Fragmentation Risks to the Dollar-Dominated International Financial Order

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Drawing from work with
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Robust dollar dominance

![Graph showing US dollar dominance in various financial markets.](image)

**Figure:** Hofmann, Igan, and Rees, BIS, April, 2023.
But with ongoing diversification of FX reserves away from USD

Figure: IMF Currency Composition of Official Foreign Exchange Reserves (COFER). The “other” category includes RMB, at 2.7% in Q4 2022. See, also, Arslanalp, Eichengreen, and Simpson-Bell (2022).
Foreign demand for Treasuries is outpaced by issuance

Data: US Treasury, TIC.
The US dollar is the vehicle currency of choice

**FX price impact: direct and with USD as an intermediate currency**

![Diagram showing FX price impact of direct and indirect trading across various non-dollar currency pairs.](image)

**Figure:** Somogyi (2023).

**Notes:**
This figure shows the median Amihud (2002) price impact in basis points (BPS) per $10 million worth of trading activity for directly (grey bars) and indirectly (black bars) exchanging 15 non-dollar currency pairs. The indirect price impact is computed as the sum of the price impacts in the two dollar pairs being involved in the vehicle currency trade. The sample covers the period from 1 September 2012 to 29 September 2020.

I assume that the US dollar is “special” in some way. Hence, the same conditions also apply to any other currency. To present the model in a concise manner, I relegate the detailed solution of the equilibrium to the Online Appendix.

### A. Set-up
To formalise the trade-off faced by traders who wish to exchange a non-dollar currency for another non-dollar currency I consider a market with a finite number of traders trading a single triplet of currency pairs. Each triplet comprises one non-dollar currency pair plus two dollar currency pairs. I assume that all traders behave strategically. Traders and currency pairs are indexed by $i$ and $k$, respectively. Throughout this paper, vectors and matrices are boldface, whereas scalars are in normal font. The distribution of expected exchange rate returns is exogenous and Gaussian $r \sim N(\delta, \Sigma)$ with a vector of (observed) mean returns $\delta_k$ and covariance matrix $\Sigma$. In principle, one could easily have more than three currency pairs but for the sake of clarity and exposition I am focusing on a single triplet of currency pairs.
The political science of currency power

Great powers have great currencies. – Robert Mundell, 1993

Potential reductions in UST FX reserves for non-Western trade partners

Predicted reduction in dollar reserves after export invoicing switch

Figure: “Geopolitics and the U.S. Dollar’s Future as a Reserve Currency,” Weiss (2022).
How the Fed supports stable global dollar liquidity

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- Term Auction Facility crisis dollar funding to foreign banks through their US offices (Cetorelli-Goldberg-11).
But recent US geopolitical support for the dollar has been more muted

- Decades ago, the US used its clout to support the dollar internationally.
  - Pressure on sovereigns not to convert USD to gold.
  - Bretton Woods.
  - Secret 1974 deal with Saudi Arabia for private “add-on” purchases of Treasuries.
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  - Sanctions (Norrlöf-22).
  - Even China's official 2023 complaints over US hegemonic support for the dollar don't include any specific post-Bretton-Woods power plays.
The debt ceiling erodes trust in US Treasury securities

Data: Bloomberg
The debt ceiling may adversely impact dollar reliance

A reaction to the debt-ceiling standoff:

*The world is starting to question whether this is only just a game of repetition that can be solved, or the world’s to start to learn to wean ourselves from that kind of situation at the end of the day. That’s not good for the United States.*

Indonesian Finance Minister Sri Mulyani Indrawati, at the current G-7 meeting.
How China supports internationalization of the renminbi

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The emerging BRICS block

Countries that are in BRICS, have applied to join, or have expressed interest in joining

- **BRICS countries**: Brazil, Russia, India, China, South Africa
- **Have formally applied to join**: Saudi Arabia, Iran.
- **Expressed interest**: Afghanistan, Algeria, Argentina, Bahrain, Bangladesh, Belarus, Egypt, Indonesia, Iran, Kazakhstan, Mexico, Nicaragua, Nigeria, Pakistan, Saudi Arabia, Senegal, Sudan, Syria, Thailand, Tunisia, Turkey, United Arab Emirates, Venezuela, and Zimbabwe.

Sources: Bloomberg News, Wikipedia.
China is expanding its Cross-Border Interbank Payment System

(a) CIPS direct participants. Total participants number 1400, of which 800 are offshore.

(b) CIPS payment volumes.
But, so far, the impact of China’s CBDC is overrated

- In 2022, total e-CNY volume was probably between 150 and 200 billion RMB, compared to approximately 100 trillion RMB for Alipay, which has 711 million users and significant international presence.

- Total holdings of e-CNY at December 2022 were only 0.13% of official RMB.

- e-CNY is piloted in mBridge and will soon be accessible in Hong Kong’s fast payment system.

- CNHC is a nascent cross-border stablecoin.
China has substantial dollar funding rollover risk

The USD cross-currency basis for renminbi, euro, and yen

Figure: Source Kodres, Sheng, and Duffie (2022).
Is China de-dollarizing?

China’s allocation of FX reserves to US Treasuries

![Graph showing China’s allocation of FX reserves to US Treasuries from 2010 to 2023. The graph displays two lines: one representing China's holding of US Treasury securities, and the other representing the ratio to total FX reserves. The graph shows a downward trend in both metrics from 2010 to 2023.](#)

**Figure:** R. Leung, ANZ (2023).

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Using RMB for trade settlement can reduce demand for USDs to pay for imports. China bought USD360bn of crude oil in 2022 including:
- USD64bn from Saudi Arabia,
- USD39bn from Iraq,
- USD32bn from UAE,
- USD29bn from Oman,
- USD25bn from Kuwait.

If these countries are willing to accept yuan, the reduction in USD demand is equivalent to China’s reduction of its holdings of US Treasury securities last year.

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Different global context from petro-dollar

China’s approach to promoting yuan-settlement differs from that of the petro-dollar which involved an exclusive agreement between Saudi Arabia and the US that stipulated the supply of oil to all other third parties in USDs.

In the case of China, even if Saudi Arabia agrees to accept yuan, it is unlikely to apply the currency requirement to other oil buyers.

Most oil exporting states are cautious about a petro-yuan, except for countries with limited access to USDs, such as Russia and Venezuela. The Iraqi central bank is limiting its use of the yuan to imports, rather than exports to China.

Countries like the US, Canada, and Norway have increased their share of global oil exports, and are unlikely to promote yuan-settlement. Therefore, yuan-settlement is an option but is unlikely to become universal anytime soon.
US Treasuries are a crisis safe haven and source of liquidity

**Figure:** Based on Weiss (2022).
US Treasuries are a crisis hedge

Changes in 10-year yields during the Covid crisis

In addition to the increase in yields in March 2020, there was an increase in the implied volatility of sovereign bond yields, reflecting in part investors' uncertainty over the global economic repercussions of the pandemic. Figure 2 charts a measure of this volatility and illustrates how, across a number of sovereign bonds, this volatility started increasing in late February 2020 and peaked in March 2020.

Alongside these changes in yields and volatility, sovereign bond liquidity deteriorated significantly in March 2020. A common measure of bond liquidity is the difference in prices that market makers offer to purchase and sell specific bonds, or the bid-ask spread. An increase in this bid-ask spread over late February and March 2020, for U.S., German, U.K., and Japan 10-year sovereign bonds is illustrated in Figure 3. This evidence, along with the aforementioned rise in volatility, suggests significant stress on trading conditions across sovereign bond markets.

Figure: Barone, Chaboud, Copeland, Kavoussi, Keane, and Searls (2022).
Flight to Treasuries

Negative high-frequency return correlation between 10-year Treasury Futures and SP500 futures

Figure: Based on “Comovements in Global Markets and the Role of U.S. Treasury,” Hu, Jin, and Pan, 2023.
COVID induced record foreign gross sales of Treasuries to U.S. dealers

But the US Treasury market has limited dealer intermediation capacity.

Figure: *Fragmenting Markets*, Duffie (2022)
Interdealer market depth

Figure: Treasury market depth on Brokertec, in millions of dollars, is the average of the largest three amounts bid or offered on Brokertec’s interdealer central limit order book market for on-the-run 10-year U.S. Treasuries between 8:30am and 10:30am EST. Source: JP Morgan, US Fixed Income Strategy, Joshua Younger and Henry St. John, April 2, 2020.
Estimated US Treasury market dealer capacity utilization

Figure: Dealer balance-sheet utilization is the ratio of the given intermediation measure to the sample record-high measure. The capacity utilization of primary dealers as a group is the weighted average of the dealers' utilizations. Source: Duffie, Fleming, Keane, Nelson, Shachar, and Van Tassell (2023).
Normally, UST illiquidity is proportional to yield volatility, but not at the extreme levels of March 2020

Figure: Duffie, Fleming, Keane, Nelson, Shachar, and Van Tassel (2023).
The component of illiquidity not explained by yield volatility is high when utilization of dealer balance sheets is high.

Figure: Duffie, Fleming, Keane, Nelson, Shachar, and Van Tassell (2023).
Appendix
Market function purchase programs
From NY Fed Staff Report with Frank Keane

1. Purchase only when lending is insufficient to quell market dysfunction.

2. Distinguish between market function purchases and QE, to improve the effectiveness of both.

3. Transparency can mitigate moral hazard by causing investors to pay at issuance for the implied liquidity put.


5. Adapt reverse-auction design to settings of market dysfunction. Consider a “delivery-choice” auction design.

6. Consider harnessing buybacks by the fiscal authority, to mitigate potential concerns over monetary policy communication and fiscal dominance.
The Fed’s market-function purchases of US Treasuries

Estimating dealer capacity utilization

- Net and gross positions in UST and agency MBS, dealer level, are from FR2004.
- Dealer purchases from customers over the past three business days, are from TRACE.
- Risk adjustment is based on swaption-implied volatilities and security-level DV01.
- The capacity of a dealer for a given activity is estimated, based on revealed preference, as the sample maximum (implying a downward bias).
- The capacity utilization of a dealer is the ratio of its current activity metric normalized by its estimated maximum.
- The collective capacity utilization of dealers is the weighted average of utilization across dealers, using capacity weights.
Figure: Source: Congressional General Accounting Office, August, 2021. The underlying data source is Bloomberg Financial LP. Bloomberg.