Oh, The Places We Could Go[1]: on the US dollar, reserve currencies and the South China Morning Post

Before getting into the US$ discussion, two quick things.

#1: Despite strong US data in Q1 and Q2, the US still appears headed for a slowdown later this year. As shown below, many longer-horizon leading indicators point in that direction. Excess household savings are also being run down and should be 60%-70% depleted by the end of the year. Click **here** for the chart collection.

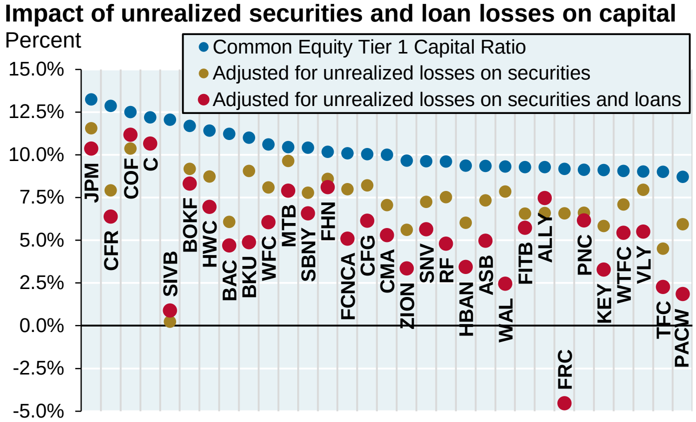
#	Category	Leading indicator...	Advanced by...	Predicts a deterioration in...
1	Economy	New orders less inventories in ISM survey	3 months	ISM manufacturing index
2	Employment	Unemployment, labor force participation rate, PCE inflation and avg. hourly earnings	12 months	Non-farm payrolls
3	Employment	Single family home sales	16 months	Initial jobless claims
4	Inflation	Small business pricing plans	12 months	Median CPI
5	Inflation-goods	Retail inventory to sales ratio	12 months	Core goods CPI
6	Inflation-services	Services prices in ISM survey	9 months	Consumer price inflation in services
7	Inflation-services	Producer prices inflation in services	9 months	Consumer price inflation in services
8	Inflation-services	Job openings	9 months	CPI in services ex-shelter
9	Lending	Banks tightening C&I loans	9 months	Corporate defaults
10	Lending	Respondents reporting tighter credit standards	9 months	Bank lending
11	Construction	Leading economic indicators	18 months	Construction activity
12	Profits	Fed Funds Rate, effective corporate tax rate, unemployment and productivity growth	8 months	Economy-wide profits
13	Profits	Economic activity, business confidence, supplier deliveries, wages, inflation, cyclical GDP	12 months	S&P profits
14	Rents	Zillow observed rent index	12 months	Rent inflation
15	Revenue	Active truck utilization	6 months	S&P revenue growth
16	Wages	Avg. growth in wages advertised in job postings	4 months	Median wages
17	Wages	Rehiring rate proxy	12 months	Wages

Source: Alpine Macro, Bloomberg, Morgan Stanley, Piper Sandler, Steno Research, Trahan Macro Research, JPMAM. April 2023.

#2: A chicken pox party and US regional banks. I don't have too much more to say on this. On March 10 and April 10 I walked through all the balance sheet mechanics and the combination of (a) the Fed's yield curve manipulation, monetary expansion and inflation blunder, (b) poor asset-liability and duration decisions by some banks and (c) over-concentration by depositors ignoring FDIC guarantee limits which got us to where we are.

The only thing I will add: given "collective responsibility" rules under which existing large banks are on the hook for any losses incurred by the FDIC as it dismantles failed ones, large banks have economic incentives to throw lifelines to unviable banks that they might otherwise not throw. I'm not sure that this kind of "chicken pox party" is such a great idea for reducing contagion, but we will see.

Impact of unrealized securities and loan losses on capital



Source: JPMAM, Q4 2022. All calculations based on 10-K reports

To be clear, banks have footed the bill in the past for large losses incurred by the FDIC. In 2009, the FDIC imposed a replenishment fee that was based on assets minus Tier 1 capital rather than on deposits, in order to shift more of the burden to bigger banks. If the FDIC is going to end up bailing out uninsured depositors with big banks footing the bill, some kind of graduated deposit insurance makes sense under which all banks pay higher guarantee fees for larger commercial deposits, scaled as well for the degree to which uninsured deposits make up the bulk of their funding.

[1] Inspired by "*Oh, The Places You'll Go!*", Dr. Seuss' last book which was published in 1990

Oh, The Places We Could Go: on the US dollar, reserve currencies and the South China Morning Post

There was an article in the South China Morning Post on April 4th entitled "*End of dollar dominance will also spell demise of US hegemony*". Oh, the places we could go on this one: we could explore press freedom by country with data from the World Economic Forum; issues related to the ownership of that particular publication; Chinese currency intervention after its acceptance into the World Trade Organization and the impact on US manufacturing wages; mercantilism measures from the OECD; and country-specific assessments of rule of law, judicial independence, property rights and capital controls, all of which affect reserve currency status.

Now is a bad time to do that, and since I've written about these topics before I will only address the dollar reserve currency issue since clients ask about it. Looking at the big picture is important to avoid being overly influenced by individual anecdotes about countries adopting the Chinese RMB or other currencies for trading and settlement purposes. De-dollarization is a hot topic, but there's more smoke than fire so far.

To be clear, reserve currency status is a big deal. The US share of global trade is just ~12% and the US share of global GDP is ~25%. Yet the dollar's share of foreign exchange, trade invoicing, debt issuance and foreign exchange reserve investment is much higher, which is why the dollar is known as the world's reserve currency. Around 35% of all Treasury bonds are owned by foreign official and private sector investors; should that figure drop to 20% (the average foreign ownership share for high grade sovereign issuers in Europe[2]), there could be a sharp increase in US interest rates to absorb an additional $3.6 trillion in Treasury supply. Let's take a look.

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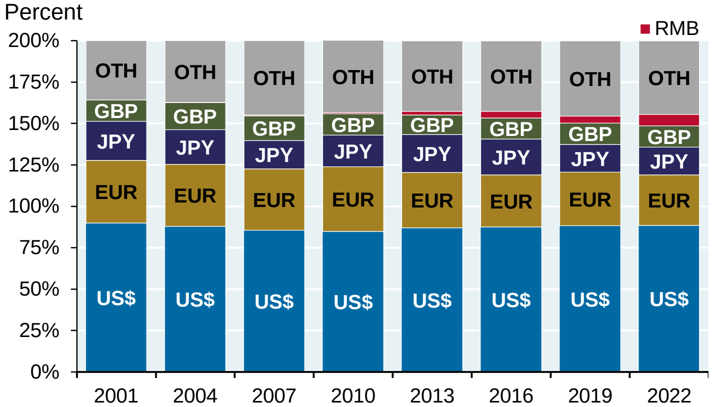
[2] Germany, France, Netherlands and Austria are the major high-grade sovereign issuers of the Eurozone. Around 20% of their sovereign debt is held outside the Eurosystem. This figure was higher before the ECB Pandemic Emergency Purchase Program absorbed EUR 1.7 trillion in government debt (Eichengreen and Gros, 2020).

i. Foreign exchange, trade and international finance

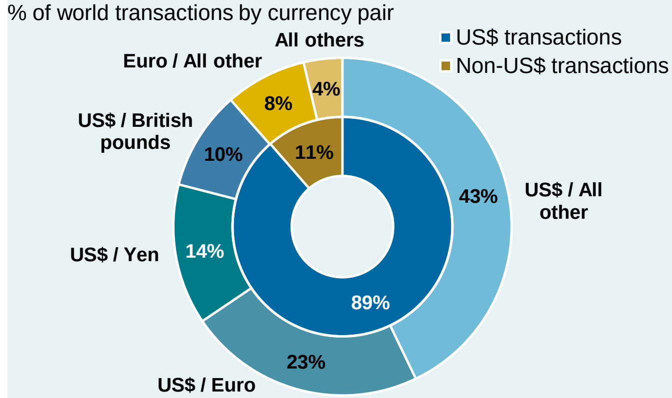
The dollar's role in foreign exchange markets is mostly unchanged over the last 20+ years; in 2022 the dollar accounted for ~89% of all FX transactions. In other words, the dollar was involved on one side or the other in 89% of all global transactions. The dollar's average turnover per day was $6.6 trillion in 2022, up 14% from $5.8 trillion in 2019 and in line with the change in total turnover. In addition to dominating the spot market, the dollar also dominates 85% of currency forward and swap markets. The RMB share has grown but is still not large enough for the label to fit in the red segment in the bar chart.

Foreign exchange turnover by currency
Percent



Source: BIS. April 2022.

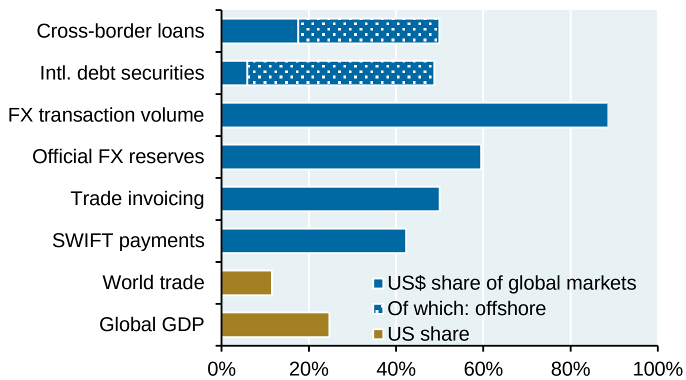
Dollar still dominates FX transactions
% of world transactions by currency pair



Source: BIS. April 2022.

Part of the reason for the dollar's dominance in foreign exchange: its use as a medium of exchange in trade and international finance. As shown below, around half of all cross-border loans and international debt securities are denominated in dollars. For 65% of all global loan issuance and 88% of all international debt issuance, non-US entities are the issuer/borrower; that's a clear demonstration of the dollar's dominance in international finance. The dollar is also used for around half of all trade invoicing, much higher than the dollar's 12% share in global trade.

The international role of the US dollar
Percent



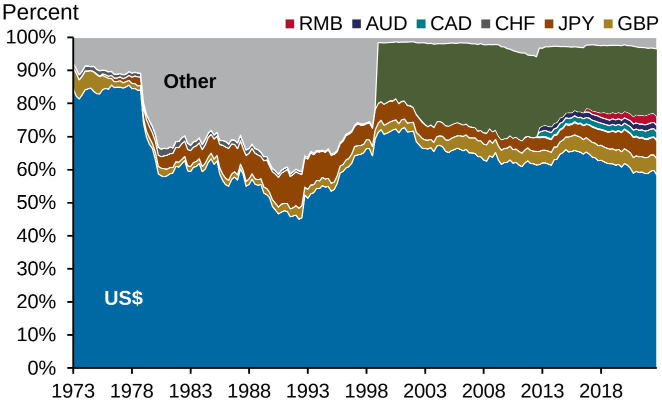
Source: BIS Quarterly Review. December 5, 2022.

ii. Investment of foreign exchange reserves

The dollar is still the dominant currency of choice for investment of foreign exchange reserves at ~60%. The dollar's share has declined by ~6% since 2015 as some Central Banks diversify holdings away from the dollar and the euro. However, most of this shift (~75%) is explained by increased allocations into currencies of smaller economies, which is a recent phenomenon: Australian and Canadian dollars, Swedish krona and Korean won. Note that the abrupt selling of Treasuries by Russia shown on the right has not been repeated elsewhere.

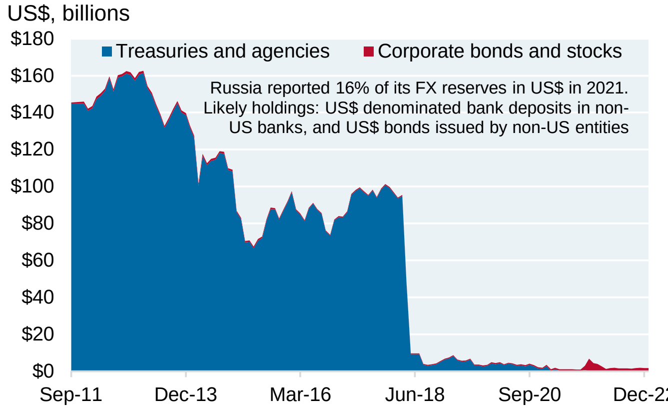
Only 25% of the shift is explained by increased allocations to the Chinese RMB, much of which is driven by Russia which holds one third of all Chinese RMB reserves. China's government bond market is the third largest in the world (larger than Germany, France and Spain combined) and the IMF added China to its Special Drawing Rights Basket in 2016, providing some impetus for other Central Banks to add it; but it's very slow going so far.

Share of global foreign exchange reserves by currency



Source: International Monetary Fund, JPMAM. Q4 2022.

Russian official/private holdings of US securities



Source: US Treasury, JPMAM. 2023

FX reserves by country, excluding gold and including SDRs, US$ millions

1	China	3,247,257	6	Saudi Arabia	452,231	11	Singapore	289,153	16	Poland	155,798
2	Japan	1,203,213	7	Russia	446,713	12	United States	235,949	17	Britain	153,635
3	Switzerland	837,358	8	Hong Kong	428,999	13	Thailand	210,346	18	Czech	139,801
4	Taiwan	567,114	9	South Korea	419,444	14	Israel	200,490	19	Indonesia	135,755
5	India	521,183	10	Brazil	332,907	15	Mexico	198,636	20	Germany	99,735

Source: Bloomberg, JP Morgan. 2023. Countries shown = 85% of global reserves

A recent article in the FT cited the 8% decline in dollar reserves in absolute terms over the last couple of years as evidence of the dollar's weakening status[3]. **But as Brad Setser[4] at the Council on Foreign Relations explains, this reasoning is flawed and an example of sloppy economics**:

- The decline in absolute dollar reserves is mostly a reflection of valuation changes in reserve portfolios as US rates rose and bond prices fell
- Central banks also sold dollars as the dollar rose in value to maintain the shares they held in other currencies such as the pound, yen and euro (normal portfolio rebalancing)
- Japan sold $50 billion to halt the slide in the yen last year (not a dollar diversification event)
- The IMF data cited above only reflects Central Bank foreign exchange reserve allocations. Other material holders of US debt securities include Sovereign Wealth funds and state banks, and there's no evidence of de-dollarization there either

[3] "Dollar ☹", Financial Times, April 19, 2023

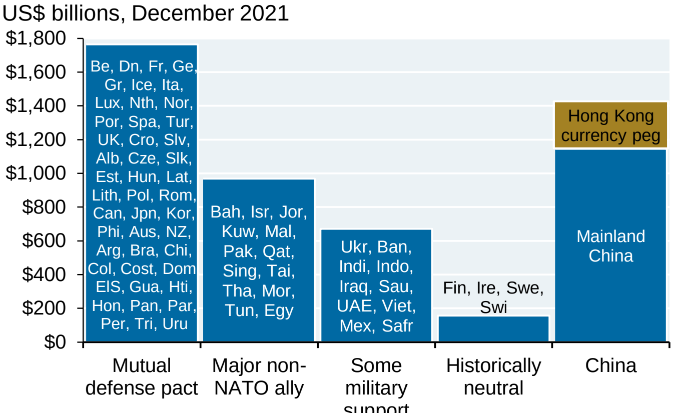
[4] Brad Setser at CFR is one of my favorite sources on all matters pertaining to foreign exchange, central bank reserves, balance of payments, trade, etc. Brad also served as a staff economist at the US Treasury focusing on international economic analysis

iii. What about the impact of US sanctions on the desire to hold dollar reserves?

Since the freezing of Russian assets after the Ukraine invasion, there has been speculation on the impact of sanctions on the dollar's reserve currency status. While the US also imposed sanctions on Afghanistan, Iran, Libya and Venezuela, the Russian sanctions were applied more broadly and to a larger economy. **However, reserve currency risks to the dollar may be exaggerated**:

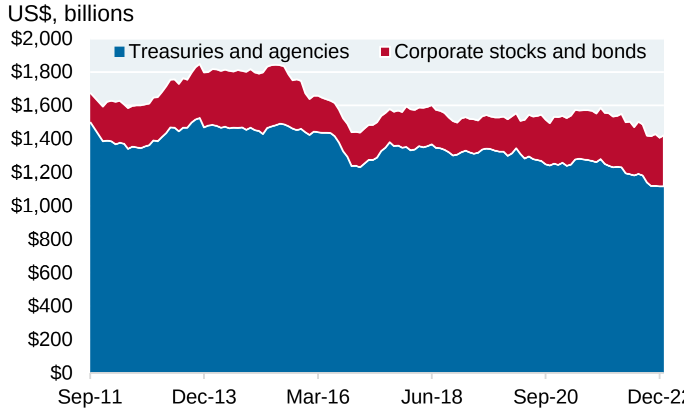
- Several studies find linkages between geopolitical ties and a country's FX reserve investments. This is observed in the early 20th century; and from the 1960's to the 1980's, dollar reserves were held exclusively by political allies of the US reliant on its military support. Emerging economies also tend to allocate reserves to currencies of countries from whom they import military equipment (Iancu et al, 2020)
- What about today? The Fed's International Finance Division found that 50%-60% of US "safe dollar assets" are held by foreign governments that have consistently strong ties with the US (Weiss, Oct 2022). This figure rises to 75% when including countries with military cooperation agreements with the US (non-NATO allies eligible for access to US military supplies) and neutral countries, two of which are joining NATO. Safe dollar assets include Treasuries, Agencies and short-term debts of US financial institutions. As for the sanctions-related benefits of diversifying, the immobilization of Russia's reserves froze even more euros than dollars
- **Hong Kong's** currency peg to the dollar stipulates that at least 80% of its liquid assets be held in dollars (currently its dollar assets are ~90%). Similarly, **Saudi Arabia and the UAE** peg their currencies to the dollar since most oil sales are invoiced in dollars
- **Brazil** President Lula expressed frustrations on the dollar's central role but the dollar still accounts for 80% of Brazil's FX reserves. Brazil's RMB holdings (5.4%) have surpassed the Euro (4.8%), but amounts are small
- What about **China**? Its bankers told Chinese officials in April 2022 that diversifying into Yen or Euros was "not practical"[5] given the size of China's reserves (see Appendix for comments on the collapse in trading volumes of Japanese government bonds). While Chinese holdings in dollars have been declining, the dollar share of China's FX reserves is roughly unchanged at ~60% (Brad Setser, CFR)

Est. safe dollar asset holdings by foreign official investors
US$ billions, December 2021



Source: Weiss (Fed). Oct 2022.

China official/private holdings of US securities
US$, billions



Source: US Treasury, JPMAM. 2023

A trifecta of circumstances that could reduce the dollar's share of global FX reserves below 50%: emerging economies reduce their dollar share of reserves to levels based on their dollar export invoicing; China reduces the dollar share of its reserves by 10%, or $320 billion; and Hong Kong abandons its peg, divesting of $170 billion in Treasuries. In this case, the dollar would account for 40%-50% of global FX reserves, down from 60% today (Weiss, Oct 2022). Even so, the dollar would still be projected to capture twice the share of global FX reserves than any other currency.

[5] "*China meets banks to discuss protecting assets from US sanctions*", Financial Times, April 30, 2022

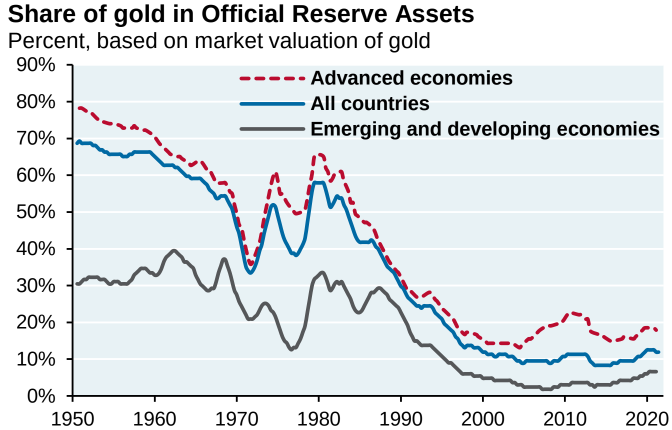
iv. What about central bank diversification into gold?

Dollar diversification could occur via increased gold holdings rather than via moves to another fiat currency, a trend which has been underway in volume terms since 2009. But when measured as a share of official reserves, the gold increases of the last decade are small and pale in comparison to the post-war era when gold was the primary reserve asset (see second chart). The table shows Central Banks with the largest increase in gold holdings since 2015.

Gold holdings in Official Reserve Assets vs gold prices

Source: IMF, Bloomberg, JPMAM. April 2023.

Share of gold in Official Reserve Assets



Source: IMF, International Financial Statistics, Eichengreen et al. 2023.

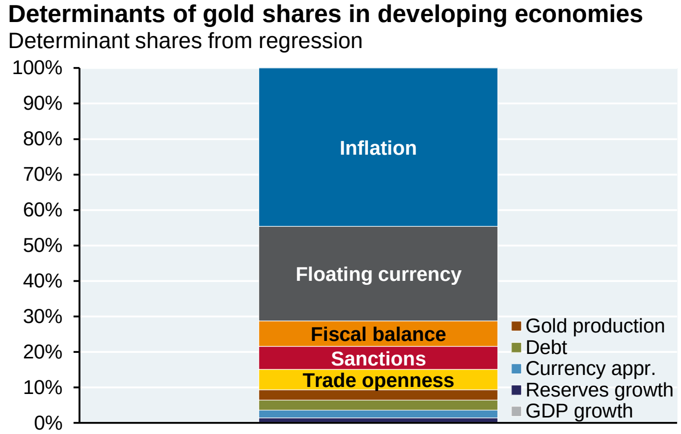
There are examples of when sanctions drove certain economies to add gold: Turkey in 2020 after US/EU sanctions; Paraguay (2012) after Mercosur sanctions; and Belarus after Russian sanctions in one year (2010) and after US/EU sanctions in another (2006). **But as shown in the last chart, sanctions (red bar) are estimated to play a minor role in gold reserve allocations. The three largest explanatory factors: issues related to monetary and fiscal policy (Eichengreen et al, 2023).**

Largest increases in central bank gold holdings vs 2015

Country	Gold (troy oz)	Change vs 2015 (oz)	Change vs 2015 (%)	Gold % of FX reserves
Russia	74.8	36.0	48%	25%
China	66.5	32.6	49%	4%
Turkey	24.5	7.9	32%	39%
India	25.4	7.5	29%	9%
Poland	7.4	4.0	55%	9%
Thailand	7.9	3.0	38%	7%
Japan	27.2	2.6	10%	4%
Singapore	6.6	2.5	38%	4%

Source: IMF, Bloomberg, JPMAM. 2023

Determinants of gold shares in developing economies



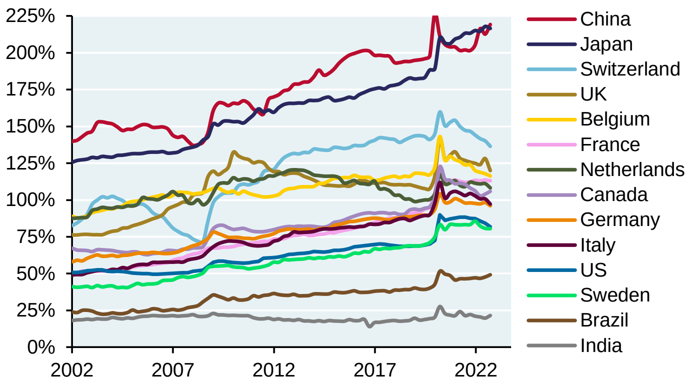
Source: Eichengreen et al. 2023.

What about **crypto**? To date, no central banks other than El Salvador (2% in Bitcoin) have added cryptocurrency, despite studies arguing for Bitcoin as a complement to gold to protect ex-ante against the risk of sanctions (Ferranti, 2023). As for central bank digital currencies, these are simply digital representations of fiat currency risk. In other words, they are backed by the full faith and credit of the issuing central bank. As a result, Country A buying the central bank digital currency of Country B would not be achieving greater diversification when compared to simply holding assets denominated in the currency of Country B, whether they be government bonds or offshore bank deposits. The same logic would apply to stablecoins backed explicitly or indirectly by financial assets.

v. The risks to China of greater capital account openness

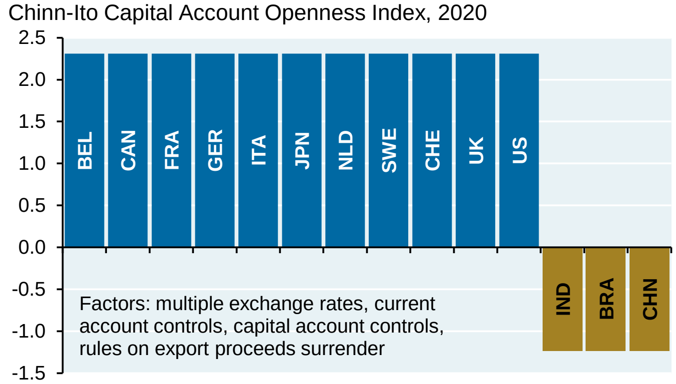
If China wants to see greater diversification into the RMB, it might have to relax constraints on outbound capital flows by residents. That could in turn create incentives for non-Chinese entities to issue debt denominated in RMB, and create depth and liquidity common to dollar and euro markets. But a fully convertible RMB appears inconsistent with Chinese policies. **China's money supply is very high; if China fully opened its capital account, possible outflows could crush the RMB and cause a collapse in Chinese equity/real estate markets**. China is arranging swap lines and currency clearing mechanisms, but is not moving towards a fully convertible currency. The Chinn-Ito Index is one measure of capital account openness and is shown on the right.

How much Chinese liquidity would leave if it could?
M2 money supply as a % of GDP



Source: Haver Analytics, JPMAM. Q4 2022.

Chinese RMB: an open and shut case
Chinn-Ito Capital Account Openness Index, 2020

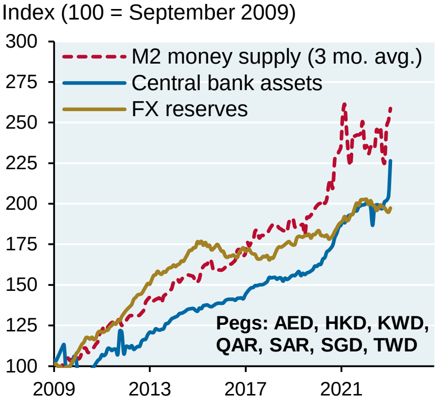


Source: Chinn & Ito (2006), "*What Matters for Financial Development? Capital Controls, Institutions, and Interactions*". Data updated as of: October 4, 2022.

My colleague Alex Wolf in Singapore has done some analysis that's even more illustrative of China's challenge with the RMB. China achieved high growth targets via one of the largest monetary expansions the world has seen: domestic banking assets in China have reached 55% of *global* GDP. However, this may only be sustainable with a closed capital account. **Here's why: FX reserves, central bank assets and money supply should broadly match, whether we're looking at a fixed currency peg or a floating exchange rate**. Pegged currencies require monetary discipline, while floating currencies adjust if domestic money supply gets too far out of line with FX reserves. There's an example in the Appendix showing how devaluation can occur when money supply diverges too far from Central Bank assets/reserves, using Argentina.

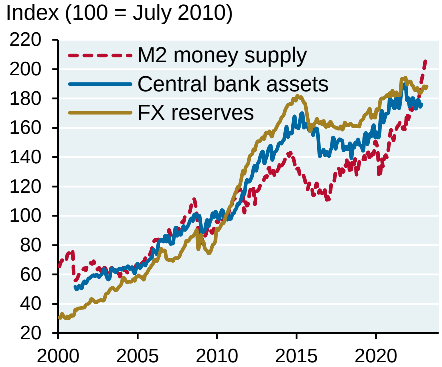
As you can see, China is quite different: there's a massive disconnect between its money supply, FX reserves and central bank assets. This may only be sustainable when accompanied by a continuously closed capital account, which appears inconsistent with reserve currency status.

Pegged currencies
Index (100 = September 2009)



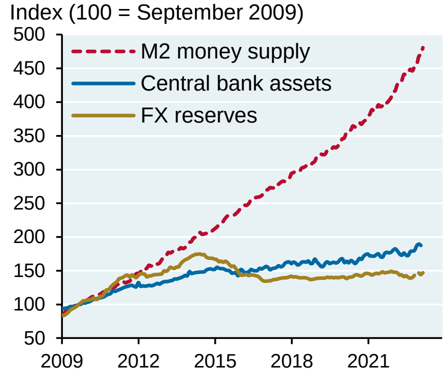
Source: Bloomberg, JPMAM. February 2023.

Mexico: monetary policy and currency aligned in free-floating economies too
Index (100 = July 2010)



Source: Bloomberg, JPMAM. March 2023.

China: disconnect between money supply & central bank assets/reserves
Index (100 = September 2009)



Source: Bloomberg, JPMAM. March 2023.

vi. The Russia-China axis and the behavior of non-aligned nations

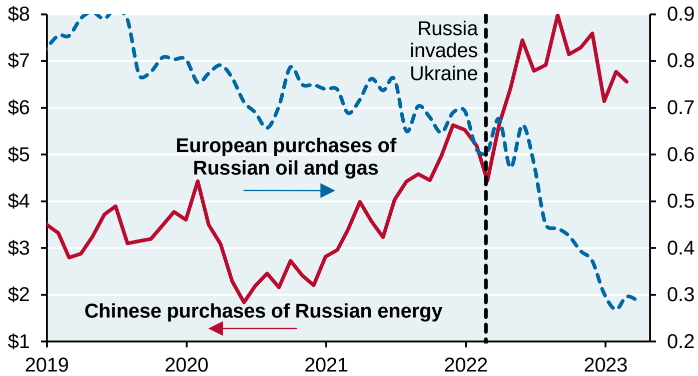
As the China-Russia axis solidifies, it will be important to watch the behavior of non-aligned nations. The seeds of de-dollarization do exist: we're monitoring Saudi-Chinese oil flows, some of which may soon be denominated in RMB; India purchases of Russian oil, which are already denominated in UAE dirhams; Power of Siberia 2 gas flows from Russia to China, which are being negotiated (Power of Siberia 1 flows are in Euros); and Chinese purchases of iron ore from Brazil, which may one day be settled in RMB. **But amounts matter**, and it's not clear yet how material these flows will be in the bigger picture.

What is already notable: 3.7 trillion RMB ($550 bn) in swap lines arranged by China with other central banks. This is part of China's strategy to be a new "lender of last resort" which parallels the role of the US after WWII. The lender of last resort role cemented the dollar's dominance at the time, and took place before liberalization of US markets. China's overseas lending and bailouts mostly go to China Belt and Road Initiative countries, and amount to roughly 20% of IMF lending over the last decade (Horn et al, 2023).

What about decisions by Turkey, China, India and other countries to not participate in the Russia oil embargo? Without Russian production, oil prices could spike to $200; so, the West reportedly wants Russia to keep producing oil. The ~$30 discount at which these countries buy Russian crude is aligned with Western objectives to reduce Russian capital inflows and also aligned with their own economic interests.

Chinese vs European purchases of Russian energy

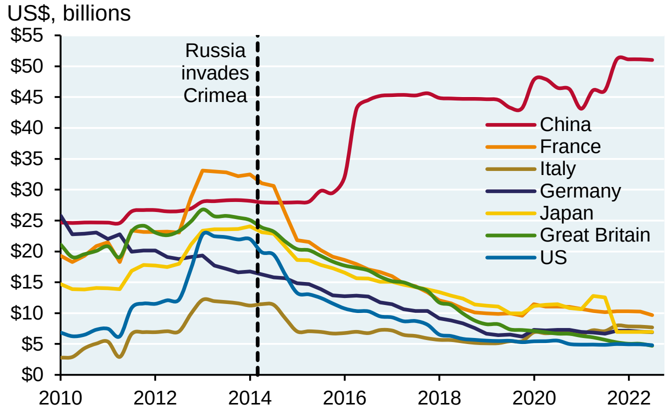
US$, billions — Million tonnes of oil equivalent / day



Source: CREA, EIA, GACC, Bloomberg, JPMAM. March 2023.

Cross-border syndicated loans to Russia

US$, billions



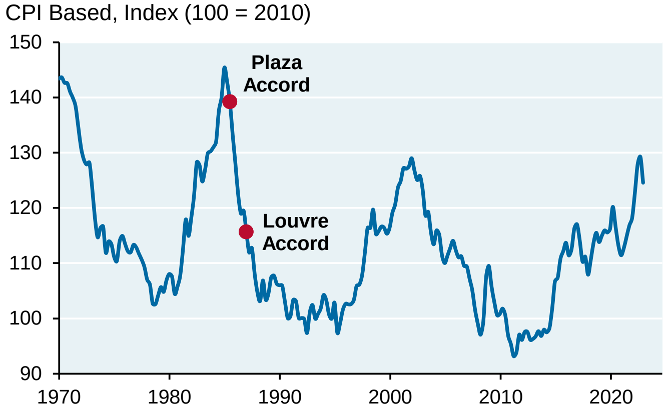
Source: BIS. Q3 2022.

vii. Threats to reserve currency status and overvaluation are two different things

While the dollar's reserve currency status may not be under imminent siege, that doesn't mean that the dollar doesn't have room to fall from here. The chart below shows how the dollar has recently come off its highest levels in 30 years. As a result, there are plenty of economic outcomes that could keep driving the dollar lower; just don't confuse macroeconomic issues with reserve currency issues.

JPMorgan US Real Broad Effective Exchange Rate Index

CPI Based, Index (100 = 2010)



Source: JPMAM. Q1 2023.

On currency forecasting

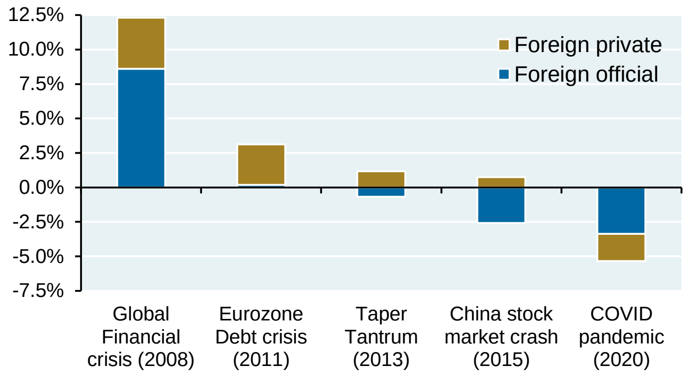
While it appears that the dollar might retrace its steps back to 2015-2019 levels, currency forecasting has often been a fool's errand. Many academics that analyze exchange rate models conclude that nominal exchange rates are nearly unpredictable, and a 2023 study of macroeconomic models finds that they are no better at predicting exchange rates than a random walk approach (Engel and Wu, 2023).

viii. What about Central Bank selling of Treasuries during COVID?

During the Financial Crisis there was net *buying* of Treasuries by foreign official investors, and net *selling* during COVID. However, net selling also occurred during the 2013 Fed taper tantrum and the 2015 China stock market crash, and in this regard 2020 selling was not unique. According to the Fed, the reasons for greater Treasury selling in 2020 were (a) unwind of a Treasury basis trade by foreign domiciled hedge funds, and (b) outflows from mutual funds prompting Treasury sales to meet redemptions. These two channels were less important during 2008 since the Treasury cash-futures basis trade grew substantially only in 2018, and since mutual fund holdings of Treasuries increased significantly after the Financial Crisis (Vissing-Jorgensen, 2021).

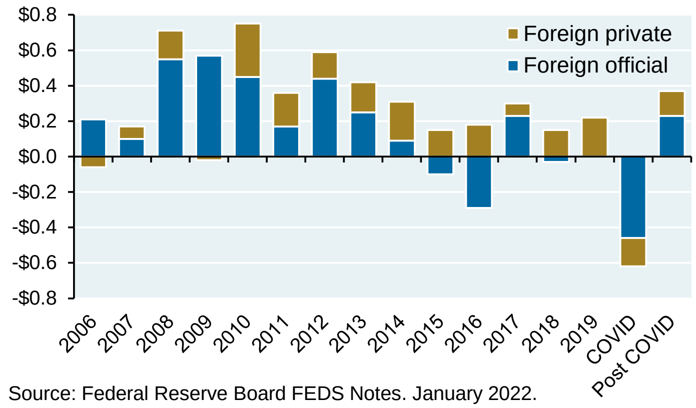
As illustrated on the right, post-COVID foreign purchases of Treasuries have rebounded and are similar to what they were before (Weiss, Jan 2022). In other words, little evidence of a change in reserve currency status based on what took place during COVID.

Net foreign purchases of Treasuries by crisis
Percent of total foreign holdings



Source: Federal Reserve Board FEDS Notes. January 2022.

Net foreign purchases of Treasuries by year/type
US$, trillions

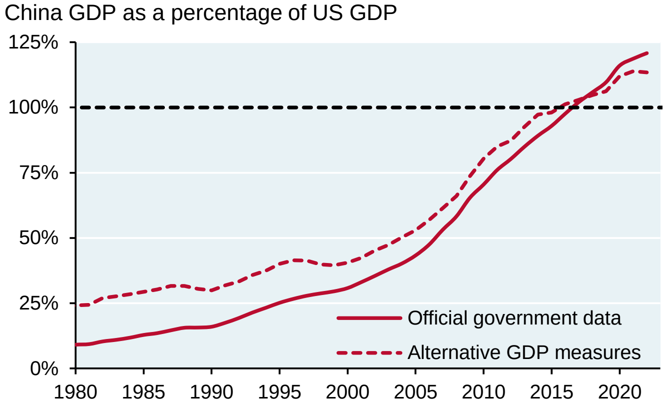


Source: Federal Reserve Board FEDS Notes. January 2022.

ix. Anything to learn from the history of the US dollar overtaking the British pound in the 20th century?

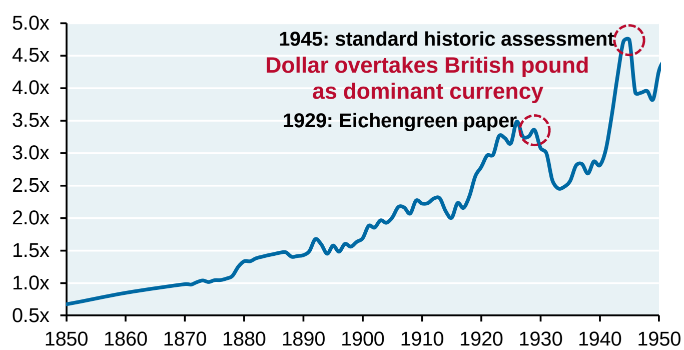
There's a lot of discussion on how the size of China's economy has surpassed the US. China's rise has been remarkable and resulted in the largest per capita GDP gains of any country over the last 100 years (see Appendix). But there's more to reserve currency status than size, such as market depth, liquidity, clarity of default resolution, ability to perfect interest in property, etc. As shown in the second chart, the US was at least 3.5x larger than the UK by the time the dollar replaced the pound as the world's reserve currency, even when using the late 1920's as the transition point based on research from Eichengreen et al (2012). Using the standard historical transition date of 1945, the US was 4.7x larger than the UK when the pound=>dollar switch occurred.

China's economy now larger than the US
China GDP as a percentage of US GDP



Source: Conference Board, JPMAM. 2022.

The US economy was 3.5x-5x larger than the UK when the US$ replaced the pound as the world's reserve currency
US GDP as a % of UK GDP

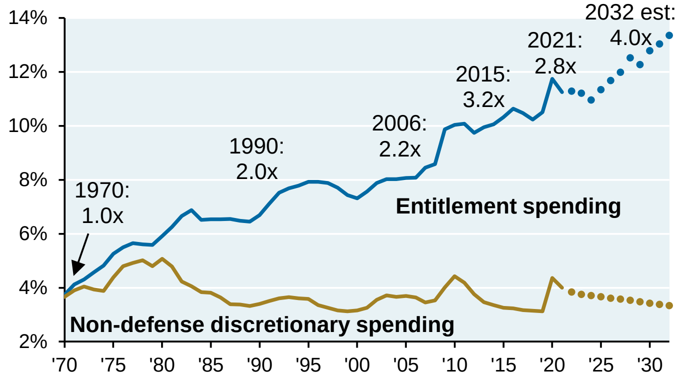


Source: Conference Board, Angus Maddison Project, JPMAM. 2022.

x. Wrapping up: the US has around 20 years to figure it out

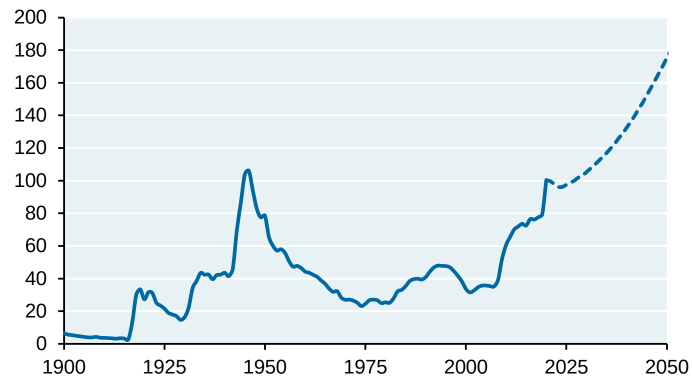
I'm not ignoring the long-term fiscal issues that the US faces[6]. I've written about them often as part of the "chart that everyone hates" series, which is the first chart below. As a reminder, everyone hates this chart since it highlights how non-defense discretionary spending[7] that affects long-run productivity is being crowded out by entitlement spending that no one knows how to control, and which the CBO projects will end up doubling US Federal debt/GDP by 2050. Even mentioning the issue continues to be the third rail of American politics[8].

What does the Federal government spend money on?
% of GDP, with ratio of entitlement to non-defense discretionary



Source: CBO, JPMAM. May 2022. Dots are CBO projections.

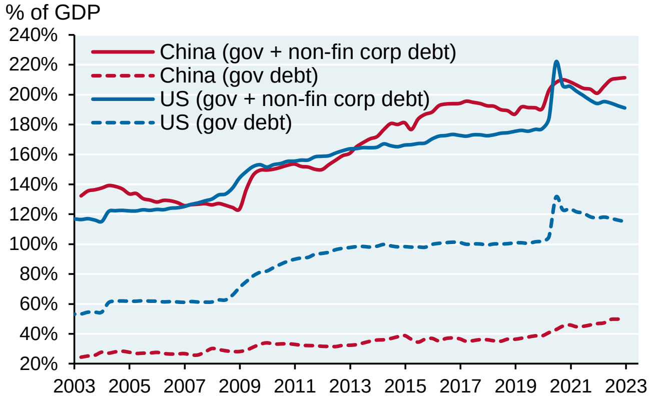
Federal debt held by the public, 1900 to 2050
Percent of GDP



Source: "*The 2022 Long-Term Budget Outlook,*" CBO. July 2022.

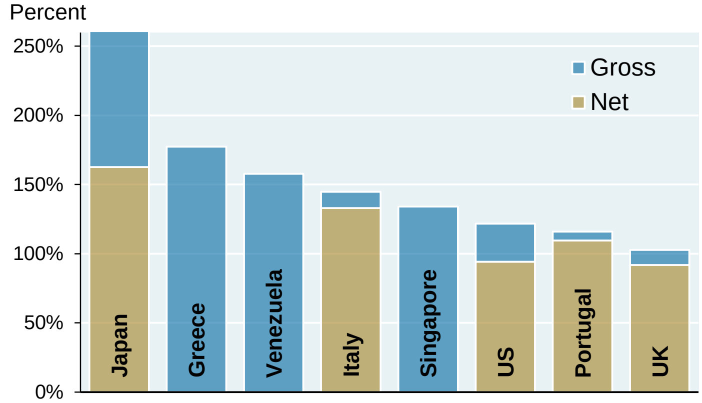
I'm of the view that the US has around 20 years to figure things out before a more sustained reserve currency threat from the RMB materializes, particularly since China has debt issues of its own. China's debt has accumulated in the corporate sector, some of which is increasingly indistinguishable from the government. If by that time the US debt ratios have veered off into Greece/Japan/Venezuela territory, then the long-predicted decline of the dollar as reserve currency may finally occur.

General government and non-financial corporate debt
% of GDP



Source: Wind, CNBS, Federal Reserve. Q4 2022.

Select general government debt to GDP ratios
Percent



Source: IMF, JPMAM. 2022. Net debt not available for Gre, Ven, Sin

Michael Cembalest, JP Morgan Asset Management

[6] I view the debt ceiling dispute as much more likely to result in a Gramm-Rudman-Hollings style agreement to curtail gov't spending than in a default, so I don't think the debt ceiling is a risk to the dollar right now

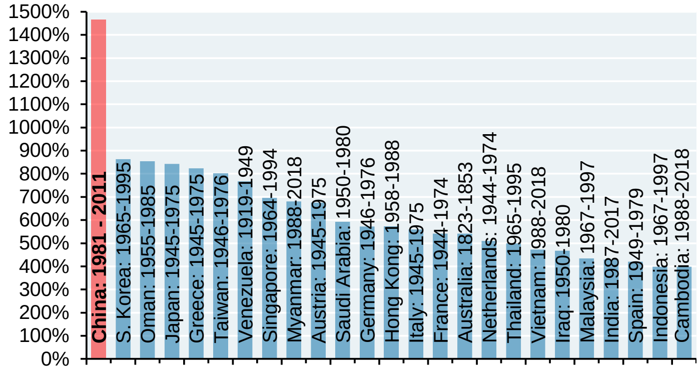
[7] Examples of non-defense discretionary spending: transportation infrastructure, air traffic control, Arms Corps of Engineers, science/energy, pollution abatement, education/training, law enforcement, judiciary, vaccine development, FDA, bioterrorism etc.

[8] From the NYT, Feb 17, 2023: "*Rick Scott Drops Social Security from Plan as GOP Retreats from Entitlement Cuts. The backtracking by the Florida Republican came after bipartisan criticism and signaled how completely the GOP has pulled away from calls to overhaul the nation's entitlement programs*"

xi. Appendix and Sources

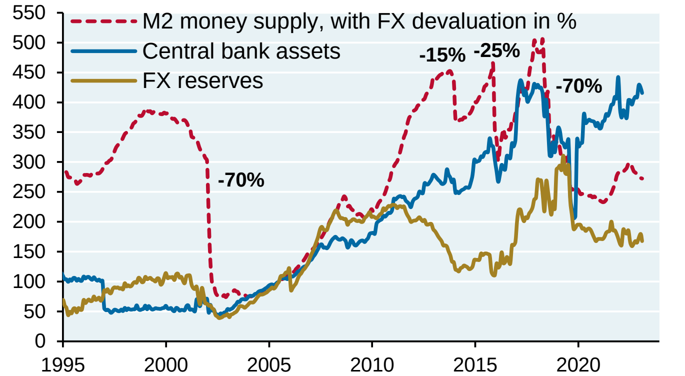
The first chart shows the largest per capita GDP gains in the last 100 years; China is #1 by far. The second chart shows that whenever the Argentine money supply grows too quickly relative to Central Bank assets/reserves, the currency eventually collapses. There have been 5 such episodes since the year 2000 (!!).

China's economic transformation in context
Largest 30 year increase in real per capita GDP by country



Source: Conference Board, University of Groningen, JPMAM. 2021.

Argentina
Index (100 = June 2005)



Source: Bloomberg, JPMAM. February 2023. Note: %=deval. in ARS vs USD.

Japanese government bond traders: work from home is completely fine. As reported by the Wall Street Journal, there has been a collapse in trading volumes of Japanese government bonds. Last October, none of the on-the-run 10 year Japanese government bonds traded for four days in a row, for the first time since 1999. The reason: the Bank of Japan was implementing a cap on 10 year JGB yields at 0.25% at a time when 30 year yields were 1.475%, leaving traders with nothing to do. The collapse in JGB trading began several years ago when the 10 year rate cap was 0%. At one point in 2016, average daily trading volumes in 5-10 year government bonds was $112 *billion* in the US compared to $172 *million* in Japan.

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American Gothic **January 24, 2023**
The Federal debt and how the Visigoths may try to break the system if no one fixes it

Winter Heating **February 21, 2023**
The large language model battles begin: a look at the future of web search, conventional wisdom machines, hallucinating bears in space, some early application successes and how far they still are from humans in the realm of real intelligence.

Silicon Valley Bank failure **March 10, 2023**
One of these things is not like the other, and that thing is Silicon Valley Bank.

13th annual energy paper **March 28, 2023**
Renewables are growing but don't always behave the way you want them to. This year's topics include the impact of rising clean energy investment and new energy bills, how grid decarbonization is outpacing electrification, the long-term oil demand outlook, the flawed concept of levelized cost when applied to wind and solar power, the scramble for critical minerals, the improving economics of energy storage and heat pumps, the transmission quagmire, energy from municipal waste, carbon sequestration, the Russia-China energy partnership, methane tracking and some futuristic energy ideas that you can just ignore, for now.

Frankenstein's Monster **April 10, 2023**
Banking system deposits and the unintended fallout from the Fed's monetary experiment; commercial real estate, regional banks and the COVID occupancy shock; the wipeout of Credit Suisse contingent capital securities; a market and economic update; and an update on San Francisco, which has experienced the weakest post-COVID recovery of any major city in North America

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