyclers, including Japan, Saudi Arabia, and Brazil, whose buying mechanically suppresses yields contemporaneously, and strategic holders, most notably China and France, whose holdings exhibit a positive contemporaneous relationship with yields — with Granger causality analysis confirming that China's holdings predictively precede yield movements across all four quarterly lags tested — suggesting deliberate market timing rather than passive surplus recycling suggesting deliberate market timing rather than passive surplus recycling. Contrary to prevailing de-dollarization narratives, we find the foreign demand channel strengthened significantly after 2020, consistent with rising U.S. fiscal borrowing needs outpacing any marginal shift away from dollar assets. These findings carry implications for U.S. fiscal sustainability, Federal Reserve

monetary transmission, and the geopolitical dimension of sovereign Treasury portfolio management.

1. Introduction

The question of who funds American debt has never carried greater urgency. The United States federal government has accumulated nearly 36 trillion dollars in outstanding debt obligations, with annual interest payments surpassing one trillion dollars for the first time in 2024. As domestic savings remain structurally insufficient to absorb this borrowing, the United States has relied heavily on foreign sovereign demand for Treasury securities to finance its fiscal deficits at manageable cost. Whether this foreign demand measurably suppresses U.S. long-term interest rates — and if so, which foreign holders are responsible — is therefore a question of profound consequence for monetary policy, fiscal sustainability, and international financial stability.

The intellectual foundation for this inquiry is Bernanke's (2005) Global Savings Glut hypothesis, one of the most influential and contested ideas in modern macroeconomics. Bernanke argued that a structural excess of savings in emerging market economies and oil-exporting nations — accumulated following the 1997 Asian financial crisis and amplified by the commodity boom of the early 2000s — was being systematically recycled into U.S. Treasury markets, suppressing American long-term interest rates below levels that domestic fundamentals alone would justify. This mechanism, he argued, explained what Federal Reserve Chairman Alan Greenspan (2005) famously described as the "conundrum" of the mid-2000s: the puzzling persistence of low long-term yields during a period of robust U.S. economic growth and successive Federal Reserve rate increases. The hypothesis attracted immediate and substantial academic attention. Caballero, Farhi, and Gourinchas (2008) provided theoretical foundations for global imbalances driving U.S. asset demand, while Obstfeld and Rogoff (2005) examined the sustainability of the associated current account dynamics. Gourinchas and Rey (2007) extended the framework by documenting the United States' unique role as global financial intermediary, borrowing short in foreign currency and investing long in domestic assets — an arrangement sustained in part by persistent foreign sovereign appetite for U.S. Treasury securities.

Empirical testing of the Global Savings Glut mechanism has produced supportive but incomplete evidence. Warnock and Warnock (2009) provide perhaps the most direct empirical test, estimating that foreign official purchases of U.S. Treasury securities reduced ten-year yields by approximately 80 basis points at peak accumulation. Beltran et al. (2013) confirm this finding using Treasury International Capital data, documenting a robust negative relationship between foreign official holdings and U.S. long-term yields across multiple specifications. However, both studies share a critical limitation: they treat aggregate foreign sovereign demand as a

homogeneous phenomenon, implicitly assuming that all foreign holders recycle surpluses passively and mechanically into Treasury markets regardless of yield levels, geopolitical conditions, or domestic portfolio objectives. This assumption, we argue, is empirically incorrect and theoretically unjustified.

Foreign sovereign holders of U.S. Treasury securities differ fundamentally in their motivations and portfolio management behavior. Aizenman and Lee (2007) distinguish between precautionary and mercantilist motives for reserve accumulation, noting that export-oriented economies accumulate reserves as a structural byproduct of current account surpluses rather than active portfolio decisions. This characterization accurately describes Japan and Saudi Arabia, whose Treasury holdings grow mechanically with export revenues and oil proceeds respectively. China, by contrast, has long been recognized as managing its external portfolio with strategic deliberateness, adjusting holdings in response to bilateral diplomatic conditions, domestic monetary objectives, and yield dynamics (Eichengreen, 2011). Treating these fundamentally different categories of holders as equivalent obscures the heterogeneous transmission mechanisms through which foreign sovereign demand actually operates in U.S. Treasury markets.

This paper addresses this gap directly. We provide a comprehensive country-level empirical test of the Global Savings Glut hypothesis, distinguishing for the first time between what we term passive recyclers and strategic holders. Using quarterly Treasury International Capital data for six major sovereign holders — Japan, China, India, Saudi Arabia, France, and Brazil — over the period 2003Q1 to 2026Q1, we employ OLS regression and Granger causality analysis to examine the relationship between country-level Treasury holdings and U.S. ten-year yields, controlling for Federal Reserve policy, broad dollar strength, and financial conditions. The sample period is deliberately chosen to span the full arc of the Global

Savings Glut era, from its emergence in the early 2000s commodity boom through the post-pandemic fiscal expansion and the subsequent de-dollarization debate.

Our findings reveal a richer and more nuanced picture than the existing literature captures. At the aggregate level, total foreign sovereign demand significantly suppresses U.S. ten-year yields even after controlling for Federal Reserve policy and dollar strength, validating the core savings glut mechanism documented by Warnock and Warnock (2009) and Beltran et al. (2013). However, country-level decomposition reveals sharp behavioral heterogeneity. Passive recyclers — Japan, Saudi Arabia, and Brazil — exhibit negative contemporaneous relationships between their holdings and U.S. yields, consistent with the mechanical surplus recycling story Bernanke (2005) described. Strategic holders — most notably China and France — exhibit positive contemporaneous relationships, appearing to increase holdings precisely when yields are already elevated. Granger causality testing reveals that China's holdings predictively precede yield movements across all four quarterly lags examined, while U.S. yields do not consistently predict subsequent Chinese buying — suggesting that China actively times the Treasury market, accumulating when yields are attractive and allowing its subsequent buying pressure to gradually compress yields over following quarters.

Perhaps our most striking finding concerns the post-2020 period. Prevailing narratives around de-dollarization — driven by the expansion of yuan-denominated oil settlements, gold reserve accumulation by Gulf central banks, and the development of alternative cross-border payment infrastructure — have widely suggested that foreign sovereign demand for U.S. Treasuries is structurally weakening. Our structural break analysis is inconsistent with this narrative. The foreign demand channel strengthened significantly after 2020, with the interaction term between total foreign

holdings and a post-2020 indicator yielding a negative and highly significant coefficient, and overall model explanatory power rising to an adjusted R-squared of 0.828. We interpret this finding as consistent with a supply-driven explanation: the extraordinary expansion of U.S. Treasury issuance following COVID-era fiscal stimulus made foreign sovereign participation more critical to yield determination than ever, overwhelming any marginal reduction in foreign appetite at the edges of the dollar system. These findings make three contributions to the existing literature. First, we extend the empirical Global Savings Glut literature by providing a systematic country-level decomposition of foreign sovereign Treasury demand effects on yields over a sample extending to 2026, incorporating the post-pandemic fiscal and monetary cycle that prior studies could not examine. Second, we contribute to the emerging literature on geopolitical finance by demonstrating that China's Treasury portfolio management exhibits characteristics consistent with strategic market timing — a finding with direct implications for debates around the potential deployment of Treasury holdings as a geopolitical instrument in the context of U.S.-China economic competition. Third, we contribute to the de-dollarization literature by providing empirical evidence that, contrary to widespread expectation, the structural role of foreign sovereign demand in U.S. Treasury markets appears to have intensified rather than diminished in the post-pandemic era, suggesting that fiscal dynamics may dominate any marginal currency diversification occurring at the periphery of the international monetary system.

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature on the Global Savings Glut hypothesis, foreign sovereign demand, and de-dollarization. Section 3 describes our data sources and empirical methodology. Section 4 presents our main regression results and Granger causality findings. Section 5 discusses the implications of our

passive recycler and strategic holder framework. Section 6 concludes with policy implications and directions for future research

2. Literature Review

2.1 The Global Savings Glut Hypothesis and Its Debate

Bernanke's (2005) Global Savings Glut hypothesis emerged as the dominant framework for explaining the paradox of persistently low U.S. long-term interest rates during the mid-2000s expansion. Bernanke argued that structural excess savings in emerging market economies — accumulated as a precautionary response to the 1997–1998 Asian financial crisis — combined with oil export surpluses in commodity-exporting nations to generate a sustained excess of global savings over global investment. This surplus, he contended, was systematically channeled into U.S. Treasury markets, compressing long-term yields below levels consistent with domestic U.S. fundamentals. The hypothesis provided an influential supply-side complement to the demand-side explanations of low yields that had dominated prior discourse, and offered a coherent account of what Greenspan (2005) described as the yield "conundrum."

The hypothesis attracted both theoretical elaboration and critical scrutiny. Caballero, Farhi, and Gourinchas (2008) provided rigorous theoretical foundations, modeling a global equilibrium in which a shortage of safe financial assets in emerging economies generates persistent capital flows toward the United States, suppressing yields and sustaining current account imbalances simultaneously. Obstfeld and Rogoff (2005) examined the broader sustainability of global imbalances associated with savings glut dynamics, raising concerns about the long-term viability of the recycling arrangement. Gourinchas and Rey (2007) reframed the United States' role in the global financial system as that of a world banker — borrowing short in foreign currency and investing long in higher-yielding foreign assets — an arrangement made possible precisely by the persistent foreign sovereign appetite for U.S. Treasury securities that Bernanke described.

Critics of the hypothesis emphasized its incomplete treatment of domestic monetary policy as a driver of low yields. Taylor (2007) argued that the Federal Reserve's own accommodative policy stance during the early 2000s was the primary explanation for low long-term rates, and that attributing yield compression to foreign flows risked misidentifying the causal mechanism. Coval and Stafford (2007) raised concerns about whether foreign sovereign demand was truly independent of domestic U.S. financial conditions or whether both reflected common global factors. These critiques highlight the central empirical challenge in this literature: isolating the independent contribution of foreign sovereign demand to yield determination after controlling for domestic monetary policy — a challenge our empirical design directly addresses.

2.2 Empirical Evidence on Foreign Holdings and Treasury Yields

Direct empirical testing of the Global Savings Glut mechanism has produced a consistent but narrowly specified body of evidence. Warnock and Warnock (2009) provide the most widely cited empirical estimate, using monthly Treasury International Capital data to show that foreign official purchases reduced U.S. ten-year yields by approximately 80 basis points at the peak of accumulation in the mid-2000s. Their identification strategy exploits variation in the timing and magnitude of foreign official purchases to isolate demand effects from concurrent changes in Federal Reserve policy, representing a methodological advance over earlier reduced-form approaches. Beltran et al. (2013) extend this analysis using a broader sample and more granular TIC data, confirming a robust negative relationship between foreign official holdings and U.S. long-term yields across multiple specifications and robustness checks. Both studies represent important empirical contributions, but share a fundamental limitation: they analyze aggregate foreign official demand without distinguishing between individual country holders, implicitly treating all foreign sovereign buyers as homogeneous agents engaged in equivalent recycling behavior.

Krishnamurthy and Vissing-Jorgensen (2012) approach the question from a different angle, documenting the unique role of Treasury securities as the preferred safe asset of global investors and showing that aggregate demand for Treasuries — from both domestic and foreign sources — carries significant yield implications through a safety and liquidity premium channel. Their work suggests that the mechanism through which foreign sovereign buying affects yields operates partly through this premium channel rather than purely through supply-demand mechanics, providing a theoretical rationale for why foreign demand effects might persist even after controlling for conventional macroeconomic determinants of yields.

2.3 Reserve Accumulation Motives

Understanding why foreign sovereigns accumulate U.S. Treasury holdings requires engaging with the broader literature on international reserve management. Aizenman and Lee (2007) distinguish between two primary motives for reserve accumulation: precautionary motives, under which countries hold reserves as insurance against sudden stops in capital flows or currency crises, and mercantilist motives, under which export-oriented economies deliberately suppress currency appreciation by accumulating dollar assets as a byproduct of maintaining export competitiveness. These two motives carry different implications for the sensitivity of reserve accumulation to yield levels. Countries accumulating reserves for precautionary reasons may be relatively insensitive to yield dynamics — they hold Treasuries because they need safe assets, not because yields are attractive. Countries accumulating for mercantilist reasons may similarly be yield-insensitive, purchasing Treasuries as a mechanical consequence of foreign exchange intervention rather than active portfolio optimization. Jeanne and Rancière (2011) formalize the precautionary motive in a welfare-theoretic framework, deriving optimal reserve levels as a function of crisis probability, output loss, and the cost of holding reserves relative to alternative investments. Their framework implies that precautionary reserve holders will maintain Treasury positions relatively independent of yield fluctuations, consistent with the passive recycler behavior we document for Japan and Saudi Arabia. Rodrik (2006) provides a cost-benefit analysis of reserve accumulation, estimating significant social costs associated with holding large foreign exchange reserves — costs that mercantilist and precautionary motives must justify. The persistence of large reserve holdings despite these costs underscores the structural rather than opportunistic nature of sovereign Treasury demand for the majority of large holders.

2.4 China's Treasury Behavior and Strategic Portfolio Management

China's management of its U.S. Treasury portfolio has attracted growing attention as both an empirical puzzle and a geopolitical concern. As the world's largest goods exporter and, until recently, the second-largest foreign holder of U.S. Treasuries, China occupies a unique position in global sovereign debt markets. Eichengreen (2011) documents the political economy of dollar dependence, noting that China's large Treasury holdings create a mutual dependency — China cannot sell without depressing the value of its remaining holdings, while the United States cannot afford to antagonize its largest creditor. This structural interdependence has been described as a form of financial deterrence, limiting the practical utility of Treasury holdings as a geopolitical weapon even while creating the theoretical possibility of their deployment.

Prasad (2014) extends this analysis in examining the structural factors sustaining dollar dominance despite widespread recognition of its costs and risks for non-U.S. economies. He argues that the absence of credible alternatives to the dollar as a global reserve currency — stemming from the inconvertibility of the Chinese renminbi and the fragmentation of the euro area — traps even strategically motivated sovereigns like China within the dollar system, constraining their portfolio choices regardless of geopolitical preferences. This trapped-buyer dynamic provides important context for interpreting the positive contemporaneous relationship between China's holdings and U.S. yields that we document — China may increase holdings in high-yield environments precisely because attractive yields make continued Treasury accumulation more tolerable despite strategic reservations.

2.5 De-dollarization: Evidence and Debate

The question of whether the structural role of the dollar in the international monetary system is declining has attracted substantial recent attention, particularly following the freezing of Russian central bank reserves in 2022 and the accelerating development of alternative payment infrastructure. Eichengreen, Mehl, and Chitu (2018) provide historical perspective, documenting the gradual erosion of the British pound's reserve currency status over the first half of the twentieth century and drawing cautious parallels to current dollar dynamics. Their analysis suggests that reserve currency transitions are protracted, multi-decade processes driven by structural shifts in trade patterns and financial market development rather than discrete geopolitical events — implying that any de-dollarization currently underway is likely to manifest gradually rather than abruptly. Gopinath and Stein (2021) examine the dollar's dominance in trade invoicing and financial markets through the lens of complementarities between dollar use in different domains, arguing that network effects and institutional inertia create powerful stabilizing forces that resist rapid displacement. Their framework predicts that de-dollarization at the margins — in bilateral trade settlements or reserve diversification at the edges — need not translate into a meaningful reduction in the dollar's role in core financial markets, including the Treasury market. This theoretical prediction is consistent with our empirical finding that the foreign sovereign demand channel in the Treasury market strengthened rather than weakened after 2020, despite simultaneous evidence of marginal de-dollarization in other domains.

2.6 Positioning This Paper

Taken together, the existing literature establishes that foreign sovereign demand suppresses U.S. Treasury yields in aggregate, that reserve accumulation is driven by a mix of precautionary and mercantilist motives, and that de-dollarization at the system level remains gradual and incomplete. What the literature has not provided is a systematic country-level decomposition of foreign sovereign demand effects that distinguishes between behaviorally distinct categories of holders — passive recyclers whose buying is mechanically driven by surplus accumulation, and strategic holders whose portfolio management reflects active yield-seeking or geopolitical calculation. This distinction, we argue, is essential for understanding the true transmission mechanism of the Global Savings Glut, the nature of China's influence in U.S. Treasury markets, and the likely trajectory of foreign sovereign demand in an era of rising U.S. fiscal borrowing needs and marginal de-dollarization pressures. Our paper fills this gap.

3. Data and Methodology

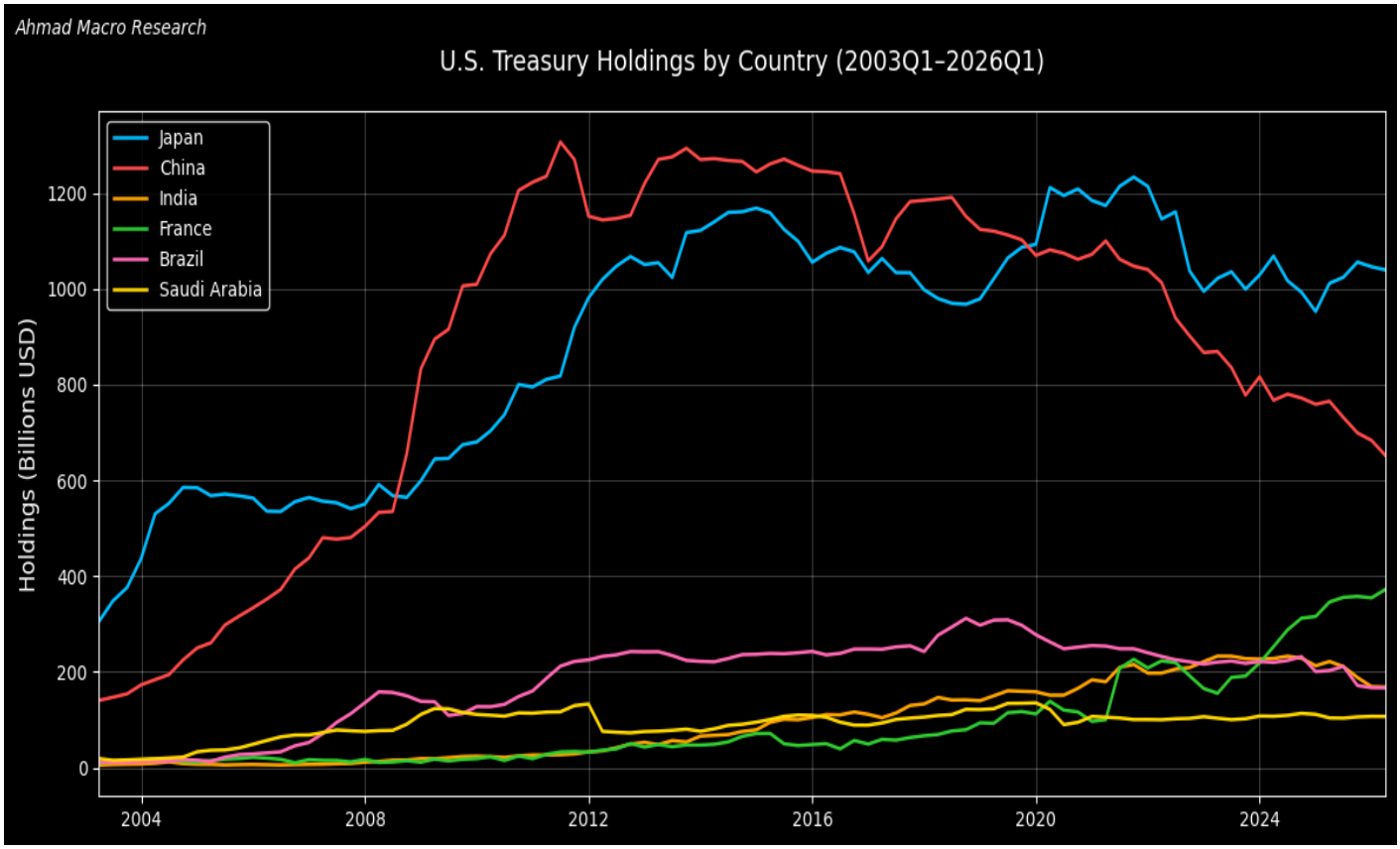


Fig:1

Quarterly U.S. Treasury holdings for six major sovereign holders, billions of USD, 2003Q1–2026Q1. Source: U.S. Treasury International Capital system via FRED. Saudi Arabia series constructed by stitching FORLTTREASPOS46612 (2003–2011) and FORLTTREASPOS45608 (2012–2026).

3.1 Data Sources and Variable Construction

Our empirical analysis employs quarterly data spanning 2003Q1 to 2026Q1, yielding 93 quarters of observations at the raw sample level. The effective estimation sample is 81 observations following the exclusion of quarters with missing values in the broad dollar index series, which begins in 2006Q1 in our dataset. All series are measured at quarter-end values and expressed in levels unless otherwise specified. Data construction and analysis are performed in Python using the statsmodels and pandas libraries in Google Colab, with all Federal Reserve series retrieved via the FRED API.

Dependent Variables

Our primary dependent variable is the U.S. ten-year Treasury yield, retrieved from FRED using ticker DGS10. The ten-year yield is the standard benchmark for U.S. long-term interest rates in the empirical macroeconomics and fixed income literatures, representing the rate most directly relevant to mortgage pricing, corporate borrowing costs, and sovereign debt sustainability assessments globally (Krishnamurthy and Vissing-Jorgensen, 2012). As a secondary dependent variable, we construct the two-year to ten-year yield spread — hereafter the 2s10s spread — as the difference between DGS10 and the two-year constant maturity Treasury yield retrieved from FRED ticker DGS2. The 2s10s spread is the most widely employed empirical measure of yield curve slope in the academic literature (Harvey, 1988; Estrella and Mishkin, 1998) and captures whether foreign sovereign demand compresses the long end of the yield curve specifically — a theoretically distinct question from whether it suppresses yield levels broadly.

Foreign Treasury Holdings

Our key independent variables are quarterly foreign sovereign holdings of U.S. Treasury securities for six major holder countries, retrieved from the

Treasury International Capital reporting system via FRED. The six countries and their respective tickers are as follows. Japan is retrieved using ticker FORLTTREASPOS42609, representing long-term Treasury securities from 1984 to 2026. China is retrieved using ticker FORTREASPOS41408, representing combined long-term and short-term Treasury holdings from 2003 to 2026. India is retrieved using ticker FORLTTREASPOS42102, representing long-term Treasury securities from 1984 to 2026. France is retrieved using ticker FORLTTREASPOS10804, representing long-term Treasury securities from 1984 to 2026. Brazil is retrieved using ticker FORLTTREASPOS30309, representing long-term Treasury securities from 1984 to 2026. Saudi Arabia is constructed as a stitched series combining ticker FORLTTREASPOS46612 covering 1984 to 2011 and ticker FORLTTREASPOS45608 covering 2012 to 2026, joined at 2012Q1 to produce a continuous quarterly series.

We note that Germany, South Korea, and Singapore — initially targeted for inclusion — do not have clean Treasury holdings series available on FRED, with available series for these countries capturing agency bonds and equity positions rather than Treasury securities. These three countries are therefore excluded from the country-level analysis.
All holdings series are reported in millions of U.S. dollars and converted to billions for presentational clarity. Monthly TIC data are converted to quarterly frequency by selecting quarter-end observations, consistent with our treatment of all other series. We construct an aggregate foreign holdings variable — hereafter total foreign — as the arithmetic sum of the six country holdings series. This constructed aggregate captures approximately 2.0 to 2.5 trillion dollars of the roughly 8 trillion dollars in total foreign official Treasury holdings reported by the U.S. Treasury during our sample period. While this constructed measure represents a partial rather than complete picture of aggregate foreign official demand, it captures the six largest and most consistently reported sovereign holders

available in our data, is internally consistent across the full sample period, and is directionally valid as a proxy for the broader foreign demand channel. We acknowledge this as a data limitation and note that results using this constructed aggregate should be interpreted as a lower-bound test of aggregate foreign demand effects.

Control Variables

We include three control variables in all specifications. The Federal Funds Rate is retrieved from FRED using ticker FEDFUNDS, representing the Effective Federal Funds Rate — the actual overnight rate at which banks lend reserves to each other, as distinct from the Federal Reserve's target range. The EFFR is the standard measure of U.S. monetary policy stance in the empirical yields literature and is expected to be positively associated with long-term yields through conventional monetary transmission channels (Gürkaynak, Sack and Swanson, 2005). The broad dollar index is retrieved from FRED using ticker DTWEXBGS, representing the trade-weighted U.S. dollar index against a broad basket of 26 trading partner currencies. We prefer the broad index over the classical DXY index — which covers only six currencies weighted heavily toward the euro and yen — because the broad index incorporates emerging market and commodity-exporting economy currencies directly relevant to our sample of sovereign holders. A stronger dollar is expected to be associated with lower U.S. yields through the safe-haven demand channel, as dollar appreciation typically coincides with capital inflows into U.S. Treasury markets (McCauley and McGuire, 2009). The National Financial Conditions Index is retrieved from FRED using ticker NFCI, published weekly by the Federal Reserve Bank of Chicago and aggregated to quarterly frequency. The NFCI summarizes conditions in money markets, debt markets, and equity markets into a single index, with positive values indicating tighter-than-average financial conditions. It is

included to control for broad financial stress conditions that may independently influence Treasury yields.

3.2 Summary Statistics

Table 1 presents descriptive statistics for all variables used in the analysis. The U.S. ten-year yield averages 3.07 percent over the estimation sample, with substantial variation ranging from 0.66 percent at the COVID-era trough to 5.15 percent at the post-pandemic peak. The 2s10s spread averages 1.05 percentage points, with negative values observed during the yield curve inversions of 2006 to 2007 and 2022 to 2023. Among sovereign holders, Japan maintains the largest average quarterly holdings at approximately 895 billion dollars, followed by China at approximately 888 billion dollars. Saudi Arabia's holdings average approximately 91 billion dollars over the sample, reflecting their more modest scale relative to Asian holders. The broad dollar index exhibits substantial variation consistent with major dollar cycle swings over the sample period, while the EFFR captures the full arc from pre-2008 conventional policy through the zero lower bound period and the post-2022 tightening cycle.

3.3 Empirical Methodology

We employ two complementary empirical methods: ordinary least squares regression for contemporaneous relationship estimation and Granger causality analysis for dynamic predictive relationship testing.

Ordinary Least Squares Regression

Our baseline empirical specification takes the following form:

$$Y_t = \beta_0 + \beta_1(TotalForeign_t) + \beta_2(EFFR_t) + \beta_3(DXY_t) + \beta_4(NFCI_t) + \varepsilon_t$$

where Y_t is the U.S. ten-year yield or the 2s10s spread in quarter t, $TotalForeign_t$ is our constructed aggregate foreign holdings proxy, $EFFR_t$ is the Effective Federal Funds Rate, DXY_t is the broad dollar index, $NFCI_t$ is the National Financial Conditions Index, and ε_t is the error term. We extend this specification to include individual country holdings in place of or alongside the aggregate measure, allowing us to identify country-specific effects.

All OLS models are estimated with heteroscedasticity-consistent HC3 standard errors following MacKinnon and White (1985), which provide reliable inference in the presence of heteroscedasticity — a concern in quarterly macroeconomic time series spanning multiple distinct monetary policy regimes. We report coefficients, robust standard errors, t-statistics, p-values, R-squared, and adjusted R-squared for all specifications.

We estimate five OLS models in total. Model 1 tests aggregate foreign demand against the ten-year yield. Model 2 tests individual country holdings simultaneously against the ten-year yield. Model 3 replaces the dependent variable with the 2s10s spread to test yield curve slope effects. Model 4 introduces a selling pressure dummy variable, defined as equal to one in quarters where a given country's holdings declined relative to the prior quarter and zero otherwise, to test for asymmetric yield effects of buying versus selling. Model 5 introduces a post-2020 binary indicator and its interaction with total foreign holdings to test for a structural break in the foreign demand channel following the COVID-era fiscal expansion and the acceleration of de-dollarization discourse.

Granger Causality Analysis

OLS regression captures contemporaneous associations between foreign holdings and yields but cannot distinguish whether foreign buying leads yield movements or responds to them. To address this identification limitation, we employ Granger causality testing (Granger, 1969), which examines whether past values of one variable improve the prediction of another variable beyond what can be predicted from the target variable's own history alone. We test two directional hypotheses: whether China's Treasury holdings Granger-cause U.S. ten-year yields, and whether U.S. ten-year yields Granger-cause China's Treasury holdings. We estimate bivariate vector autoregressive models at lags one through four quarters and report F-statistics and p-values for both directions at each lag. A finding that China holdings Granger-cause yields but yields do not consistently Granger-cause China holdings would be consistent with active market timing behavior — China's portfolio adjustments predictively preceding yield movements rather than reacting to them.

It is important to note the standard limitation of Granger causality as a predictive rather than structural causal concept (Sims, 1980). A finding of Granger causality establishes that China's holdings contain information about future yield movements beyond what yields' own history predicts — it does not establish a deep structural causal mechanism in the econometric sense. We interpret our Granger results accordingly, as evidence of predictive precedence consistent with strategic market timing behavior rather than as proof of structural causation.

Table 1: Descriptive Statistics

Sample: 2003Q1–2026Q1, Quarterly. All foreign holdings in millions of USD.

Variable	*Obs*	*Mean*	*Std Dev*	*Min*	*Max*
Foreign Treasury Holdings (millions USD)					
Japan	*93*	*895,958.38*	*252,705.87*	*305,428.00*	*1,233,622.00*
China	*93*	*887,678.74*	*358,417.59*	*140,419.00*	*1,306,951.00*
Brazil	*93*	*182,308.86*	*87,924.04*	*11,241.00*	*311,948.00*
India	*93*	*94,658.48*	*80,226.00*	*5,425.00*	*233,031.00*
Saudi Arabia	*93*	*90,716.41*	*30,009.28*	*15,277.00*	*135,311.00*
France	*93*	*89,901.61*	*98,620.76*	*9,921.00*	*372,158.00*
Total Foreign (constructed)	*93*	*2,241,222.48*	*772,263.74*	*491,584.00*	*3,071,622.00*
Dependent Variables					
US 10-Year Yield (%)	*93*	*3.07*	*1.14*	*0.66*	*5.15*

US 2-Year Yield (%)	*93*	*2.02*	*1.62*	*0.13*	*5.16*
2s10s Spread	*93*	*1.05*	*0.96*	*–1.06*	*2.82*
Control variables					
Fed Funds Rate (%)	*93*	*1.78*	*1.90*	*0.07*	*5.33*
Broad Dollar Index	*81*	*106.36*	*12.44*	*86.48*	*129.28*
NFCI	*93*	*-0.34*	*0.56*	*-0.80*	*2.71*

Note: Total Foreign is constructed as the arithmetic sum of six country holdings series. The Broad Dollar Index has 81 observations as it begins 2006Q1. All regression models use 81 observations after dropping quarters with missing DXY values. Foreign holdings are sorted by mean holdings in descending order.

4. Results

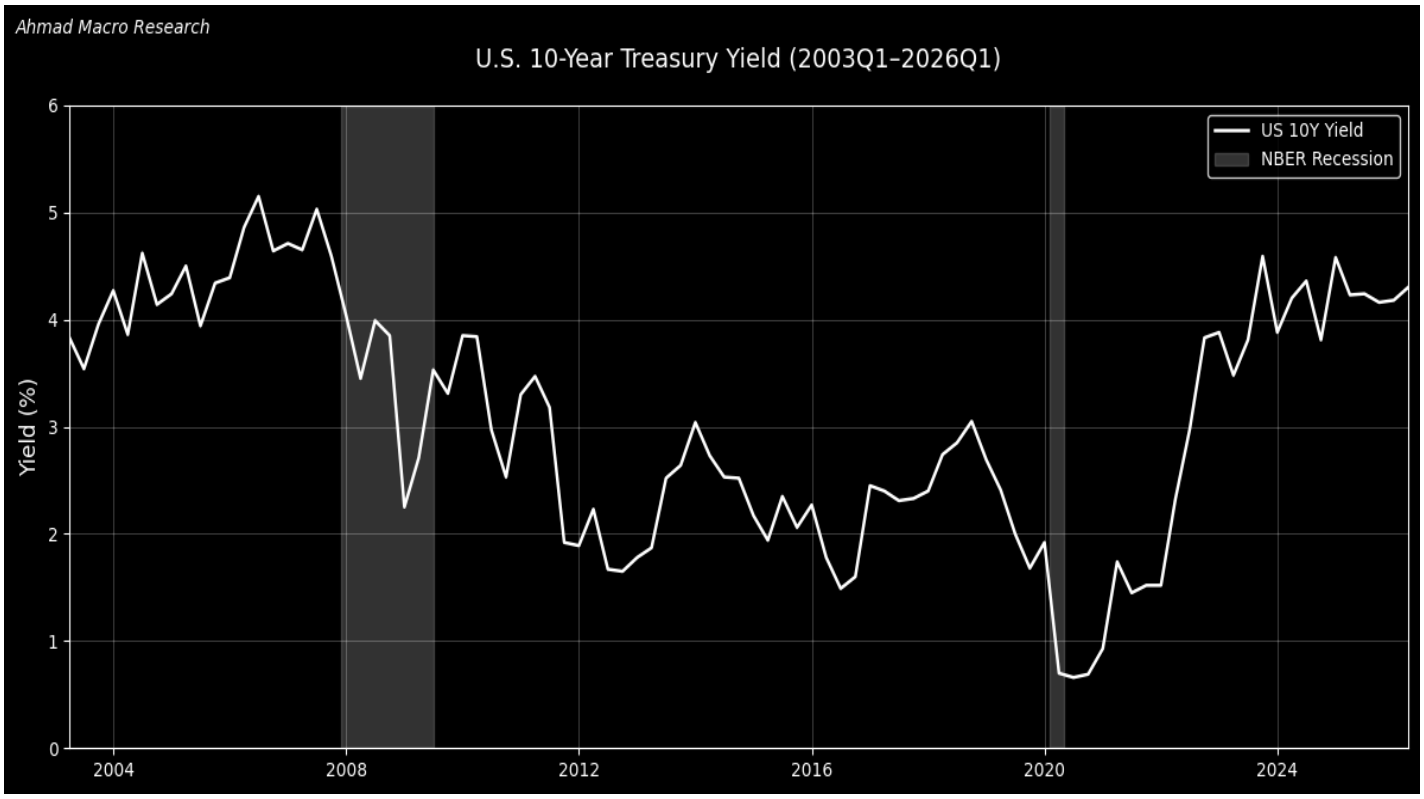


Fig:2

U.S. ten-year constant maturity Treasury yield, quarterly, 2003Q1–2026Q1. Source: Federal Reserve Economic Data (FRED), ticker DGS10. Shaded regions indicate NBER recession periods

4.1 Aggregate Foreign Demand and U.S. Treasury Yields

Table 2 presents the results of Model 1, which tests whether aggregate foreign sovereign demand for U.S. Treasury securities suppresses the ten-year yield after controlling for Federal Reserve policy, dollar strength, and financial conditions. The model explains 75.19 percent of the variation in U.S. ten-year yields over the estimation sample, with an adjusted R-squared of 0.7388 and an F-statistic of 64.47 significant at the one percent level, indicating strong overall model fit.

The coefficient on total foreign holdings is negative and statistically significant at the five percent level, with a coefficient of -6.073×10^{-7} (robust SE = 2.397×10^{-7}, t = −2.534, p = 0.011). This finding indicates that greater aggregate foreign sovereign accumulation of U.S. Treasury securities is associated with meaningfully lower ten-year yields, providing direct empirical support for the core mechanism of Bernanke's (2005) Global Savings Glut hypothesis. To interpret the economic magnitude, a one standard deviation increase in total foreign holdings — approximately 772 billion dollars based on Table 1 — is associated with a yield reduction of approximately 47 basis points, a meaningful suppression effect given the 114 basis point standard deviation of the ten-year yield over the sample period.

The Federal Funds Rate carries the largest and most precisely estimated effect, with a coefficient of 0.398 (robust SE = 0.061, t = 6.506, p = 0.000), confirming that U.S. monetary policy is the dominant contemporaneous driver of long-term yields. The broad dollar index enters with a negative coefficient of −0.013 (p = 0.225), consistent with the theoretical expectation that dollar strength attracts capital inflows that compress yields, though this effect does not reach conventional significance thresholds in the aggregate specification. The NFCI is statistically insignificant in this model (p = 0.399), suggesting that aggregate financial conditions do not independently predict yield levels once monetary policy and dollar dynamics are controlled for

Table 2: Model 1 — Aggregate Foreign Demand

Dependent Variable: US 10-Year Treasury Yield
OLS with HC3 Robust Standard Errors, 81 Observations, 2006Q1–2026Q1

Variable	*Coefficient*	*Robust SE*	*t-stat*	*p-value*
Constant	*5.069*	*0.723*	*7.011*	*0.000*
Total Foreign Holdings ($\times 10^{-6}$)	*–0.607*	*0.240*	*–2.534*	*0.011*
Fed Funds Rate	*0.398*	*0.061*	*6.506*	*0.000*
Broad Dollar Index	*–0.013*	*0.011*	*–1.214*	*0.225*
NFCI	*–0.100*	*0.119*	*–0.844*	*0.399*

R^2 = 0.7519 | Adjusted R^2 = 0.7388 | F-stat = 64.47 (p = 0.000)
Note: Total Foreign Holdings is the sum of six country holdings series — Japan, China, India, France, Brazil, and Saudi Arabia — expressed in millions of USD. Coefficients scaled by 10^{-6} for presentational clarity.

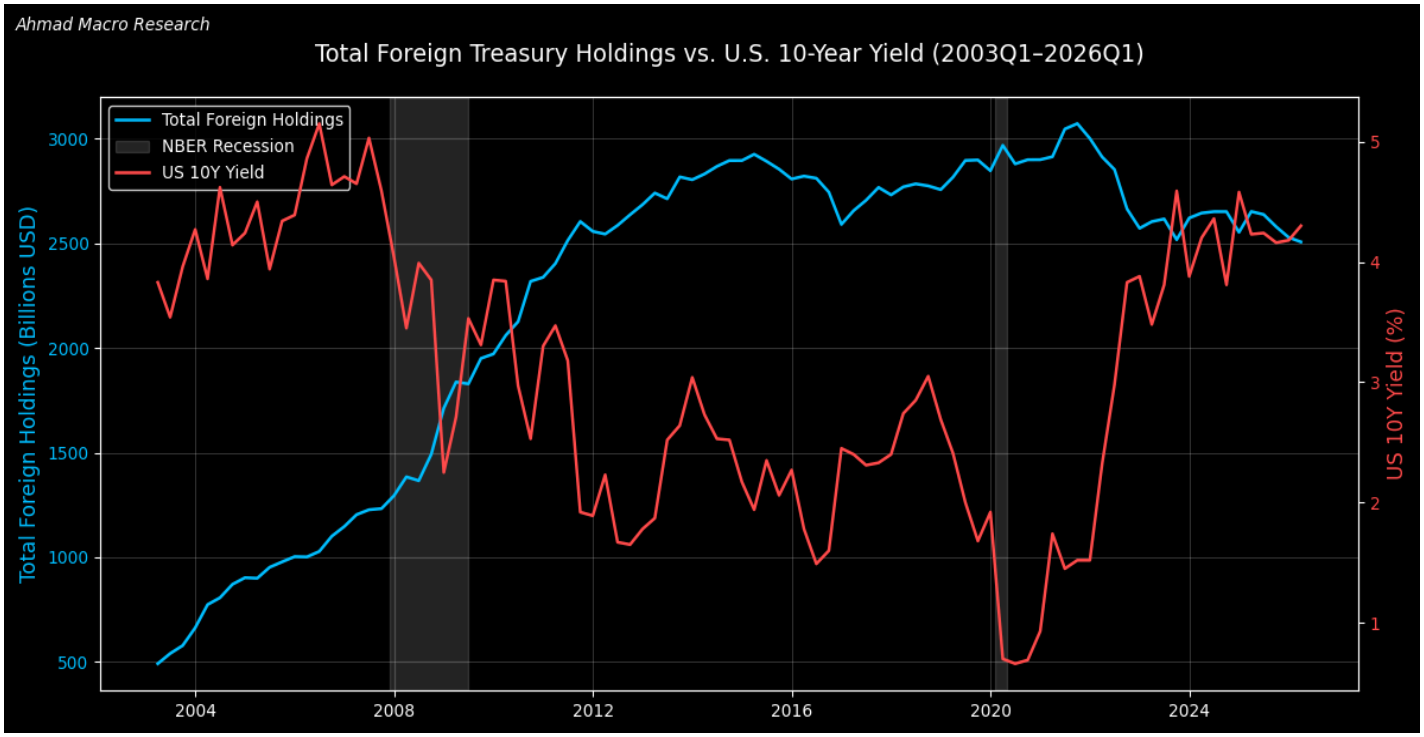


Fig:3

Total foreign holdings is the arithmetic sum of six country holdings series expressed in Billions of USD, plotted against the U.S. ten-year Treasury yield. The inverse relationship between foreign holdings and yields is consistent with the Global Savings Glut mechanism documented in Model 1. Source: FRED, U.S. Treasury TIC system.

4.2 Country-Level Heterogeneity: Passive Recyclers and Strategic Holders

Table 3 presents the results of Model 2, which disaggregates foreign holdings to the country level, allowing us to identify whether the aggregate suppression effect documented in Model 1 masks heterogeneous behavior across individual sovereign holders. The country-level specification explains 88.08 percent of yield variation, with an adjusted R-squared of 0.8657 — a substantial improvement over the aggregate model — indicating that country-level decomposition meaningfully enriches our understanding of the foreign demand channel. The F-statistic of 73.31 is significant at the one percent level.

The results reveal sharp and economically meaningful heterogeneity across sovereign holders, which we organize within our passive recycler and strategic holder framework. Among passive recyclers, Japan exhibits a negative and highly significant coefficient of -4.524×10^{-6} (robust SE = 8.628×10^{-7}, t = –5.244, p = 0.000), representing the strongest yield suppression effect among all individual country variables. This finding is consistent with Japan's role as the world's largest foreign holder of U.S. Treasuries, accumulating reserves mechanically as a byproduct of its persistent current account surplus and export-oriented economic structure. Saudi Arabia similarly exhibits a negative and significant coefficient of -1.024×10^{-5} (robust SE = 4.312×10^{-6}, t = –2.374, p = 0.018), consistent with petrodollar recycling dynamics whereby oil export revenues are systematically channeled into U.S. Treasury markets. Brazil also enters with a negative and significant coefficient of -5.360×10^{-6} (robust SE = 2.062×10^{-6}, t = –2.599, p = 0.009), consistent with reserve accumulation driven by commodity export surpluses. These three passive recyclers collectively exhibit the negative yield suppression relationship predicted by the Global Savings Glut hypothesis.

In sharp contrast, China and France exhibit positive and statistically significant coefficients. China's coefficient of $+2.733 \times 10^{-6}$ (robust SE =

6.741 × 10^{-7}, t = +4.055, p = 0.000) and France's coefficient of +5.494 × 10^{-6} (robust SE = 9.218 × 10^{-7}, t = +5.960, p = 0.000) indicate that their holdings are positively associated with contemporaneous yield levels — rising when yields are already elevated rather than mechanically suppressing them. This pattern is inconsistent with passive recycling behavior and instead suggests that these holders increase Treasury positions in high-yield environments, either as yield-seeking behavior or in response to common macroeconomic factors that simultaneously drive yields upward. India's coefficient is positive but statistically insignificant (p = 0.377), providing no reliable evidence of either suppression or strategic behavior for this holder.

The Federal Funds Rate remains highly significant at 0.362 (p = 0.000), while the broad dollar index and NFCI lose significance in the country-level specification, suggesting that country-level holdings absorb some of the variation previously attributed to these controls in the aggregate model.

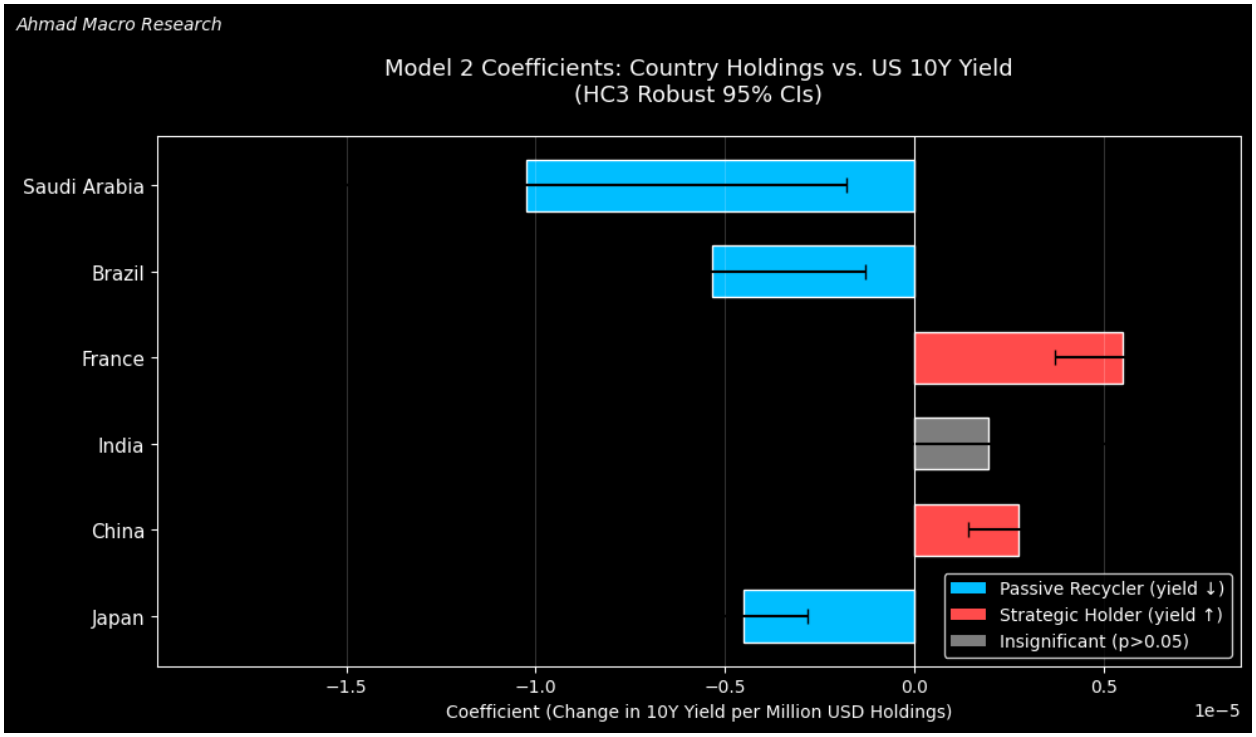


Fig:4

OLS coefficients from Model 2 for individual country Treasury holdings against U.S. ten-year yield, with 95% confidence intervals based on HC3 robust standard errors. Negative coefficients indicate yield suppression — passive recycler behavior. Positive coefficients indicate holdings positively associated with contemporaneous yield levels — strategic holder behavior. India's coefficient is statistically insignificant at the five percent level.

Table 3: Model 2 — Country-by-Country Holdings

Dependent Variable: US 10-Year Treasury Yield
OLS with HC3 Robust Standard Errors, 81 Observations, 2006Q1–2026Q1

Variable	*Coefficient*	*Robust SE*	*t-stat*	*p-value*	*Significant*
Constant	*5.910*	*1.281*	*4.613*	*0.000*	✅
Japan (×10⁻⁶)	*−4.524*	*0.863*	*−5.244*	*0.000*	✅
China (×10⁻⁶)	*+2.733*	*0.674*	*+4.055*	*0.000*	✅
India (×10⁻⁶)	*+1.948*	*2.207*	*+0.883*	*0.377*	❌
France (×10⁻⁶)	*+5.494*	*0.922*	*+5.960*	*0.000*	✅
Brazil (×10⁻⁶)	*−5.360*	*2.062*	*−2.599*	*0.009*	✅
Saudi Arabia (×10⁻⁶)	*−10.239*	*4.312*	*−2.374*	*0.018*	✅

Fed Funds Rate	*0.362*	*0.071*	*5.111*	*0.000*	✅
Broad Dollar Index	*–0.006*	*0.012*	*–0.554*	*0.580*	❌
NFCI	*–0.141*	*0.150*	*–0.946*	*0.344*	❌

R^2 = 0.8808 | Adjusted R^2 = 0.8657 | F-stat = 73.31 (p = 0.000)
Note: All holdings coefficients scaled by 10^{-6}. Positive coefficient indicates holdings positively associated with yields contemporaneously. Negative coefficient indicates holdings suppress yields contemporaneously. Significance threshold p < 0.05.

4.3 Yield Curve Slope Effects

Table 4 presents Model 3, which replaces the ten-year yield level with the 2s10s spread as the dependent variable to test whether foreign sovereign demand specifically compresses the long end of the yield curve — a theoretically distinct question from whether it suppresses yield levels broadly. The model achieves an adjusted R-squared of 0.7679 with an F-statistic of 46.04 significant at the one percent level, indicating strong overall fit for the yield curve slope equation.

The coefficient on total foreign holdings is positive and statistically insignificant (coefficient = 9.225×10^{-8}, p = 0.654), indicating that aggregate foreign sovereign demand does not measurably alter the slope of the yield

curve. This null result implies that foreign buying moves the entire yield curve downward broadly rather than disproportionately compressing long-end yields — a finding inconsistent with the theoretical prediction that large sovereign buyers concentrated in long-duration instruments would specifically flatten the curve. The Federal Funds Rate enters with a negative and highly significant coefficient of –0.251 (p = 0.000), confirming the well-established empirical regularity that monetary tightening flattens the yield curve by raising short rates faster than long rates. The broad dollar index also enters negatively and significantly (–0.042, p = 0.000), consistent with dollar appreciation compressing the term premium embedded in long-term yields.

Table 4: Model 3 — Yield Curve Slope

Dependent Variable: 2s10s Spread (10Y minus 2Y yield)
OLS with HC3 Robust Standard Errors, 81 Observations, 2006Q1–2026Q1

Variable	***Coefficient***	***Robust SE***	***t-stat***	***p-value***
Constant	*5.697*	*0.498*	*11.440*	*0.000*
Total Foreign Holdings ($\times 10^{-6}$)	*+0.092*	*0.206*	*+0.449*	*0.654*
Fed Funds Rate	*–0.251*	*0.049*	*–5.144*	*0.000*
Broad Dollar Index	*–0.042*	*0.008*	*–5.537*	*0.000*
NFCI	*+0.069*	*0.108*	*+0.633*	*0.527*

R^2 = 0.7795 | Adjusted R^2 = 0.7679 | F-stat = 46.04 (p = 0.000)
Note: The 2s10s spread is constructed as DGS10 minus DGS2. A positive spread indicates an upward-sloping yield curve. A negative spread indicates inversion.

4.4 Asymmetric Effects of Buying and Selling

Table 5 presents Model 4, which tests whether episodes of foreign sovereign selling exert disproportionately larger upward pressure on yields relative to the downward pressure associated with buying — an asymmetry hypothesis motivated by the concern that coordinated or large-scale Treasury liquidations could trigger non-linear yield spikes. The model includes a selling pressure dummy equal to one in quarters where aggregate foreign holdings declined quarter-over-quarter, and an interaction term between this dummy and total foreign holdings.

Neither the selling pressure dummy (coefficient = 1.380, p = 0.433) nor the interaction term (coefficient = -3.998×10^{-7}, p = 0.540) is statistically significant, providing no evidence of asymmetric yield effects. Selling episodes are associated with yields symmetrically — their yield impact is not measurably larger in magnitude than equivalent buying episodes. The aggregate foreign holdings variable retains its negative and significant coefficient of -5.605×10^{-7} (p = 0.017) consistent with Model 1, confirming the robustness of the baseline suppression result. These findings suggest that while aggregate foreign demand does suppress yields, the current

pattern of foreign selling does not constitute a non-linear threat to Treasury market stability — at least within the range of selling episodes observed in our sample

Table 5: Model 4 — Asymmetry Test

Dependent Variable: US 10-Year Treasury Yield
OLS with HC3 Robust Standard Errors, 81 Observations, 2006Q1–2026Q1

Variable	***Coefficient***	***Robust SE***	***t-stat***	***p-value***
Constant	*5.339*	*0.754*	*7.078*	*0.000*
Total Foreign Holdings ($\times 10^{-6}$)	*–0.561*	*0.234*	*–2.392*	*0.017*
Selling Pressure Dummy	*+1.380*	*1.758*	*+0.785*	*0.433*
Foreign Holdings × Selling ($\times 10^{-6}$)	*–0.400*	*0.653*	*–0.612*	*0.540*
Fed Funds Rate	*+0.410*	*0.061*	*+6.716*	*0.000*
Broad Dollar Index	*–0.018*	*0.011*	*–1.639*	*0.101*
NFCI	*–0.117*	*0.114*	*–1.021*	*0.307*

R^2 = 0.7741 | Adjusted R^2 = 0.7558 | F-stat = 59.98 (p = 0.000)

Note: Selling Pressure Dummy equals one in quarters where aggregate foreign holdings declined relative to the prior quarter and zero otherwise. The interaction term Foreign Holdings × Selling tests whether selling has a disproportionately larger effect on yields than buying

4.5 Post-2020 Structural Break: Evidence of a Strengthened Channel

Table 6 presents Model 5, which directly tests whether the sensitivity of U.S. ten-year yields to foreign sovereign demand changed structurally after 2020 — the period associated with COVID-era fiscal expansion, Federal Reserve balance sheet growth, and the acceleration of de-dollarization discourse. This is our most novel empirical contribution and produces our most striking finding.

The model achieves an adjusted R-squared of 0.8280 with an F-statistic of 152.88 significant at the one percent level — the strongest overall fit of any specification we estimate. The baseline foreign holdings coefficient is negative and highly significant at -1.230×10^{-6} (robust SE = 2.314×10^{-7}, t = −5.315, p = 0.000), confirming the suppression result in the pre-2020 period. The post-2020 dummy enters with a large positive coefficient of +13.169 (robust SE = 1.994, t = 6.603, p = 0.000), capturing the broad upward shift in yield levels following the pandemic-era inflation surge and Federal Reserve tightening cycle.

Most critically, the interaction term between total foreign holdings and the post-2020 dummy enters with a negative and highly significant coefficient of -4.599×10^{-6} (robust SE = 7.196×10^{-7}, t = −6.391, p = 0.000). This coefficient indicates that the marginal yield-suppressing effect of foreign sovereign Treasury demand intensified substantially after 2020 — the opposite of what the de-dollarization narrative would predict. The combined post-2020 foreign holdings effect, summing the baseline and interaction coefficients, implies a yield suppression sensitivity approximately four times larger than in the pre-2020 period. The NFCI also achieves significance in this specification (coefficient = −0.348, p = 0.002), suggesting that financial conditions carry additional explanatory power once the structural shift in the foreign demand channel is accounted for.

We interpret this finding as consistent with a supply-driven explanation: the extraordinary expansion of U.S. Treasury issuance following COVID-era fiscal stimulus — with federal debt increasing by approximately 10 trillion dollars between 2020 and 2024 — made foreign sovereign participation in Treasury markets more critical to yield determination than at any prior point in our sample. The marginal foreign buyer became more consequential precisely because the supply of Treasuries requiring absorption grew dramatically faster than any marginal reduction in foreign appetite driven by de-dollarization at the edges of the international monetary system.

Table 6: Model 5 — Structural Break Post-2020

Dependent Variable: US 10-Year Treasury Yield
OLS with HC3 Robust Standard Errors, 81 Observations, 2006Q1–2026Q1

Variable	*Coefficient*	*Robust SE*	*t-stat*	*p-value*
Constant	*6.177*	*0.646*	*9.555*	*0.000*
Total Foreign Holdings ($\times 10^{-6}$)	*−1.230*	*0.231*	*−5.315*	*0.000*
Post-2020 Dummy	*+13.169*	*1.994*	*+6.603*	*0.000*
Foreign Holdings × Post-2020 ($\times 10^{-6}$)	*−4.599*	*0.720*	*−6.391*	*0.000*
Fed Funds Rate	*+0.127*	*0.069*	*+1.841*	*0.066*
Broad Dollar Index	*−0.007*	*0.009*	*−0.823*	*0.411*
NFCI	*−0.348*	*0.112*	*−3.110*	*0.002*

R^2 = 0.8409 | Adjusted R^2 = 0.8280 | F-stat = 152.88 (p = 0.000)
Note: Post-2020 Dummy equals one from 2020Q1 onwards and zero otherwise. The interaction term Foreign Holdings × Post-2020 tests whether the sensitivity of yields to foreign holdings changed after 2020. A negative and significant interaction coefficient indicates the foreign demand channel strengthened post-2020.

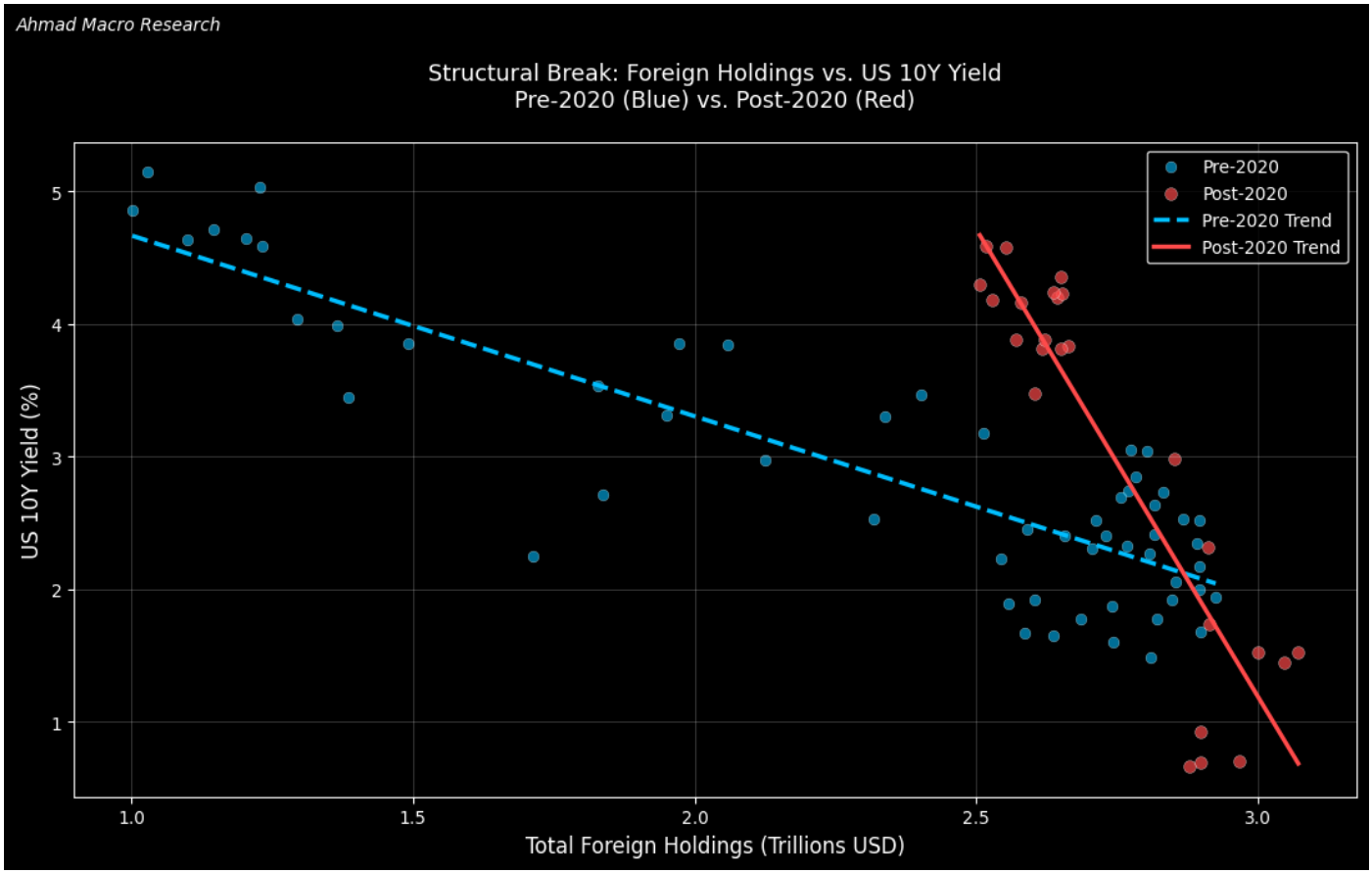


Fig:5

Scatter plot of total foreign Treasury holdings against U.S. ten-year yield, 2006Q1–2026Q1. Pre-2020 observations shown in blue with fitted regression line. Post-2020 observations shown in red with fitted regression line. The steeper slope of the post-2020 regression line is consistent with the strengthened foreign demand channel documented in Model 5. Each observation represents one quarter.

4.6 Granger Causality: China's Strategic Market Timing

Table 7 presents the results of the bivariate Granger causality analysis between China's Treasury holdings and U.S. ten-year yields over 93

quarterly observations from 2003Q1 to 2026Q1. The test addresses a fundamental identification limitation of OLS regression: whether China's positive contemporaneous coefficient in Model 2 reflects China driving yields upward, or China responding to yield movements driven by other factors.

The results are consistent with the strategic market timing interpretation. China's Treasury holdings Granger-cause U.S. ten-year yields at all four quarterly lags tested, with F-statistics of 5.498 (p = 0.021), 3.322 (p = 0.041), 3.873 (p = 0.012), and 2.819 (p = 0.030) at lags one through four respectively — all significant at the five percent level. This consistent significance across all lag lengths indicates that China's portfolio adjustments contain reliable predictive information about future U.S. yield movements beyond what yields' own history predicts.

In the reverse direction, U.S. yields do not consistently Granger-cause China's holdings. The reverse relationship achieves borderline significance only at lag two (F = 3.665, p = 0.030) and is insignificant at lags one, three, and four, providing no pattern of consistent predictive precedence from yields to Chinese buying behavior.

Taken together, these results are consistent with a strategic market timing interpretation of China's Treasury portfolio management. China appears to increase holdings when yields are elevated — producing the positive contemporaneous correlation observed in Model 2 — with this accumulation subsequently exerting downward pressure on yields over the following one to four quarters. This behavior is inconsistent with the passive recycling narrative that underpins the original Global Savings Glut hypothesis and instead suggests that China actively exploits yield opportunities in the U.S. Treasury market, accumulating when returns are attractive and allowing its subsequent buying pressure to gradually compress yields. This finding carries significant implications for understanding the geopolitical dimension

of sovereign Treasury portfolio management, which we discuss further in Section 5.

Table 7: Granger Causality Test — China Treasury Holdings and US 10-Year Yield

Sample: 2003Q1–2026Q1, 93 Quarters, Lags 1–4

Lags	*China —> Yield F-stat*	*China —> Yield p-value*	*Significant?*	*Yield —> China F-stat*	*Yield —> China p-value*	*Significant?*
1	*5.498*	*0.021*	✅	*0.867*	*0.354*	❌
2	*3.322*	*0.041*	✅	*3.665*	*0.030*	✅
3	*3.873*	*0.012*	✅	*2.306*	*0.083*	❌
4	*2.819*	*0.030*	✅	*1.560*	*0.193*	❌

Note: Null hypothesis is that the row variable does not Granger-cause the column variable. Significance threshold $p < 0.05$. China holdings Granger-cause US yields consistently across all four lags. US yields do not consistently Granger-cause China holdings, with significance appearing only at lag 2 and disappearing at lags 1, 3, and 4.

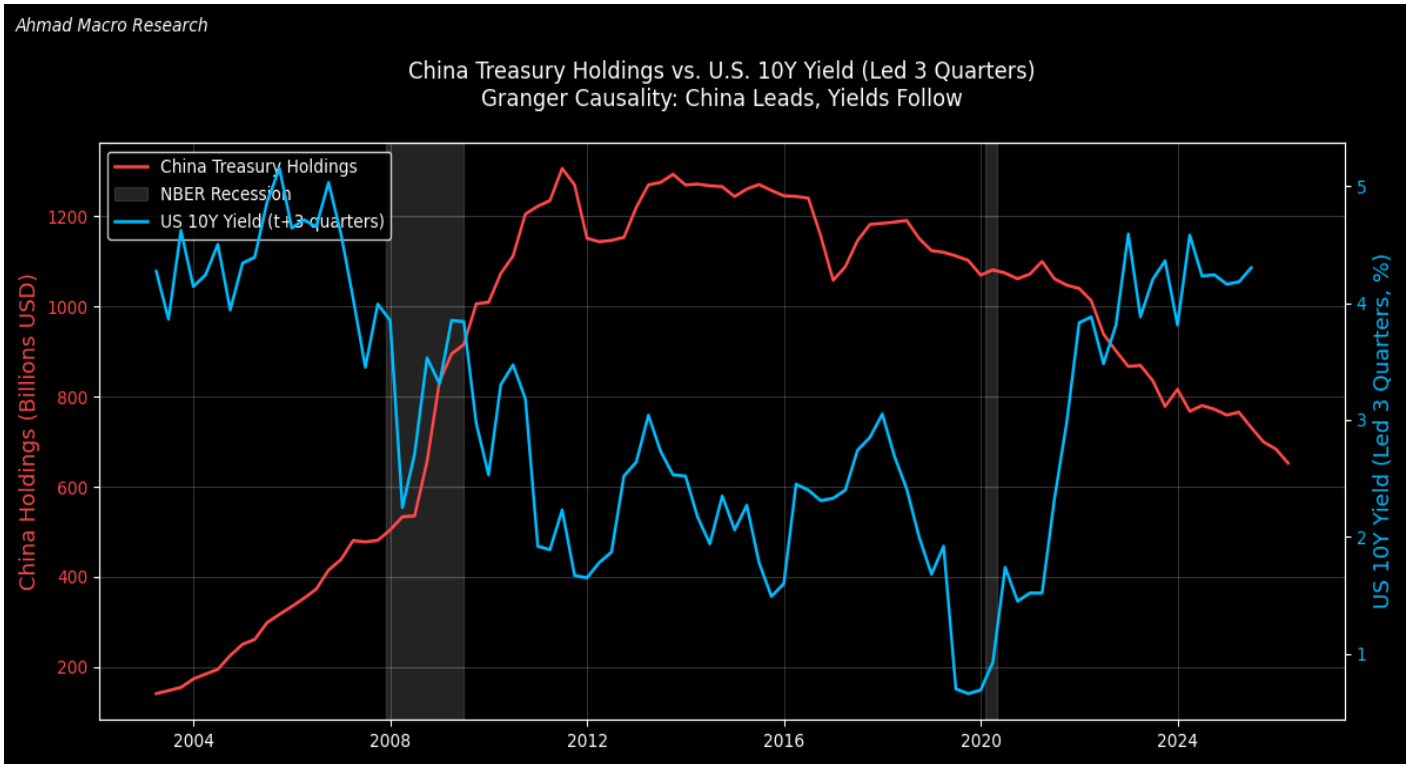


Fig:6

China Treasury holdings plotted against U.S. ten-year yield shifted forward by three quarters, 2003Q1–2026Q1. The visual co-movement suggests that periods of elevated Chinese accumulation are followed by subsequent yield compression, consistent with the Granger causality finding that China's holdings predictively precede U.S. yield movements across all four quarterly lags tested. Source: FRED, U.S. Treasury TIC system.

5. Discussion

5.1 The Passive Recycler and Strategic Holder Framework

Our empirical results collectively support a fundamental reconceptualization of how foreign sovereign demand operates in the U.S. Treasury market. The existing literature,

anchored in Bernanke's (2005) Global Savings Glut hypothesis, implicitly treats all foreign sovereign buyers as equivalent actors engaged in passive surplus recycling — accumulating Treasury securities mechanically as a byproduct of current account surpluses and reserve management objectives. Our country-level decomposition reveals that this homogeneous characterization is empirically unsustainable.

The distinction between passive recyclers and strategic holders is not merely taxonomic. It reflects fundamentally different transmission mechanisms through which foreign sovereign demand affects U.S. borrowing costs. Passive recyclers — Japan, Saudi Arabia, and Brazil in our sample — accumulate Treasuries as a structural consequence of export surpluses, oil revenues, and precautionary reserve objectives. Their buying is largely insensitive to contemporaneous yield levels, occurring as a predictable mechanical response to current account dynamics rather than active portfolio optimization. This behavior is broadly consistent with what Bernanke described, and our results confirm that these holders do suppress yields contemporaneously and significantly. Japan's coefficient is the largest in magnitude among all individual country variables, consistent with its position as the world's largest foreign holder and its decades-long pattern of systematic surplus recycling into dollar assets.

Strategic holders behave entirely differently. China and France increase Treasury positions when yields are already elevated, producing positive contemporaneous relationships with yield levels that superficially appear to contradict the savings glut mechanism. For France, this pattern likely reflects European institutional behavior — increasing allocations to U.S. fixed income during periods of elevated dollar yields relative to European alternatives, a yield-seeking response to cross-border return differentials. For China, the Granger causality results reveal a more sophisticated dynamic: strategic accumulation in high-yield environments followed by gradual yield compression over subsequent quarters as accumulated buying pressure works through the market. This market timing behavior suggests that China's treasury portfolio management is not driven purely by reserve adequacy or current account mechanics but incorporates active return optimization and potentially geopolitical calculation.

5.2 China's Market Power and Its Geopolitical Implications

The finding that China's Treasury holdings Granger-cause U.S. yield movements consistently across all four quarterly lags carries implications that extend beyond academic finance. It suggests that China may possess measurable predictive influence in the world's most important sovereign debt market — the ability to influence U.S. borrowing costs through portfolio decisions made in Beijing.

This finding must be interpreted carefully. Granger causality establishes predictive precedence rather than deep structural causation in the econometric sense (Sims, 1980). China's portfolio adjustments predict future yield movements, but this predictive relationship could reflect China's superior information about global macroeconomic conditions, its market timing ability, or the mechanical effect of large-scale accumulation working through Treasury market supply and demand dynamics. What it rules out is the reverse narrative — that China is passively reacting to yield movements driven entirely by other forces. The consistent significance across all four lags, combined with the absence of consistent reverse causality from yields to Chinese buying, is difficult to reconcile with a purely reactive interpretation.

The geopolitical dimension of this finding is particularly salient in the current environment. The debate around whether China could weaponize its Treasury holdings — selling large quantities to spike U.S. borrowing costs as leverage in trade or diplomatic disputes — has circulated in policy circles for over a decade. Eichengreen (2011) argued that the mutual dependency embedded in the creditor-debtor relationship between China and the United States creates a form of financial deterrence that limits the practical utility of such a threat. Our asymmetry results in Model 4 are consistent with this view — we find no evidence that selling episodes exert disproportionately larger yield effects than buying episodes within our sample. However, the Granger causality results establish that China's portfolio decisions do have measurable downstream yield consequences, suggesting that the weaponization concern, while perhaps overstated in its acute form, is not without empirical foundation.

The practical implication for U.S. policymakers is that China's Treasury portfolio management deserves monitoring as a macroprudential variable — not merely as a balance of payments statistic. Sustained Chinese selling, even if symmetric in its per-dollar yield impact, could exert meaningful upward pressure on U.S. borrowing costs given the scale of existing holdings. The Federal Reserve's ability to offset such pressure through domestic open market operations would depend critically on the pace and coordination of any such selling — a vulnerability that our results help to illustrate.

5.3 De-dollarization: Marginal Reality, Not Structural Threat

Our structural break results constitute perhaps the most policy-relevant finding of this paper, directly engaging with one of the most actively debated questions in international finance: whether de-dollarization represents a genuine structural threat to the dollar's role in global financial markets.

The evidence from our Model 5 is consistent with a substantial strengthening of the foreign demand channel. The foreign demand channel did not weaken after 2020 — it strengthened dramatically, with the interaction term indicating a yield suppression sensitivity approximately four times larger in the post-2020 period than before. This result is robust to the inclusion of a post-2020 level shift that captures the broad increase in yield levels associated with the pandemic-era inflation surge and Federal Reserve tightening cycle. The strengthening of the foreign demand channel occurred simultaneously with widely reported increases in yuan-denominated oil settlements, Gulf central bank gold purchases, and the development of alternative payment infrastructure including the mBridge cross-border CBDC platform.

How do we reconcile these apparently contradictory observations? The resolution lies in distinguishing between de-dollarization at the margins of the international monetary system and the structural role of dollar assets in core sovereign reserve portfolios. The evidence suggests that marginal de-dollarization — occurring in bilateral trade settlement, peripheral reserve diversification, and alternative payment systems — is genuine and ongoing. However, it has not translated into reduced foreign sovereign participation in U.S. Treasury markets. The explanation lies on the supply side: the United States added approximately 10 trillion dollars in federal debt between 2020 and 2024, creating an enormous increase in Treasury supply that required foreign sovereign absorption to prevent yield levels from rising even further than they did. Foreign buyers became more consequential to yield determination not because they increased their appetite for Treasuries relative to alternatives, but because the quantity of Treasuries requiring absorption grew so dramatically that each marginal foreign buyer carried greater weight in equilibrium yield determination.

This interpretation is consistent with Gopinath and Stein's (2021) theoretical framework emphasizing the complementarities and network effects that sustain dollar dominance in core financial markets even as marginal diversification occurs at the periphery. It also aligns with Eichengreen, Mehl, and Chitu's (2018) historical analysis suggesting that reserve currency transitions are protracted multi-decade processes driven by structural shifts in trade and financial market development rather than discrete policy choices or geopolitical events. Our results add empirical content to these theoretical predictions: as of 2026, the structural role of foreign sovereign demand in U.S. Treasury markets shows no signs of diminishing — and may be deepening driven by the fiscal arithmetic of American borrowing needs rather than any increase in the attractiveness of dollar assets per se.

The policy implication is sobering for U.S. fiscal sustainability. The very expansion of debt that made foreign demand more consequential to yield determination also increases the vulnerability of U.S. borrowing costs to any future reduction in foreign sovereign appetite — whether driven by accelerating de-dollarization, geopolitical disruption, or the eventual development of credible alternative reserve assets. The post-2020 strengthening of the foreign demand channel is not a sign of dollar resilience so much as a sign of dollar dependence.

5.4 Limitations and Directions for Future Research

Several limitations of our analysis warrant acknowledgment. First, our constructed total foreign holdings variable captures approximately 2.0 to 2.5 trillion dollars of the roughly 8 trillion dollars in total foreign official Treasury holdings, as data availability constraints precluded the inclusion of all sovereign holders in our sample. Future research with access to more comprehensive TIC data or confidential Federal Reserve holdings data could extend our country-level decomposition to a broader set of holders, potentially identifying additional passive recyclers or strategic holders not captured in our six-country sample.

Second, our use of Granger causality as the primary tool for identifying strategic market timing behavior is subject to the standard limitation that Granger causality establishes predictive precedence rather than structural causation. Future research employing instrumental variable approaches or structural vector autoregression methods could provide more robust causal identification of the mechanisms we document.

Third, our analysis focuses exclusively on U.S. Treasury securities, while sovereign holders manage diversified portfolios that include agency securities, corporate bonds, and equity positions. The strategic timing behavior we document for China in the Treasury market may interact with portfolio decisions across asset classes in ways our analysis does not capture.

Finally, our sample extends to 2026Q1, encompassing only the initial years of the post-2020 structural break. As the de-dollarization process evolves and the post-pandemic fiscal consolidation proceeds, the strengthened foreign demand channel we document may itself undergo further structural change. Ongoing monitoring of the relationship between foreign sovereign holdings and U.S. yields represents an important agenda for future empirical research.

6. Conclusion

This paper set out to test one of the most influential hypotheses in modern macroeconomics — Bernanke's (2005) Global Savings Glut hypothesis — through a comprehensive country-level empirical examination of foreign sovereign Treasury demand. Our results validate the core mechanism while fundamentally revising its characterization, revealing a foreign demand channel that is heterogeneous across holders, asymmetric in its geopolitical implications, and — contrary to prevailing narratives — strengthening rather than weakening in the post-pandemic era.

Our first and most foundational finding is that aggregate foreign sovereign demand for U.S. Treasury securities significantly
suppresses ten-year yields even after controlling for Federal Reserve policy, dollar strength, and financial conditions. A one standard deviation increase in our constructed aggregate foreign holdings measure is associated with approximately 47 basis points of yield suppression — an economically meaningful effect that confirms Bernanke's central claim that foreign surplus recycling constitutes an independent downward force on U.S. long-term interest rates. This finding extends and corroborates the earlier empirical work of Warnock and Warnock (2009) and Beltran et al. (2013) over a longer sample period that includes the zero lower bound era, the post-pandemic tightening cycle, and the early stages of the de-dollarization debate.

Our second and most conceptually novel finding is the sharp heterogeneity revealed by country-level decomposition. We identify two behaviorally distinct categories of sovereign holders. Passive recyclers — Japan, Saudi Arabia, and Brazil — accumulate Treasuries mechanically as a structural consequence of current account surpluses and commodity export revenues, suppressing yields contemporaneously in a manner consistent with the original savings glut narrative. Strategic holders — most notably China and France — exhibit positive contemporaneous relationships with yield levels, increasing holdings in high-yield environments rather than suppressing yields mechanically. For China, Granger causality analysis reveals that this strategic accumulation predictively precedes yield declines across all four quarterly lags tested, while U.S. yields do not consistently predict subsequent Chinese buying — establishing that China times the Treasury market deliberately and that its portfolio decisions carry measurable downstream consequences for U.S. borrowing costs. This finding suggests that China may exercise measurable predictive influence in the world's most important sovereign debt market, with implications for both monetary policy transmission and the geopolitical management of U.S.-China financial interdependence.

Our third finding provides evidence inconsistent with the de-dollarization narrative that has dominated international finance discourse since 2022. Rather than weakening after 2020, the foreign demand channel strengthened dramatically, with the post-2020 interaction term in our structural break model yielding a negative and highly significant coefficient that implies a yield suppression sensitivity approximately four times larger in the post-2020 period than before. We interpret this finding as reflecting the fiscal arithmetic of American borrowing: the extraordinary

expansion of U.S. Treasury supply following COVID-era fiscal stimulus made each marginal foreign buyer more consequential to yield determination, overwhelming any marginal reduction in foreign appetite driven by peripheral de-dollarization. Marginal de-dollarization — in bilateral trade settlement, reserve diversification, and alternative payment infrastructure — is genuine and ongoing. But it has not penetrated the structural role of foreign sovereign demand in the core Treasury market. If anything, rising U.S. fiscal dependence on foreign buyers has deepened rather than diminished that structural role.

Our fourth finding, derived from the yield curve slope analysis and asymmetry test, provides important negative results that sharpen the paper's contribution. Foreign sovereign demand moves yield levels broadly rather than specifically compressing the long end of the curve — implying that the term premium channel through which foreign buying operates is not concentrated in long-duration instruments as might be expected from the known maturity preferences of sovereign wealth funds. And selling episodes do not exert disproportionately larger yield effects than buying episodes, suggesting that the acute weaponization risk associated with coordinated Treasury liquidation — while not zero — does not manifest as a non-linear threat within the range of selling behavior observed in our sample.

Taken together, these findings carry several important implications for policy. For the Federal Reserve, our results confirm that foreign sovereign portfolio decisions constitute an independent channel of influence on long-term yields that operates alongside but separately from domestic monetary policy transmission — a channel that became more powerful precisely when the Fed was attempting to reassert control over long-term rates through its post-2022 tightening cycle. For the U.S. Treasury, our post-2020 findings underscore the growing structural dependence of U.S. borrowing cost management on the continued willingness of foreign sovereigns to absorb Treasury supply — a dependence that fiscal consolidation would reduce but that shows no signs of abating under current projections. For international policymakers and institutions including the BIS and IMF, our passive recycler and strategic holder framework provides an empirical foundation for differentiating between the stabilizing and potentially destabilizing dimensions of foreign sovereign participation in core sovereign debt markets.

Several important questions remain open for future research. The extension of our country-level decomposition to a broader set of sovereign holders — incorporating the full universe of TIC reporters rather than our six-country sample — would provide a more complete picture of the heterogeneity we document. The application of structural vector autoregression methods would allow more robust causal identification of the strategic timing behavior we attribute to China on the basis of Granger causality. And the ongoing evolution of the post-2020 structural break — as de-dollarization progresses, U.S. fiscal dynamics shift, and the international monetary system continues its slow transformation — represents perhaps the most important empirical agenda in international finance for the coming decade.

The United States Treasury market remains the gravitational center of global finance. Who buys its debt, why they buy it, and what their buying does to the price of that debt are questions with consequences that extend far beyond academic finance into monetary policy, fiscal

sustainability, and the geopolitical architecture of the international monetary system. This paper provides new empirical answers to those questions — answers that complicate the existing consensus while pointing toward a richer and more nuanced understanding of how the global demand for safe assets shapes the cost of American borrowing.

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