

TOP *of* MIND

WHAT'S IN STORE FOR THE DOLLAR



After the US Dollar surged in late March as investors rushed to its safety amid the global onset of the coronacrisis, its value has since declined sharply. As uncertainty about the virus trajectory and the global economic recovery—not to mention the US election—continues to loom large, the key question from here is whether this retrenchment marks the start of a multi-year Dollar down cycle, and, even more fundamentally, an erosion of the Dollar's dominance in the global monetary system. We feature interviews with three experts to answer these questions: UC Berkeley's Barry Eichengreen, Cornell's Eswar Prasad and GS's own Zach Pandl. They don't necessarily agree on the direction of the Dollar ahead, with Eichengreen less convinced than Pandl that the Dollar is set for a period of sustained depreciation. But they do agree that despite economic and geopolitical trends that suggest an eventual erosion of the Dollar's global role, there's still a long way to go before potential Dollar substitutes—the Euro, RMB and digital currencies—challenge its dominance.

“It's not just the rate of global growth that matters for the Dollar's value, it's how global growth compares to US growth. Even if the global economy is recovering, if US growth outpaces global growth, the Dollar will remain supported.

- Barry Eichengreen

The Dollar's value surged at the beginning of the coronavirus recession... but it has lost ground since as the global recovery has gained traction. This pattern will likely persist... with good news on the global economic recovery probably weighing on the Dollar... almost regardless of how the US economy is performing relative to key trading partners.

- Zach Pandl

By all logic, the Dollar's dominance in the global monetary system should be declining... But the reality is that the Dollar's position remains as dominant as ever.

- Eswar Prasad

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Investors should consider this report as only a single factor in making their investment decision. For Reg AC certification and other important disclosures, see the Disclosure Appendix, or go to www.gs.com/research/hedge.html.

Macro news and views

We provide a brief snapshot on the most important economies for the global markets

US

Latest GS proprietary datapoints/major changes in views

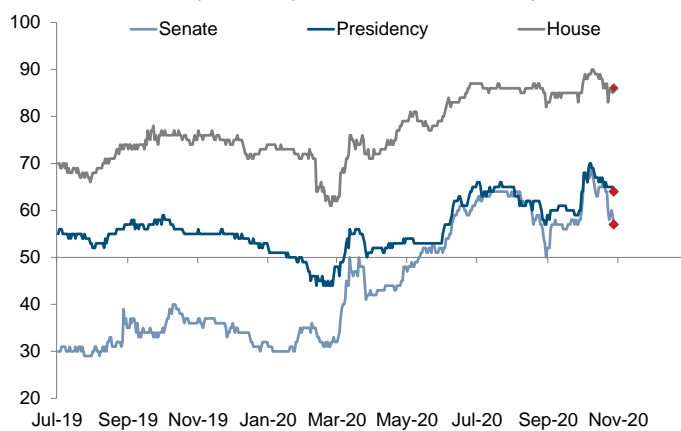
- We now expect core PCE inflation to decline to 1.4% by year-end 2021.

Datapoints/trends we're focused on

- US elections; under a Democratic sweep, we think Democrats would likely pass a ~\$2.5tn COVID-19 relief package.
- Vaccine approval; we still expect the FDA to grant Emergency Use Authorization for at least one vaccine by year-end.
- COVID-19 spread, which has worsened on net over the last month, with daily new cases rising to as high as over 80K.
- Pandemic scarring effects, which have so far proven much less severe than initially feared.

Likelihood of a Democratic sweep remains elevated

Prediction market probability of a Democratic victory, %



Source: PredictIt, Goldman Sachs Global Investment Research.

Europe

Latest GS proprietary datapoints/major changes in views

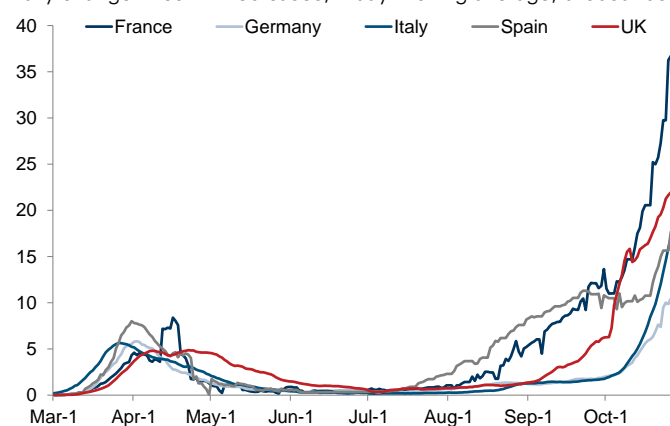
- We expect the ECB to announce a EUR 400bn PEPP extension at its December meeting.

Datapoints/trends we're focused on

- Virus spread; daily new cases have reached record-high levels across Western Europe, leading to renewed restrictions.
- Brexit; we still think a "thin" free trade agreement will likely be struck by early November, and ratified by year-end.
- Inflation; we expect the ECB to adopt a symmetric 2% inflation aim but think it will include "soft" elements of AIT.
- Government deficits; we expect EMU-4 wide deficits of ~9% of GDP in 2020 and ~6% of GDP in 2021.

New virus cases in Europe have sharply increased

Daily change in confirmed cases, 7-day moving average, thousands



Source: JHU CSSE, Goldman Sachs Global Investment Research.

Japan

Latest GS proprietary datapoints/major changes in views

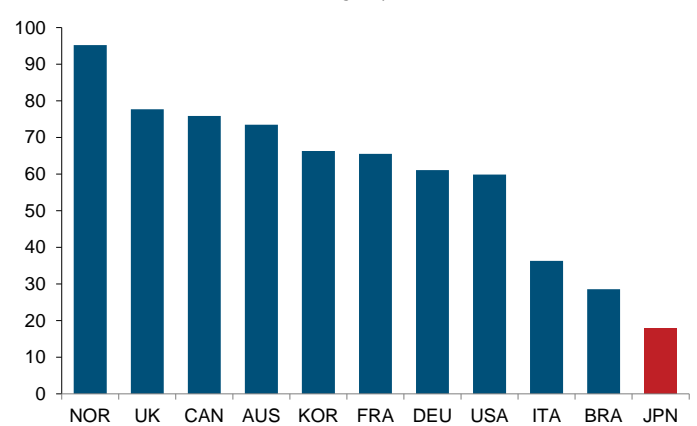
- No major changes in views.

Datapoints/trends we're focused on

- Early elections; we think the probability that PM Suga will call a snap general election before year-end 2020 is diminishing.
- A third supplementary budget, which the government may compile as it tries to prevent virus spread while reviving activity.
- Government-led digitization, which we believe is essential to enhancing digital literacy in the private sector.
- A central bank digital currency, which we do not believe Japan has any need to rush into given strong cash demand and a well-functioning settlement/payments system.

Digital literacy is low in Japan's private sector

Citizens who used internet banking in past three months, % (2017-19)



Source: OECD, Goldman Sachs Global Investment Research.

Emerging Markets (EM)

Latest GS proprietary datapoints/major changes in views

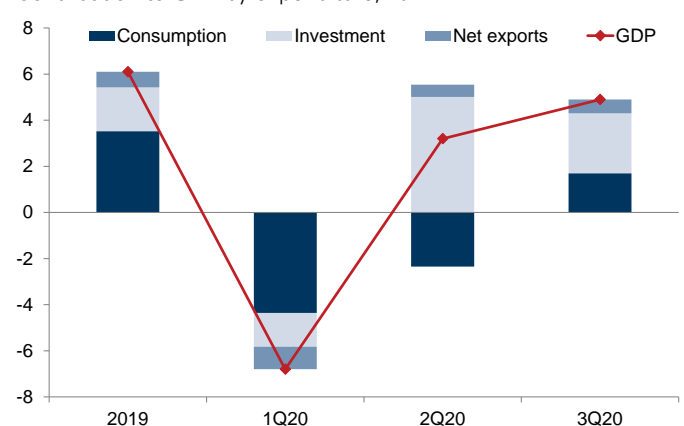
- Our 2020 China GDP growth forecast fell to 2.0% following softer-than-expected Q3 growth on disappointing investment.
- We lowered our 4Q20 CEE-4 growth forecast to -4.4% following a second wave of virus spread in the CEEMEA region.

Datapoints/trends we're focused on

- Virus spread; daily new cases are increasing in CEEMEA but falling in LatAm and EM Asia.
- Asia trade; we expect a high single-digit recovery in Asian exports in 2021, with tech-oriented exporters early beneficiaries.
- EM fiscal imbalances, which have widened sharply since the pandemic began, and are expected to remain elevated in 2021.

Investment added significantly less to China's Q3 GDP

Contribution to GDP by expenditure, %



Source: NBS, Goldman Sachs Global Investment Research.

What's in store for the Dollar

After the US Dollar surged in late March as investors rushed to its safety amid the global onset of the coronavirus crisis, its value has since declined sharply to the lowest level in over two years. As uncertainty about the virus trajectory and the global economic recovery—not to mention the US election—continues to loom large, the key question from here is whether this retrenchment marks the start of a multi-year Dollar down cycle, and, even more fundamentally, an erosion of the Dollar's dominance in the global monetary system, which could have far-reaching implications for the relative performance of economies and asset values over time. In short, what's in store for the Dollar is Top of Mind.

We first sit down with Zach Pandl, GS co-head of Global FX, Rates and EM Strategy, who has high conviction that a period of sustained Dollar downside is ahead given the Dollar's current overvaluation—in the 10-15% range on his estimates—deeply negative real rates in the US, and an ongoing sharp global economic recovery from the coronavirus recession—a standard recipe for broad Dollar weakness, in his view. He's expecting a 15% depreciation in the real trade-weighted Dollar from this year's peak to the end of 2023, but believes a larger move is possible. And he sees the trajectory of the pandemic and vaccine development, as well as the election outcome, as risks that might affect the timing of Dollar weakness, but likely won't impact the medium-term Dollar outlook.

GS global economists Sid Bhushan and Daan Struyven then explain that while stronger global growth should help weaken the Dollar, this expected period of Dollar weakness should also act as a form of global monetary easing, lending support to global growth and reinforcing our above-consensus global growth forecast for next year. And GS strategists review the asset implications of such a move, which they believe will lend support to US, Asian and broader EM equities, and provide a particular boost to commodity prices (see pg. 10 for an asset-by-asset discussion.) Indeed, Damien Courvalin, GS Head of Energy Commodity Research, explains that a positive feedback loop between a weaker Dollar and higher commodity prices is yet another reason to be bullish on commodities in 2021.

But not everyone believes there's a clear case for a Dollar depreciation trend ahead. We speak with Barry Eichengreen, Professor of Economics and Political Science at the University of California, Berkeley, who doesn't think the Dollar is especially over/undervalued today, and doesn't buy into common arguments for Dollar downside such as the view that the US will eventually have to cheapen its financial assets through Dollar depreciation in order to attract the foreign capital necessary to finance persistent budget deficits. Although he sees some merit in the argument that better global growth could weaken the Dollar, this, he says, will depend entirely on relative growth rates between the US and the world; in his view, even if the global economy is recovering from the coronavirus recession, if US growth outpaces global growth, the Dollar will remain supported.

Beyond whether the Dollar is now on a depreciation trend or not, an even more consequential question is whether shifting growth and geopolitical factors suggest an eventual erosion of the Dollar's current dominance in the global monetary and reserve systems (see pg. 11 for a snapshot of Dollar

dominance.) Eichengreen believes that the declining relative importance of the US in the global economy and recent US foreign policy decisions that have led many policymakers globally to question their dependence on the Dollar—including a retreat from traditional alliances and the “weaponization” of the Dollar to force compliance with US policy positions—is likely to lead to diminished Dollar dominance over time. But he sees very slow progress in the internationalization of the major potential Dollar alternatives—the Euro and the RMB—as a testament to the Dollar's strong grip on the global system for the time being. Pandl generally agrees, emphasizing that while some of these alternatives are gaining ground, they remain far from close Dollar substitutes. And GS FX Strategist Michael Cahill broadly discusses the impediments global reserve managers face in pursuing de-Dollarization.

We then take a closer look at the progress that the Euro and the RMB have made toward internationalization, and the remaining obstacles to achieving it. On the Euro, Pandl and GS FX Strategist Isabella Rosenberg argue that the EU Recovery Fund is an important first step in addressing structural weaknesses that have held back its internationalization. Eichengreen, for his part, basically shares this view but sees the Fund as more of a baby step, stressing that its EUR 750bn size is small potatoes relative to the trillions of dollars of US Treasuries held by central banks and governments worldwide. And, with the majority of this bond supply likely to be absorbed by ECB quantitative easing in any case, he sees the shortage of high-quality bonds in Europe remaining a real obstacle to a greater global role for the currency.

On the RMB, we speak with Eswar Prasad, Professor of Trade Policy at Cornell University. He argues that while Chinese policymakers have made meaningful progress on liberalizing reforms that will likely promote the internationalization of the RMB, concerns about the credibility and durability of such reforms remain key obstacles to a greater global role for the currency. And Eichengreen goes a step farther, reminding us that every true international currency in history has been the currency of a political republic or a democracy. But GS Asia economist Maggie Wei makes the case that further liberalization of China's capital account would nonetheless go some way in increasing the global use of the RMB.

Finally, GS Chief Asia Economist, Andrew Tilton, as well as many of our other contributors, address the next currency frontier—digital currencies—and their potential implications for payments, banking and the global monetary system. The consensus seems to be that these currencies—and especially future Central Bank Digital Currencies (CBDCs)—will likely mark an evolutionary step in the global payments system and could have some effect on the toolkit to conduct—and transmission of—monetary policy, but are unlikely to directly challenge the Dollar's role in the global monetary system.

P.S. Don't forget to check out the podcast version of this and other recent GS Top of Mind reports—on [Apple](#) and [Spotify](#).

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Interview with Zach Pandl

Zach Pandl is Co-Head of FX, Rates, and EM Strategy at Goldman Sachs. Below, he argues that the US Dollar is heading for a period of trend depreciation that will most likely last several years.



Allison Nathan: Why did the Dollar rally at the start of the pandemic, and why has it generally weakened since?

Zach Pandl: The value of the Dollar is negatively correlated with the health of the global economy, reflecting the currency's unique international role. For example, during a recession, demand for US Treasuries from global investors rises, and these inflows—if they are

unhedged—result in Dollar appreciation. This is the simplest reason for that correlation, but there are several others related to the Dollar's many roles in the global trade and financial system. In fact, we often encourage investors to think of two Dollars: a "domestic Dollar" that reflects the relative performance of the US economy and asset markets, and an "international Dollar," which tends to respond to global developments, including overall global GDP growth, trends in commodity prices, investor risk appetite, and other factors.

In recent years, and certainly this year, global developments have had a bigger influence on the value of the Dollar than the performance of the US economy relative to the rest of the world. The Dollar's value surged at the beginning of the coronavirus recession even though the Fed cut rates to zero, but it has lost ground since as the global recovery has gained traction. This pattern will likely persist as long as the world is still dealing with the coronavirus recession, with good news on the global economic recovery probably weighing on the Dollar, and negative news likely lifting its value almost regardless of how the US economy is performing relative to key trading partners.

Allison Nathan: That said, you forecast a period of sustained Dollar downside ahead. What's driving your conviction in Dollar depreciation, and how far and how long can it run?

Zach Pandl: I do expect a period of trend depreciation for the Dollar that should last at least a few quarters and most likely several years. Whenever we make a longer-run forecast like this it's important to have some humility about the number of things that could change over time. But our conviction comes from the fact that all the usual variables we monitor to inform our broad Dollar view are pointing in the same direction. First, the US Dollar is substantially overvalued: on a broad trade-weighted basis, the currency was roughly 20% overvalued at its highs earlier this year on our models, and is 10-15% overvalued today. Second, the Fed has committed to keeping rates low to help generate higher inflation, meaning deeply negative real interest rates are likely to persist for some time. And third, over the next few years the global economy should be on a relatively steep upward trajectory out of the coronavirus recession. We see these factors—overvaluation, negative real rates, and a recovering global economy—as a standard recipe for broad Dollar weakness.

How large could the move be? Well, in past periods of a trending Dollar, the trade-weighted index has moved an average of 30% over five years. We are currently forecasting about a 15%

depreciation in the real trade-weighted Dollar from this year's peak to the end of 2023, but a larger move is certainly possible.

Allison Nathan: Where does your Dollar depreciation view stand relative to consensus expectations?

Zach Pandl: The view that the Dollar is overvalued today and is likely poised for downside over the next few years is widely held. But investors still seem reluctant to embrace a lower Dollar view for the remainder of this year and through 2021 given the looming uncertainty around the US election, the health of the global economy and how the US will perform relative to other markets. So, many investors are not positioned for a weaker Dollar in the coming months.

Allison Nathan: But wouldn't some election outcomes materially change your Dollar views?

Zach Pandl: The election could alter the timing of Dollar depreciation, but it likely won't change the medium-term outlook. The Dollar weakness that we're expecting is more a reflection of the general outlook for the global economy and the Dollar's high valuation today than a specific election outcome. That said, we do think that a "blue wave" election that sees Democrats gain control of both the White House and Congress could bring forward the Dollar weakness we expect for several reasons. For example, a more multilateral approach to foreign policy, especially regarding US-China relations, could strengthen the appreciation trend of the Yuan against the Dollar. Similarly, proposals to raise corporate tax rates and increase regulation in some sectors like technology could reduce cross-border demand for US equities. And even fiscal stimulus could paradoxically be Dollar negative: if investors need to be compensated to buy more Treasury bonds to fund US deficits, and if the Fed continues to hold real rates low, the Dollar may need to weaken to induce foreign demand.

Alternatively, a status quo election outcome in which President Trump wins re-election and Republicans hold the Senate would likely keep the Dollar relatively well-supported into year end. But once you turn the page to next year, the focus for markets will likely shift towards other issues, including the likely timeline for the distribution of a vaccine and relative economic performance across countries. So, even under this scenario, we would still anticipate eventual Dollar weakness over the medium term despite a likely short-term boost on a Trump victory.

Allison Nathan: What about the other major source of uncertainty keeping investors at bay: the pandemic?

Zach Pandl: When it comes to the pandemic and the Dollar, investors should think not only about how the US is performing relative to the rest of the world, but also the overall outlook for the coronavirus and the global economic recovery, which is often the larger driver of its performance—an often underappreciated fact. Ironically, even if the US pandemic trajectory is worsening, if the trajectory in the rest of the world—and, in turn, the global outlook—is also deteriorating, then the Dollar would likely strengthen due to its safe haven properties. In fact, we saw this pattern play out in June of this year. Conversely, if the virus

situation in the US improves, but global virus developments also improve and the global economy as a whole is recovering from the coronacrisis, then the Dollar would likely weaken.

Allison Nathan: Your FX forecasts embed a fairly optimistic vaccine outlook—that at least one vaccine is approved for Emergency Use Authorization by the FDA before year-end, and large portions of the US and European populations are inoculated in 2021. How would a vaccine delay impact your Dollar view?

Zach Pandl: Bad news on the vaccine is likely to be good news for the Dollar, especially relative to Emerging Market (EM) currencies. Many EM countries have struggled to control the virus without a vaccine, so they would benefit disproportionately from a vaccine. Our optimistic vaccine assumptions are therefore one reason behind our relatively positive outlook for EM assets. That said, while a long vaccine delay would likely support the Dollar versus the currencies of many EMs that have struggled with virus control, it could still result in Dollar weakness versus crosses in countries that have done well on virus control, including the Chinese RMB and other Asian currencies.

Allison Nathan: What risk to your views worries you most?

Zach Pandl: The risk that I'm most worried about—and where we get the most pushback from investors—is the potential for persistent US equity outperformance, and therefore continued unhedged foreign inflows into US stocks. US corporate profits and equity markets have been much stronger than those in the rest of the world for about a decade. That has continued this year with the very strong performance of the US tech sector. Most equity investors push back on our views around Dollar weakness because they believe that the opportunity in other major global markets remains fairly unattractive and intend to remain overweight US equities. If demand for US equities remains very strong, and US equity markets continue to massively outperform, it would be hard to see meaningful Dollar weakness. But, our view, shared by our colleagues in equity research, is that the outperformance of US markets over the last decade reflects factors particular to the post-GFC period, and relative returns across regions will be more balanced in the future.

Allison Nathan: Bigger picture, is the Dollar's dominant role in the global monetary system and as the global reserve currency in jeopardy at all?

Zach Pandl: The Dollar's role is under pressure, partly for the simple reason that the currency's role in the global financial system is much larger than the US's role in the global economy. The US economy comprises only around 15-20% of global GDP, but the Dollar accounts for about 60% of global foreign exchange reserves, three-quarters of cross-border lending to EMs, and is the dominant currency in global trade. So the natural evolution would be to see a rise in the weight of global currencies in the international financial system to reflect the changing nature of the global economy—although whether this will actually happen is hotly debated.

US foreign policy choices have also likely contributed to pressure on the Dollar's reserve currency status. The clearest example was Russia's decision to sell most of its US-domiciled assets after the Trump Administration sanctioned a number of Russian individuals. The European Commission has also expressed concern that US extraterritorial sanctions threaten the EU's financial and monetary sovereignty. These issues often prompt debate about the Dollar's global role, but at the moment investors have no suitable alternative.

Allison Nathan: But are potential alternatives like the Euro and the RMB getting closer to competing with the Dollar?

Zach Pandl: Yes, both Europe and China are taking steps to make their currencies stronger competitors to the Dollar. The EU's Recovery Fund is a big step forward in the potential internationalization of the Euro because it starts to address some of the structural weaknesses of the European Monetary Union. And China has been reforming its capital market to encourage more bond and equity inflows, and it was recently announced that its bonds will be included in the FTSE World Government Bond Index starting next year, which is another important step toward deepening its capital market. These efforts will take time to have an effect on international currency choice, but stronger competition from the Euro and the RMB is likely a necessary condition for substantially reducing the Dollar's global role.

Allison Nathan: Has the coronacrisis increased the urgency for diversification away from the Dollar?

Zach Pandl: At this stage, it's too early to say. On the one hand, one could argue that political factors may encourage greater diversification away from the Dollar. On the other hand, financial crises are a reminder of why countries have foreign exchange reserves in the first place, and why they have them denominated in Dollars—as long as the global financial system is Dollar-based, countries need Dollars for insurance purposes during major crises like this one.

Allison Nathan: There's increased attention on greater adoption of private and public digital currencies, including central bank digital currencies (CBDCs). Does this potential shift pose a real threat to the Dollar's dominance?

Zach Pandl: In assessing the importance of this shift, it's useful to distinguish between the two main functions of money; it facilitates transactions and represents a store of value. CBDCs primarily address the transactional uses of money, so they could facilitate a move away from the Dollar in some of these uses. But, at this stage, I don't see them being a major factor in demand for Dollar reserves or as an alternative to the Dollar as a store of value, because they do not change the relative attractiveness of assets denominated in different currencies. That said, the digitization of official—and private—currencies will definitely be worth watching over the coming years.

Interview with Barry Eichengreen

Barry Eichengreen is George C. Pardee and Helen N. Pardee Professor of Economics and Political Science at the University of California, Berkeley. Below, he argues that the Dollar is likely to remain relatively stable in the near to medium term, and that its global dominance should decline over the longer term, but Dollar alternatives still lag far behind.

The views stated herein are those of the interviewee and do not necessarily reflect those of Goldman Sachs.



Allison Nathan: Is the Dollar overvalued or undervalued today? Where is it likely to move from here?

Barry Eichengreen: I don't see the real effective broad Dollar as being especially overvalued or undervalued. Despite the argument from some that we've entered a new Dollar down cycle, I don't see the Dollar as having

weakened dramatically over the recent period, and I don't necessarily believe it's going to weaken dramatically going forward. The ECB and PBOC are likely to resist further Euro and RMB appreciation against the Dollar. And the Dollar is hardly weak against Emerging Market currencies other than China's.

Allison Nathan: What are the people who argue that the Dollar has entered a new down cycle missing?

Barry Eichengreen: Their arguments remind me of the twin deficit logic often heard before the GFC. The crux of a common argument is that massive US budget deficits will translate into massive current account deficits. We're spending more than we're producing, and the only way we can attract the foreign capital necessary to finance those current account deficits is by cheapening our financial assets—in other words, by depreciating the Dollar. This argument was wrong before the GFC, and it is likely wrong today. Budget deficits don't translate one-for-one into current account deficits. The public sector may be spending more, but the private sector is spending less. This is likely to continue for some time. Households have been reminded of the inadequacy of their precautionary savings. Firms will remain hesitant to invest so long as they don't know the shape of the post-COVID landscape. Moreover, other factors beyond the size of the US current account deficit will also determine capital flows. If the government pursues investments in areas like infrastructure and early childhood education that raise US productivity, capital will flow into the US, even at current exchange rates, strengthening the Dollar.

Allison Nathan: What about the argument that the Dollar is negatively correlated to global growth, so if global growth recovers from the coronacrisis, the Dollar should weaken?

Barry Eichengreen: This argument holds some weight, but it's missing a crucial consideration. Exchange rates are relative prices. They are influenced by relative growth rates. So it's not just the rate of global growth that matters for the Dollar's value, it's how global growth compares to US growth. Even if the global economy is recovering, if US growth outpaces global growth, the Dollar will remain supported.

Allison Nathan: What risks could lead to a big Dollar move?

Barry Eichengreen: The paramount risk is the pandemic. A better US virus trajectory than the rest of the world would lend

support to the Dollar. But a US failure to get the pandemic under control due to inadequate public health measures, the absence of an effective vaccine or an unwillingness of the American public to take the vaccine when it becomes available would be strongly Dollar negative. The second risk is the US election—not simply who wins the presidential race, which will determine the direction of policy, but also which party controls the House and Senate, which will determine the extent to which those policies can be passed through Congress. The more productive investments the next government can make—again, in areas including infrastructure and early childhood education—the better it will be for the US economy and therefore for the Dollar.

Allison Nathan: Looking at the bigger picture, has Dollar dominance been good or bad for the US and for the world?

Barry Eichengreen: The dominance of the Dollar—or so-called *Exorbitant Privilege*—is a mixed blessing for the US. On the one hand, Dollar dominance has enabled the Fed to act as an effective lender of last resort, because the US conducts so much cross-border business in its own currency. Dollar dominance also provides the US with an insurance policy, in the sense that when bad things happen, the Dollar doesn't automatically crater, worsening conditions in financial markets. In fact, it does the opposite. For example, at the height of the GFC in September 2008 and earlier this year, investors rushed to the safety of the Dollar even though the US itself was embroiled in crisis. US banks and firms also have the convenience of being able to conduct cross-border business in Dollars. And it's often argued that the US can sell its Treasury debt more cheaply because of the strong demand for Dollars from central banks, corporate treasurers and others, although that argument is less relevant at zero interest rates.

On the other hand, persistent Dollar demand strengthens the Dollar, leaving US exporters at a disadvantage. But since exports depend fundamentally on US productivity, and only marginally on slight shifts in the exchange rate, that handicap is small. So, on balance, the Dollar's global status has been a modest positive for the US. This dominance has also been perfectly fine for the rest of the world in the presence of a smart Federal Reserve Board of Governors, which has acted as not just America's, but the world's, lender of last resort when crisis strikes.

Allison Nathan: Will Dollar dominance remain a good thing for the world going forward?

Barry Eichengreen: That's less clear, for several reasons. First, there's no guarantee that a future Fed will be as smart, insightful, or non-isolationist as today's. Second, the US's shrinking share of the world economy suggests that the US will likely have trouble remaining the sole provider of safe and liquid assets to the world. Finally, a system with multiple international currencies would simply be safer. It's safer to have alternatives just in case

something goes wrong financially, economically, or politically in the dominant reserve currency country.

Allison Nathan: How important will geopolitical considerations be in moving away from Dollar dominance?

Barry Eichengreen: Very important. My [previous work](#) shows that central banks and governments hold as reserves and more generally prefer the currencies of their alliance partners. So the fraying of US alliances and US efforts to weaponize the Dollar in order to force other countries to comply with US positions—such as sanctions on Iran—have encouraged countries to look to alternatives to their Dollar, SWIFT and US bank dependence. But this hasn't yet shown up in the official numbers, and progress has been slow. For example, Europe has agreed to establish an alternative clearing system called Insteax that doesn't utilize the Dollar in order to facilitate business with Iran and other countries. Last time I checked, however, it had exactly one employee. This slow progress is testimony to how deeply entrenched the Dollar is and how large the shock would have to be to displace it.

Allison Nathan: Are there historical precedents of one currency supplanting another's global dominance, and are any currencies close to challenging the Dollar today?

Barry Eichengreen: Displacement of a reserve currency has occurred in the past, such as the transition from the Dutch Guilder to the British Pound in the 19th century, and more recently, from the Pound to the Dollar beginning after WWI and solidifying after WWII. I've been predicting a move toward a more multipolar international monetary and financial system where the Dollar shares the global stage with the Euro and the Chinese Renminbi for a decade now, and I will keep predicting it until I'm right! Seriously, we haven't seen this reflected in official numbers yet. If anything, the Euro has given up more ground than the Dollar in the IMF's currency composition of foreign exchange reserves over this period, and the RMB currently accounts for less than 2% of financial transfers through SWIFT. Herb Stein famously reminded us that if something can't go on forever, then it will stop. We just can't say when.

Allison Nathan: Is the EU's Recovery Fund a meaningful step toward Euro internationalization? What steps must EU officials take for the Euro to gain ground globally?

Barry Eichengreen: Internationalizing the Euro is now the official policy of the European Commission and the ECB, but the EUR 750bn Recovery Fund is only a baby step in that direction; this fund is small potatoes relative to the trillions of dollars of US Treasuries held by central banks and governments worldwide. In any case, the majority of the new bonds, or their close substitutes, will be bought up by the ECB in the course of quantitative easing, and therefore will be unavailable to corporate treasurers or central bank reserve managers. This shortage of AAA-rated Euro, EU, and national government bonds is a real obstacle to Euro internationalization. In order for EU officials to truly advance this goal, they need to unlock the supply of safe, AAA-rated supply. Together with Daniel Gros, I've [proposed](#) that the ECB issue tradable certificates of deposit, which would unlock the European bank deposits on the ECB's balance sheet. EU officials also need to deepen the banking union and complete

the Capital Markets Union, which will make for more liquid markets and a more stable financial system. Finally, policymakers credibly signaling that the Recovery Fund is a first step—and not the only step—towards fiscal union would be useful. So while many of the pieces are in place, there is more work to do.

Allison Nathan: What obstacles remain to the RMB becoming a viable Dollar alternative?

Barry Eichengreen: China has made progress in terms of encouraging its foreign counterparties to use the RMB for trade invoicing and settlement, putting in place the infrastructure that will be necessary to support a global currency, and gradually opening up its financial markets. But the remaining obstacle to RMB internationalization is arguably the most challenging one—the political backdrop. Every true international currency in history, going back to the Republican city states of Venice, Genoa, and Florence in the 13th century, has been the currency of a political republic or democracy. Before investors will feel comfortable using the RMB for a significant portion of their cross-border transactions, they need to be assured of a reliable system of checks and balances on executive actions and a certain level of government transparency and predictability.

Allison Nathan: How transformative would digital currencies be, and could they diminish the Dollar's dominance?

Barry Eichengreen: I don't see the transition to digital currencies as significantly more important than past evolutionary changes such as the development of bills of exchange or the ability to write checks. This is just one more step towards a cashless society, a process that was well underway before the pandemic but has no doubt been accelerated by it. I think concerns around a lack of lender of last resort capability will ultimately limit the appeal of, and regulatory tolerance for, purely private payments systems. But, as these private platforms gain traction in the meantime, central banks will worry about losing control over the payments system, given that maintaining the integrity of the payments system is central to their mandates. This, in my view, is the primary driver behind central banks' interest in developing their own digital currencies. We see this clearly in the PBOC's response to the explosion of the use of digital currencies in China, including rolling out their own Central Bank Digital Currency (CBDC) as a digital currency alternative. It's easy to predict that CBDCs are coming; it's just a question of when.

Allison Nathan: Given all of the above, what share of global foreign exchange reserves will the Dollar likely comprise in 10, 20, 30 years?

Barry Eichengreen: Extrapolating from past trends, the share of Dollar reserves will likely continue to decline over the next several decades, but at a very slow pace—a fraction of 1% per annum. Conceivably, something could happen that undermines confidence in the US and in the Dollar, leading to a scramble out of the currency like we saw with the Pound after WWI and even the Dollar in 1931, in the midst of the major banking and financial crisis. I'm reminded of what the late Rudi Dornbusch said about crises: they always take longer than expected to materialize, but they're even more violent than you expected once they finally do.

Dollar ups and downs

History of the US Dollar



Source: Bloomberg, Federal Reserve Board, Congressional Research Service, various news sources, Goldman Sachs Global Investment Research.

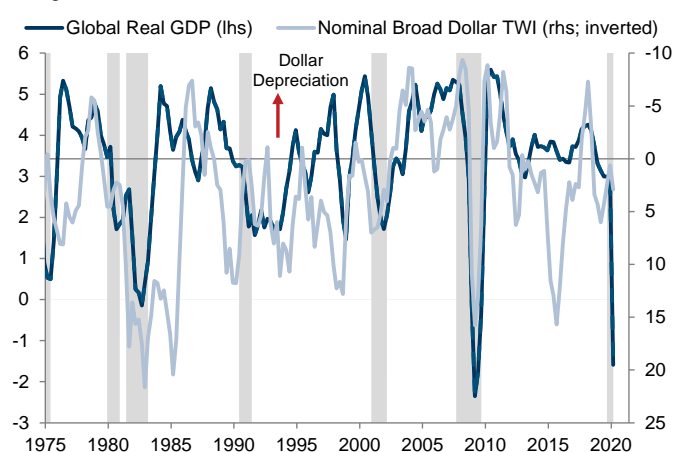
A weaker Dollar supports global growth

Sid Bhushan and Daan Struyven argue that Dollar depreciation acts as a form of global monetary easing due to the Dollar's special international role, boosting global growth

Like all currencies, the Dollar is affected by domestic conditions relative to those in other markets, including changes in relative growth rates and in interest rate differentials. But the Dollar also has an important "global" feature: it tends to appreciate when global growth slows, and depreciate when global growth firms.¹ We believe that this negative correlation between the Dollar and global growth reflects, at least in part, the Dollar's special role in international trade invoicing of non-US transactions, cross-border borrowing, and global investor portfolios.² In analyzing these channels, we find that Dollar depreciation acts as a form of global monetary easing, especially for Emerging Market (EM) economies.

Dollar depreciation has historically been associated with firmer global growth

Change, YoY, %



Note: Grey shading represents US recessions.

Source: Haver Analytics, Federal Reserve Board, Goldman Sachs GIR.

The first channel: Dollar invoicing of international trade

The first channel operates via the Dollar's outsized role in international trade invoicing and the resulting positive impact of Dollar depreciation on trade volumes. Around half of all ex-US international trade is invoiced in Dollars, and many EMs invoice nearly all of their trade in Dollars.³ In these economies, Dollar depreciation lowers the cost of imports in the local currency, boosting import demand and trade volumes.⁴ We estimate that a 10% Dollar depreciation against all other currencies is

associated with a nearly 5% increase in the volume of global trade, corresponding to just under 1% of global GDP.

The second channel: cross-border Dollar borrowing

The second channel operates through the positive effect of Dollar depreciation on firms, governments, and financial institutions that borrow in Dollars but generate revenues and own assets in local currency. Dollar depreciation means that the cost of repayments falls in local currency terms for these Dollar borrowers, and with their revenues remaining constant as a result of being generated in local currency, such borrowers are therefore more willing and better able to borrow further.⁵ With around two-thirds of global cross-border credit denominated in Dollars, we find that a 10% Dollar depreciation is associated with a nearly 5% increase in Dollar cross-border borrowing, creating a boost to domestic activity.⁶ The reliance on Dollar borrowing, and therefore the strength of this channel, is highest among EMs—specifically in CEEMEA and LatAm, where 25% and 20% of debt is denominated in Dollars, respectively.

The third channel: global investor Dollar funding

The Dollar is often the funding currency of choice in the portfolios of global investors who measure their returns in Dollar terms but invest in assets denominated in local currency, creating a currency mismatch on investor balance sheets.⁷ When the Dollar depreciates, the rise in the Dollar value of local currency-denominated EM assets relaxes investors' borrowing and risk constraints, allowing global investors to take larger positions in local currency assets, which in turn leads to higher local asset prices, easier financial conditions, and an increase in domestic activity. We also find evidence that bilateral Dollar depreciation is associated with a narrowing of sovereign risk spreads for EMs.

Tailwind to global growth

Taken together, we find that the negative relationship between the Dollar and global growth likely partly reflects the effect of the Dollar on global growth through its special role in trade, cross-border borrowing, and investor portfolios. The large downward move in the Dollar that we expect therefore supports our above-consensus forecast for global growth, and particularly for EM growth.

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¹ See "What Makes the Dollar Special", Global Markets Analyst, 21 September 2018.

² The correlation also reflects the important reverse impact of the global economy on the Dollar, which complicates any attempt to disentangle the causal effect of the Dollar on global growth.

³ See Gina Gopinath, "The International Price System", Jackson Hole Symposium, 2015.

⁴ See Casas et al., "Dominant Currency Paradigm", NBER Working Paper, December 2016.

⁵ See Valentina Bruno and Hyun Song Shin, "Capital Flows and the Risk-Taking Channel of Monetary Policy", NBER Working Paper, April 2013.

⁶ There is an offsetting effect on Dollar lenders who receive less income in the local currency as a result of Dollar depreciation, but the spending propensity of these lenders is likely significantly smaller than that of Dollar borrowers.

⁷ Bank for International Settlements, "Monetary Policy Framework in EMs: Inflation Targeting, the Exchange Rate, and Financial Stability", June 2019.

Snapshot of our mainline asset views...

Implications of a weaker US Dollar

FX

Zach Pandl, Kamakshya Trivedi & Team

- **DM:** We see the ingredients for sustained Dollar depreciation ahead; the Dollar is overvalued on standard metrics, rate differentials have narrowed substantially, and the USD tends to weaken when global growth is picking up. Thus, we expect the trade-weighted Dollar to fall by about 4% over the next year and close to 15% from the recent peak by the end of 2023. DM FX should play a key role in this move as investors reconsider portfolio allocations. This could even be accelerated in the event of a quicker global economic recovery.
- **EM:** A weaker Dollar directly corresponds to EM FX strength. EM high-yielders are, in general, likely to feature a high 'beta' to a broad Dollar move.

RATES

Praveen Korapaty, Kamakshya Trivedi & Teams

- **DM:** In a weak Dollar environment, we would expect a relative decline in front/belly US real yields versus other regions like Europe that are likely to find it more difficult to nudge inflation towards their target. A weaker Dollar should provide a boost to inflation, particularly at shorter maturities. Beyond direct effects, a Dollar bear market helps to support a structural bull market in commodities, which should strengthen the tailwind for US breakevens. For non-US rates markets, the associated domestic currency strength is likely to create a headwind for traded inflation and reinforce dovish central bank pricing. Substantial and/or rapid Dollar depreciation may also help pull in foreign official sector demand for Treasuries if the USD weakness translates into increased FX intervention.
- **EM:** A weaker Dollar environment would remove one marginal headwind for maintaining easy monetary policy or further easing across the high-yielder space, reinforcing the case for receiving rates in several of these markets.

CREDIT

Lotfi Karoui, Amanda Lynam, Kamakshya Trivedi & Teams

- **DM:** We find little evidence that a prolonged period of Dollar depreciation hurts foreign demand for USD bonds. On the supply side, funding and hedging costs have exhibited a negative correlation with foreign demand since 2014. With the caveat that the sample period is small, this pattern suggests that a decline in Dollar funding and hedging costs should therefore be supportive for foreign demand for US corporate bonds. Perhaps counterintuitively, Dollar depreciation generally coincides with declining cross-border M&A activity. This reflects the fact that the drivers of the Dollar can matter more than the move itself, with a strong Dollar often reflecting stronger growth in the US relative to Europe, thereby boosting the appetite of strategic acquirers.
- **EM:** Overall, a weaker USD should be positive for EM sovereign credit, especially for HY sovereigns with higher external vulnerabilities.

EQUITIES

David Kostin, Peter Oppenheimer, Caesar Maasry, Tim Moe, Kathy Matsui, & Teams

- **US:** A weaker Dollar should add a small boost to US corporate profits. Our top-down earnings model shows that a 10% decline in the trade-weighted USD lifts S&P 500 earnings by about 3%. Within the index, sectors and stocks with a high percentage of international sales generally outperform alongside a weakening USD.
- **Europe:** A rise in the Euro versus the Dollar is negative for European corporate earnings. Over 50% of sales of STOXX 600 companies come from outside of the Euro area and a substantial proportion of those are either to the US or Dollar-linked in some way. Based on our STOXX 600 Top-Down EPS growth model, a 10% rise in EUR/USD removes about 2.5pp off of annual EPS growth. That said, GDP growth matters much more for earnings and usually offsets the FX impact.
- **EM:** EM equities tend to outperform during periods of global growth-driven Dollar weakness. A weaker Dollar eases credit conditions for EM corporates and should also enable central banks to lean in the direction of additional accommodation given less pressure on EM currencies. Latin American markets tend to benefit the most from USD weakness, which is one of the reasons why it remains our preferred region in EM through year-end.
- **Asia-Pacific:** For Asian equity markets, there is a consistent and significant inverse relationship between the Dollar and index performance, indicating a weaker Dollar should provide a tailwind to regional stocks.

COMMODITIES

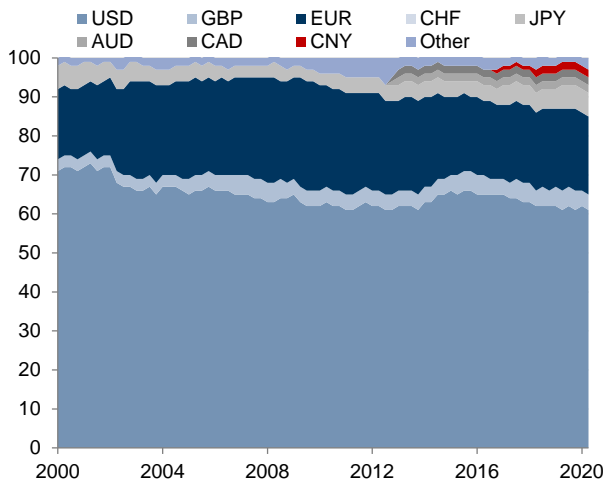
Jeff Currie, Damien Courvalin, & Team

- **Oil:** While expected Dollar weakness will provide a tailwind to oil prices, it will likely have a smaller impact than the rest of the commodity complex as a high proportion of costs are Dollar-denominated. However, once oil prices rally sufficiently to impact EM savings, they will contribute to Dollar weakness (see pg. 16 for more discussion.)
- **Base metals:** Since a high proportion of their cost is local currency-denominated (labor, consumables), base metal prices are exposed to Dollar moves. China's recovery and the acceleration of green electrification across Europe will be the main drivers of base metals demand, in our view. Accordingly, Dollar weakness vs EUR and CNY will likely provide a tailwind for prices.
- **Gold:** Ultimately, gold is "the currency of last resort" in environments like the current one, in which governments are debasing their fiat currencies and pushing real interest rates to all-time lows. These actions are set to create demand for gold as a hedge against the loss of Dollar purchasing power and will likely push prices higher in coming years.

The Dollar's global role in pics

USD accounts for ~60% of total global FX reserves...

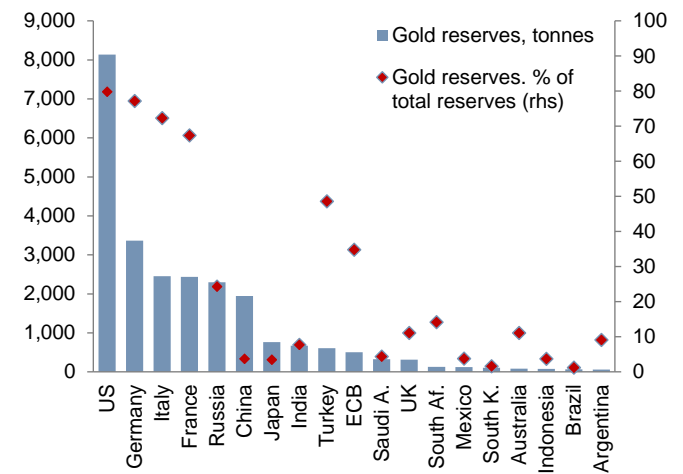
Share of global allocated currency reserves, %



Source: IMF, Goldman Sachs Global Investment Research.

...and gold reserves are also sizable for some countries.

Gold reserves, tonnes (lhs) and as a % of total reserves (rhs)

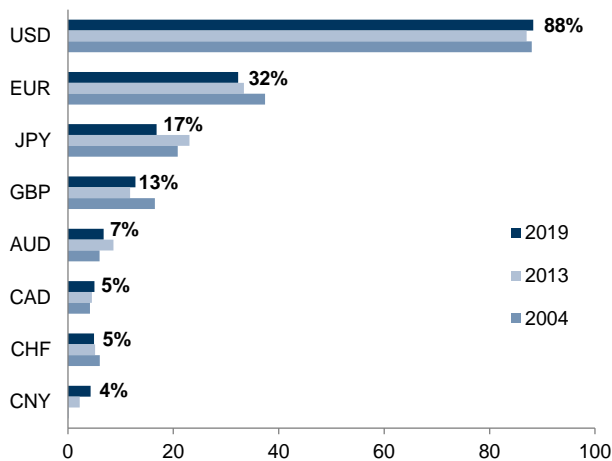


Note: As of October 2020.

Source: World Gold Council, Goldman Sachs Global Investment Research.

The Dollar remains the dominant currency in FX markets...

Share of total global OTC FX market turnover, %

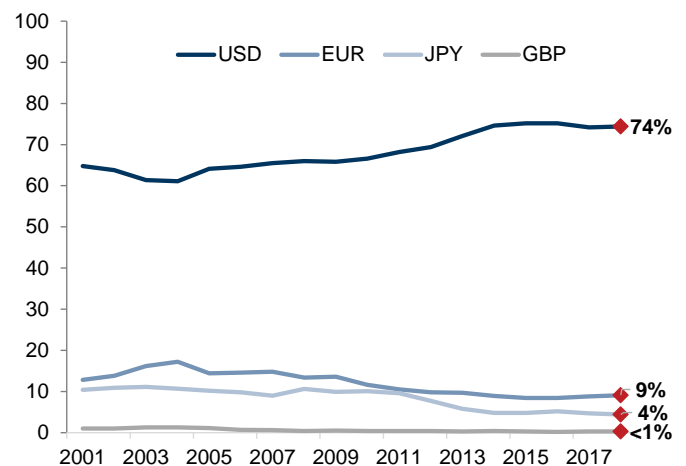


Note: Based on net-net basis; sum of the shares of individual currencies total to 200% because two currencies are involved in each transaction.

Source: BIS, Goldman Sachs Global Investment Research.

...and most EM external debt is Dollar-denominated.

Share of total EM external debt, %

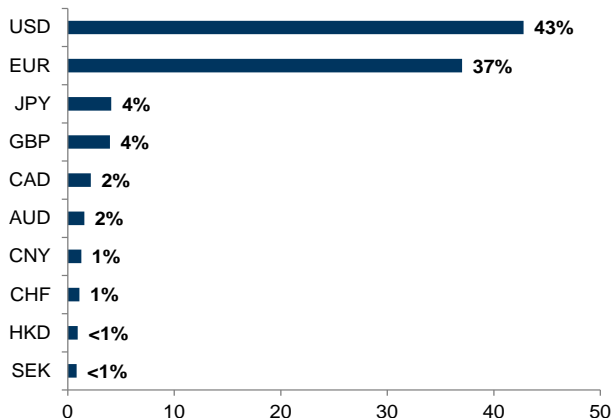


Note: Based on long-term debt of countries in World Bank Low & Middle Income classification.

Source: World Bank, Goldman Sachs Global Investment Research.

Cross-border payments mostly settled in USD or EUR...

Share of cross-border payments via SWIFT, %

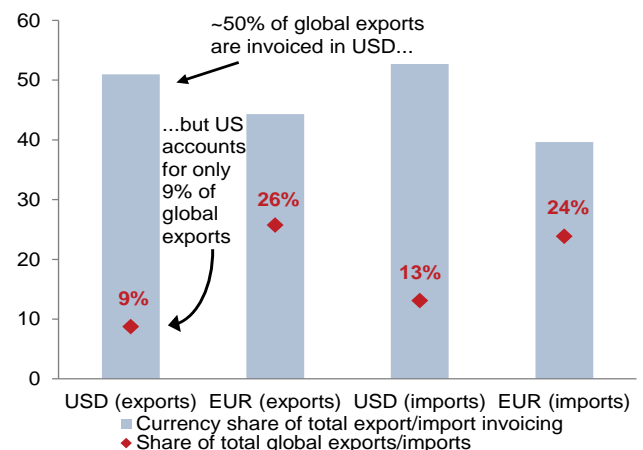


Note: As of September 2020; excludes payments within the Eurozone.

Source: SWIFT, Goldman Sachs Global Investment Research.

...as is the majority of global trade.

Share of global trade invoicing and global exports/imports, %



Source: IMF, Goldman Sachs Global Investment Research.

Interview with Eswar Prasad

Eswar Prasad is the Tolani Senior Professor of Trade Policy at Cornell University and a Senior Fellow at the Brookings Institution. He is former chief of the Financial Studies Division in the International Monetary Fund's Research Department and was the head of the IMF's China Division. Below, he argues that despite progress on liberalizing reforms, trust and credibility concerns remain a constraint on a greater global role for the RMB.

The views stated herein are those of the interviewee and do not necessarily reflect those of Goldman Sachs.



Allison Nathan: Is the Dollar's dominance in the global monetary system in jeopardy today?

Eswar Prasad: No. By all logic, the Dollar's dominance in the global monetary system should be declining given the shrinking size of US GDP relative to global GDP and the deteriorating trajectory of the pandemic and substantial political

uncertainty in the US right now. But the reality is that the Dollar's position remains as dominant as ever, both as a reserve currency and as an international payments currency; the Dollar still accounts for roughly 60% of global foreign exchange reserves, and, based on trade invoicing and other measures, remains the dominant international payments currency. So it hardly seems like the Dollar's dominant global position is being challenged on any dimension.

Allison Nathan: When we last spoke to you in 2014, you were relatively optimistic about the potential for the RMB—and other major currencies—to increasingly challenge the Dollar's dominance over the coming decade. What explains the stalled progress?

Eswar Prasad: The RMB made remarkable progress towards playing a more dominant role in the global financial system in the 2010-2015 period, with the share of global payments made in the RMB rising to nearly 3% in 2015 and the share of global foreign exchange reserves in RMB climbing significantly from essentially zero in the early 2010s. But this progress has stalled—and even slightly retrenched—since 2015, when the RMB faced significant depreciation pressures in the wake of policy missteps, and the Chinese government responded by imposing capital controls and intervening substantially in the foreign exchange market to support the currency. The RMB now accounts for about 2 percent each of international payments and global reserves.

Since this episode of volatility, the government has renewed its commitment to capital account liberalization and allowing market forces to determine the exchange rate, and it has backed up its words with actions towards achieving these reforms. But the reality is that besides some modest currency volatility caused by rising US-China tensions and the onset of the pandemic, this commitment hasn't really been tested by a period of significant pressure on the currency, and especially depreciation pressure, which can be particularly difficult to manage. Certainly, the current domestic and external backdrop, in which the Chinese economy is outperforming the other major economies and foreign investors are seeking to bring more money into China for both diversification purposes and a

search for yield, is unlikely to provide such a test. So the question remains whether policymakers—if and when they are faced with such a challenge—would re-impose capital controls and re-engage in substantial currency intervention. This uncertainty about the credibility and durability of liberalizing reforms has been a key factor in the lack of progress on the internationalization of the RMB since we last spoke.

But the RMB is not the only currency that's endured a setback over this period. Virtually all second-tier currencies, including the Euro, the Yen and the Pound, have faced various challenges, which have eroded their progress in playing a larger international role. So, in fact, today we have a bifurcation in which the Dollar remains as dominant—or even more dominant by some measures—while the second-tier currencies are duking it out against each other, with any marginal gains in their relative prominence coming at the expense of one another rather than of the Dollar, and that's likely set to continue.

Allison Nathan: So is the internationalization of the RMB a priority for Chinese policymakers at this stage?

Eswar Prasad: Currency internationalization was likely never an end goal in itself, and it certainly isn't one today. Although having a currency that plays a greater role in international finance confers benefits for the domestic economy, such as making it easier to settle cross-border transactions, Chinese policymakers have instead tended to see RMB internationalization as providing a framework for a number of reforms that are otherwise essential to achieving balanced and sustained growth—independent of what happens with the RMB. Securing a greater global role for the RMB would require a more open capital account, a more market-determined exchange rate and deeper and better regulated domestic financial markets—all critical reforms—and internationalization of the RMB became a useful slogan to reduce domestic resistance and make progress toward these goals.

Allison Nathan: Has progress on these liberalizing reforms that would facilitate broader use of the RMB been meaningful? Does such progress really matter if the main concern is that such reforms can't be trusted to persist?

Eswar Prasad: Yes, the progress has been meaningful, although there is more work to do. At this point, foreign investors have relatively unfettered access to China's fixed income markets, for example, and access to equity markets has also expanded substantially, especially through government schemes like the Qualified Foreign Institutional Investor (QFII) program, in which the size of inflows is now largely unrestricted, with remaining controls mainly amounting to registration and reporting requirements. The PBOC's relative

lack of intervention in the foreign exchange markets in recent years, especially versus the Dollar, has also been notable.

That said, progress has been slower on liberalizing outflows. Foreign investors can repatriate their capital with very few restrictions, but domestic residents are still somewhat constrained in the amount of money they can take out of the country and the type of investments they can make. And Chinese policymakers have made it quite clear that the end goal for “liberalizing” their capital account is more limited than what we see in the US and other advanced economies, where there are very few—if any—restrictions on capital flows. Chinese officials plan to maintain restrictions on hot money flows that they see as driven by speculation rather than by economic motivations related to trade or financial transactions.

But despite this more limited interpretation of “liberalizing” the capital account, trust and credibility concerns are indeed the real hurdle that’s keeping foreign investors from more fully embracing China as an investment destination and the RMB as a global currency. On top of concerns that liberalizing reforms could be rolled back, investors worry about whether the rule of law will be enforced in a manner that puts them at a disadvantage relative to domestic investors, and whether they could be subject to government rule and regulation changes without prior notice, with the judicial system offering little recourse against such actions. So the progress on liberalizing reforms matters, but more needs to be done to enhance investor trust.

Allison Nathan: What—if anything—can the Chinese government do to enhance this trust?

Eswar Prasad: Certainly, fundamental political reform isn’t in the cards for China today, and rule of law reform likely isn’t, either. But even under those constraints, the government can still do a lot to bolster its institutional framework and enhance investor confidence. Improvements in the regulatory framework and corporate governance, as well as in auditing and accounting procedures—so that investors in Chinese corporations can be assured that companies’ balance sheets and financial statements can be taken at face value—would be an important step in that direction. Some Chinese government agencies and regulators have already made progress in these areas, but there is still a long way to go on improving the institutional framework across many dimensions.

Allison Nathan: Recent US government actions, such as retrenchment from traditional alliances, aggressive use of sanctions, and the “weaponization” of the Dollar also seem to have engendered some concerns from policymakers globally. Do these types of actions increase the urgency to reduce Dollar dependence?

Eswar Prasad: Geopolitical considerations are absolutely on the minds of Chinese and other policymakers globally who are gravely concerned about the use of Dollar dominance as a geopolitical weapon. In particular, the willingness of the current and prior US administrations to use direct and secondary

sanctions to cut countries off from the Dollar-based financial system is a dangerous path that hasn’t gone unnoticed by China or even by many traditional US allies, including Europe.

Partly in response to such concerns, Chinese policymakers have put in place the Cross-Border Interbank Payment System (CIPS) that has the ability not just to increase the efficiency of domestic payments, but also to provide a pathway to link with international payment systems, and most importantly, in a way that could potentially bypass SWIFT’s payment messaging system. This is crucial because even though SWIFT is in principle a nonpartisan body, the US has been very effective at convincing SWIFT to bend to its will, for example, in maintaining compliance with US sanctions imposed on countries such as Russia, Venezuela and Iran. So establishment of the CIPS represents an important step by China to start to free itself from the Dollar-dominated global financial system.

Allison Nathan: Have such US actions put the Dollar more in “play” as a weapon for Chinese policymakers, for example, in terms of a willingness to sell US Treasuries?

Eswar Prasad: Even if the US threatened to cut off China from SWIFT as a result of escalating tensions between the two countries, it’s highly unlikely that China would choose to use US Treasuries as a retaliatory weapon. China officially holds about \$1.1tn of US Treasuries, but its actual holdings of UST and other Dollar assets are likely much greater than that. So if China is going to divest its US assets, the key question is: what would it hold instead? It can diversify to a marginal extent into gold, Japanese bonds and the bonds of other countries, but the sheer size of its holdings makes it difficult to find a market deep enough or liquid enough to meaningfully diversify away from the Dollar. That said, just the notion that China may start aggressively diversifying away from the Dollar may lead to some turmoil in US government bond markets, which may be all that China would be trying to achieve in such a situation.

Allison Nathan: How do the Chinese government’s recent efforts to roll out a digital currency factor into its currency strategy? Could it be a game changer for the RMB’s role in the global monetary system?

Eswar Prasad: China’s development of a digital currency—known as Digital Currency Electronic Payment (DC/EP)—is an important step in terms of providing competition to domestic payments services, which are becoming increasingly dominated by digital currencies. But the international implications of the DC/EP rollout are likely to be quite limited, as most international payments already exist in digital form, and China has indicated that it sees DC/EP largely as a substitute for domestic currency in circulation. I think the CIPS that I mentioned will be far more important for the RMB’s role as an international payment currency because it will make it far easier to trade, invoice and settle transactions in RMB. So over time, the CIPS, rather than the DC/EP, is likely to be the real game changer for the international role of the RMB.

A global RMB: in progress but more to go

Maggie Wei argues that Chinese policymakers have made a lot of progress towards RMB internationalization but have more work to do

RMB internationalization has returned to the spotlight as foreign investors' demand for Chinese domestic assets has boomed on the back of favorable interest rate differentials, global bond index inclusions, and the continued appreciation of the RMB. Boosting global usage of the RMB has long been on the list of policy goals in China, but is facing a greater sense of urgency today given increased global uncertainties and heightened tensions with the US. Although liberalizing reforms have materially advanced RMB internationalization over the past decade, the RMB still lags behind other major currencies on many dimensions that have held back its wider usage as a medium of exchange, store of wealth, and unit of account abroad.¹

Medium of exchange

The RMB's share in global currency turnover and usage in China's cross-border settlements is higher, as China has taken a bigger share in global trade and GDP, and has encouraged RMB-denominated invoicing with its trade partners.

- The RMB ranked as the 8th most traded currency in the BIS's latest Triennial Central Bank Survey in April 2019, and its share in overall global turnover volume rose to 4.3% from 0.9% in 2010. Despite this rapid increase, daily turnover of RMB was only \$285bn in 2019, a fraction of the \$5.8tn for USD, and the RMB's share in global turnover also remains low relative to China's share of global trade (13%) and global GDP (17%).
- The usage of RMB in cross-border settlement has also increased sharply, with 16% of China's cross-border current account settlement denominated in RMB, compared to only 2% in 2010. But such progress has not been smooth; the RMB's share in cross-border current account settlement fell in 2016-17, likely on depreciation and capital outflow concerns.
- On the public side, the PBOC has gradually expanded its bilateral local currency swap agreements, with more than RMB 3.7tn in place with 39 central banks as of 2019.

Store of wealth

Foreign holdings of Chinese assets have risen in the recent period on liberalizing reforms and favorable rate differentials.

- Foreign holdings in Chinese domestic RMB bonds and equities have increased from RMB 744bn in 2013 to around RMB 5 trillion as of June 2020 as policymakers have expanded channels and relaxed restrictions for foreign investment in these markets, including through the China Interbank Bond Market Direct scheme, as well as stock and bond connect programs. Major global equity and bond market indices, such as MSCI indices and the Bloomberg Barclays Global Aggregate Index, have also announced the inclusion of China's markets in recent years, further attracting foreign inflows. But despite the rapid increase in foreign holdings, their share in total domestic RMB bonds and equities remains low, at less than 3pp.
- On the public side, the RMB share of global reserve allocation is still limited. Only around 2% of global reserves are

denominated in RMB, compared with USD share of 61%, EUR share of 21%, JPY share of 6% and GBP share of 5%.

Foreign holdings of Chinese assets have risen, but are still low
Trillions of RMB (lhs), % (rhs)



Note: 3Q20 data are estimated using bond custodian data and stock connect flows. Source: PBOC, WIND, Goldman Sachs Global Investment Research.

Unit of account

Use of the RMB as a unit of account has also increased in the recent period owing to the inclusion of the RMB in the IMF's SDR basket, greater access to onshore FX markets and more market-driven currency management.

- The IMF included the RMB in its SDR basket in 2016, with a weight of 10.92%, which may be increased in the upcoming IMF basket review. RMB-denominated commodity futures were also launched in recent years and, most recently, QFII/RQFII rules were relaxed to allow foreign investors access to onshore commodity markets.
- Another key improvement in the RMB's usage as a unit of account is a narrowing gap between the onshore exchange rate (CNY) and offshore exchange rate (CNH), from a monthly average spread of -1000 pips to +600 pips in 2010-12 to -200 pips to +400 pips today, as offshore entities have gained greater market access to the onshore FX market. Higher transparency and more market-driven FX management have also promoted the usage of RMB as a unit of account.

What's next?

This year's outperformance of the Chinese economy and the climbing market share of China's exports, which have accelerated China's already growing contribution to the global economy, could help RMB internationalization, but they are not sufficient conditions to hasten its realization. Further relaxation of restrictions in the capital account and administrative streamlining of CNY transactions requirements could be crucial for increasing global investors' faith in the RMB. Recent policy communications imply Chinese policymakers may further liberalize cross-border RMB flows and ease restrictions on the capital account in both directions. Policymakers are also engaged in large-scale tests of a sovereign digital currency (see pgs. 18-19) to lower transaction costs, reduce the dependence on US Dollar systems for cross-border payments, and ward off potential threats to monetary sovereignty from foreign official or private digital currencies, which could increase the appeal of the RMB.

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¹ Chinn and Frankel, "Will the Euro Eventually Surpass the Dollar as Leading International Reserve Currency", NBER Working Paper, August 2005.

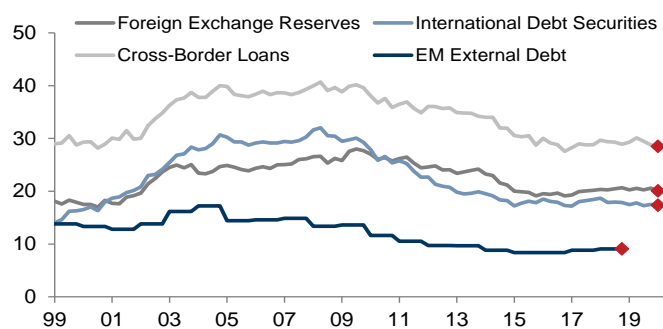
Euro internationalization: a step forward

Zach Pandl and Isabella Rosenberg argue that the EU's Recovery Fund is an important step for the internationalization of the Euro

Upon the launch of the Euro in 1999, the expectation was that its gradual "internationalization" would lead to competition with the Dollar in global trade and finance. After an inauspicious start, a steady internationalization of the Euro seemed to be underway, but much of this progress has reversed since 2007, with many measures of the currency's global role now similar to levels just after its launch. Today, the Euro functions as a global currency, but is generally thought to be "punching below its weight."¹ However, the EU's new Recovery Fund addresses many features of the European Monetary Union (EMU) that have held back the Euro's internationalization, and could therefore represent an important step forward in this effort.

Euro internationalization has reversed since the GFC

Euro's share of global total, %



Source: Haver Analytics, Goldman Sachs Global Investment Research.

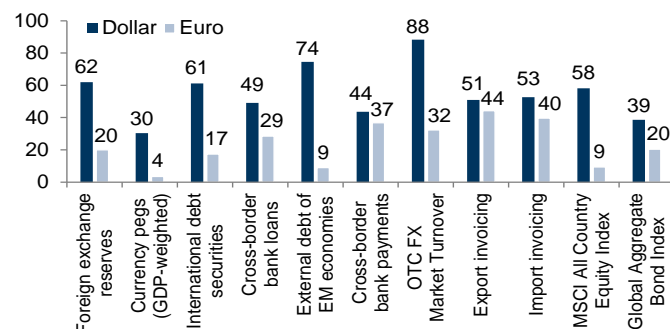
International currencies and the Euro's status

The internationalization of a currency carries many benefits.² International currencies are often used in managed exchange rate arrangements, which can lower cross-country currency volatility, and facilitate trade. Overseas holdings of domestic cash also provide seigniorage revenue to an economy with an international currency, and structural demand from official holdings of a country's bonds can lower real interest rates and allow governments to finance spending more cheaply. Lastly, global currencies arguably contribute to geopolitical hegemony. Conversely, internationalization can cause unwanted currency appreciation and a loss of control of the domestic bond market. But, likely judging that the positives outweigh the negatives, the European Commission adopted an initiative to strengthen the Euro's global role in December 2018.

On a few measures, the Euro has caught up to the Dollar in international markets—in particular, in trade invoicing and cross-border bank payments. But the Euro has a comparatively small presence across other measures of internationalization, including foreign exchange reserve holdings, currency market turnover, and cross-border lending through both bank-based and capital market channels. In short, the Euro has "regionalized," but has not truly "internationalized."

The Dollar still dominates most international functions

Currency share of total, %



Source: IMF, BIS, SWIFT, MSCI, Bloomberg, Goldman Sachs GIR.

Prospects for Euro internationalization

The Euro already has many features of a major global currency, including a large domestic economy, high financial development and relatively low currency volatility. However, structural features of the Euro Area (EA) have held back the Euro's internationalization. First, compared to other advanced economies, the EA has lower macroeconomic stability, due largely to an incomplete fiscal union and thus more persistent internal imbalances. Second, the EA lacks a large supply of the high-quality government bonds typically sought by sovereign investors. As a result, foreign official investors seeking to diversify into Euro-denominated bond markets must take on more credit risk or invest more heavily in the few available AAA-rated securities. Third, Europe lacks geopolitical reach, since foreign and defense policies are conducted nationally.

The EU Recovery Fund helps address the first two of these structural weaknesses. In terms of macroeconomic stability, the extension of intra-regional transfers in the form of grants and loans represents a step toward fiscal federalism. And given that the new bonds will probably be AAA-rated, the issuance could go a long way in addressing the dearth of highly-rated securities in the region and deepening capital markets. The Recovery Fund is therefore an important first step to jump-starting Euro internationalization.

An important next step would be an eventual decision to use the new EU-level bonds as a foundation for a deeper and more liquid Euro-denominated capital market. Additional steps should include resolving legacy debt overhangs, completing the banking union, and exiting negative rates. Euro internationalization will also depend on whether the US continues to use the Dollar's dominance to achieve its foreign policy goals, which could cause other nations to increasingly seek out substitute international currencies, with recent institutional and political changes suggesting the Euro may be the most compelling alternative.

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¹Ethan Ilizetki, Carmen Reinhart, and Kenneth Rogoff, "Why is the Euro Punching Below its Weight?" NBER Working Paper, February 2020.

² See, for example, Richard Portes and Helene Rey, "The Emergence of the Euro as an International Currency", NBER Working Paper, February 1998.

The Dollar/commodity feedback loop

Damien Courvalin argues that the positive feedback loop between a weaker Dollar and higher commodity prices supports a bullish commodity outlook in coming years

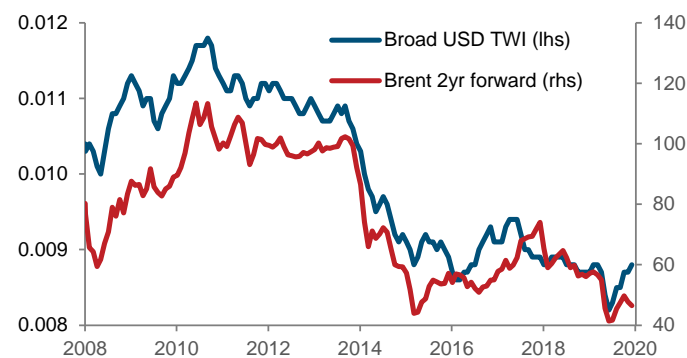
Underinvestment in commodity supply accelerated by the pandemic, combined with a recovery in commodity demand owing to vaccine developments, record-large fiscal stimuli, and the shift toward a less carbon-intensive economy, suggests higher commodity prices in 2021, followed by a new structural commodity bull market. But even beyond these supply and demand factors, the global economy's further shift into a new phase of rising interventionist policy, inflation risks and Dollar weakness provides a third macro tailwind for the commodity complex. Indeed, we find that a weaker Dollar leads to higher commodity prices, and higher commodity prices, in turn, lead to a weaker Dollar, generating a positive feedback loop that reinforces our bullish commodity outlook.

Dollar weakness drives commodity prices higher...

The weakening of the US Dollar that our strategists expect will drive long-dated commodity prices higher through input cost inflation. This is particularly the case for the mining and agricultural sectors, where labor accounts for a large share of costs and consumables are produced locally. Appreciation in the local currency would therefore increase production costs in US Dollar terms, ultimately leading to higher commodity prices.

Such higher prices, in turn, would lead to deterioration in the terms of trade for commodity importers. Throughout the 2000s, rising US oil imports, a widening current account deficit and a weakening Dollar were all self-reinforcing. While the US shale revolution broke that link—with the US becoming a net oil exporter in late 2019—this relationship could resurface as a structural shift in the US shale landscape leads to lower production growth at the same time that US oil demand recovers, potentially returning the US to a period of rising oil imports, and restoring the oil-Dollar terms of trade correlation.

A weakening Dollar has helped drive oil higher since April Dollar Trade-weighted index (lhs), \$/bbl (rhs)



Source: CME, Goldman Sachs Global Investment Research.

...but higher commodity prices also weaken the Dollar

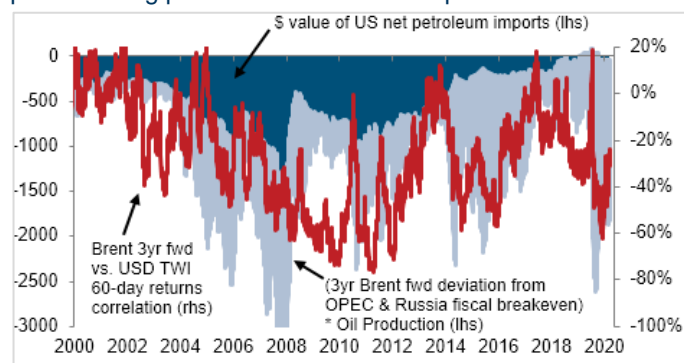
The feedback loop from Dollar weakness to higher commodity prices also runs in the other direction because higher commodity prices allow commodity exporters to save more Dollars, creating Dollar liquidity outside of the US that is available for credit and leverage in EMs. This Dollar liquidity is likely the main driver behind the co-movements of oil and the

Dollar, as the accumulation of excess USD reserves in periods of high oil prices is effectively a source of USD supply, leading to Dollar depreciation.

The feedback loop in practice

Indeed, we find high Dollar-oil correlations in periods when oil prices deviate significantly from the aggregate IMF oil fiscal breakeven price of large OPEC producers and Russia, as such deviations lead to large changes in the Dollar reserves of these exporters. We also observe high correlations in periods prior to the US shale revolution, when concerns around the size of the US twin deficit—which is partly reflective of significant oil import needs—drove the Dollar lower. While oil prices are currently depressed due to excess inventories, supply underinvestment and recovering demand are set to bring prices high enough in coming years to restart this feedback loop.

High USD-Oil correlations occur around macro shocks and periods of big price deviations from EM producer breakevens



Source: ICE, IEA, EIA, IMF, Goldman Sachs Global Investment Research.

Gold is the currency of last resort

Finally, markets are also growing increasingly concerned about a possible return of inflation now that the initial deflationary shock from the pandemic has passed. Beyond the already massive debt build-ups around the world, we see risks of politically-driven inflationary policies to address rising social needs. Such policies would support commodity consumption while commodities' history as an effective inflation hedge would lead investors to rotate into them—particularly gold.

Gold prices are driven by two primary factors: fear—which drives up investment demand in Developed Markets—and wealth—which fuels consumer demand in Emerging Markets. Both factors are set to support gold prices in the coming years as the Dollar weakens. Our strategists expect that expansionary fiscal and monetary policy in DM economies will continue to drive real rates and the Dollar lower, creating demand among DM investors for inflation hedges such as gold. We further expect EM consumer demand for gold to return next year as incomes rise, boosted by local currency appreciation. In fact, higher oil prices and a weaker Dollar would likely both accelerate the accumulation of gold by EM central banks too.

Ultimately, gold is "the currency of last resort" in environments like the current one, in which governments are debasing their fiat currencies and pushing real interest rates to all-time lows. These actions are set to create demand for gold as a hedge against the loss of Dollar purchasing power, leaving risks to our \$2,300/toz 12-mo price forecast skewed to the upside.

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De-Dollarization: struggling for substitutes

Michael Cahill contends that while the Dollar's share in global FX reserves might decline, its global status likely won't for some time

Reserve managers typically weigh a number of economic and geopolitical factors when deciding which currencies to hold in their foreign exchange reserves. Although global trends suggest that some reserve managers may seek to reduce their Dollar allocation over time—and, indeed, some have already begun this process—structural and practical considerations will likely keep the Dollar as the world's primary reserve currency for some time.

Long-term trends pointing away from the Dollar

Academic research and our own analysis finds that a number of factors drive reserve currency decisions, including the economic size, economic stability, geopolitical alignment, and financial development of a reserve currency country, as well as inertia.¹ At the very least, the first three of these factors point to a likely decline in the Dollar's share of global reserves over time—the US economy now accounts for a smaller share of the global economy and of global trade, its policies appear less stable on a number of dimensions, and countries might look to reallocate their reserves to economies that have become more important and reliable economic and political partners.

Indeed, the Dollar's share of allocated reserves has trended lower over the last 20 years as some countries have pursued reserve diversification for these reasons, with China and Russia as two prominent examples. In 1995, China held close to 80% of its reserves in Dollars. By 2014, that share had declined to just under 60%.² More recently, in mid-2018, Russia quickly cut its Dollar holdings in half, from about 45% to just over 20%.³

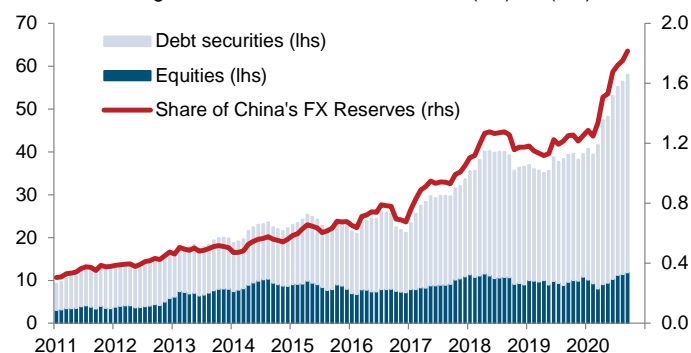
Running into constraints

Despite this, the Dollar's share of allocated reserves has remained relatively sticky above 60%, and the experiences of China and Russia highlight why. Regional flows show that China has tried to expand its investments in other important trading partners, but the investable universe is simply not large enough for China to meaningfully diversify away from the Dollar, particularly relative to the substantial size of China's reserve holdings, which account for about a quarter of global reserves. For example, China's investments in South Korea have increased almost six-fold over the last decade, but those holdings still represent less than 2% of its reserves.⁴

Russia's attempts to lower its reliance on the Dollar reveal a number of further constraints. First, while the Russian central bank's *geographic* exposure to the United States is still declining, its underlying *FX* exposure to Dollars has been roughly stable, perhaps partly because of the large number of foreign countries and companies that still issue their most stable liabilities in Dollars. Second, they also seemed to struggle to find investable assets in other countries. When

Russia abruptly shifted out of USD assets in Q2 2018, this translated into a drop in their holdings of sovereign debt, and a corresponding increase in short-term deposits—presumably in RMB—apparently because it took a while to reinvest the proceeds into Chinese bonds.

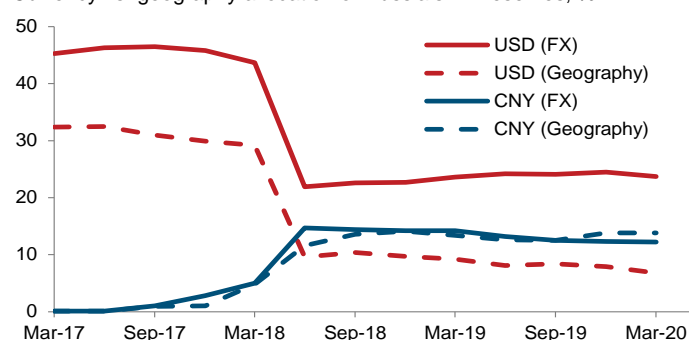
China has increased Korea holdings, but the share is small
Chinese holdings of Korean securities, \$ billions (lhs), % (rhs)



Source: Korea Financial Supervisory Service, Goldman Sachs GIR.

Third, the Dollar's share of global reserves barely budged when Russia reduced its Dollar allocation because reserve assets are highly concentrated among a few countries in which substitution challenges remain a real constraint.

Russia's reserves suggest difficulty shifting away from USD
Currency vs. geography allocation of Russia's FX reserves, %



Source: Central Bank of Russia, Goldman Sachs Global Investment Research.

Perhaps above all else, the Dollar's outperformance in March 2020 clearly demonstrates why it continues to play an important role in reserve portfolios and substitutes lag far behind: in a liquidity crunch, the Fed has the resources and willingness—at least currently—to act as the global lender of last resort, substantially boosting demand for Dollars.

Continued Dollar reliance ahead

Taking a longer view, the motivation behind—and pursuit of—de-Dollarization by some countries will likely persist. But given the Dollar's outsized role in global trade, as well as a lack of alternatives to the US's deep, open capital markets that has made finding Dollar substitutes a real struggle, the Dollar's status as a global currency is likely to remain supported for some time.⁵

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¹ See "The Drivers of Reserve Currencies", Global Markets Daily, 31 July 2020.

² China State Administration of Foreign Exchange, 2018 Annual Report.

³ Bank of Russia Foreign Exchange and Gold Asset Management Report.

⁴ Korea Financial Supervisory Service Foreign Investors' Stock and Bond Investment.

⁵ See "FX Reserve De-Dollarization: Contained and Constrained", Global Markets Analyst, 24 April 2019.

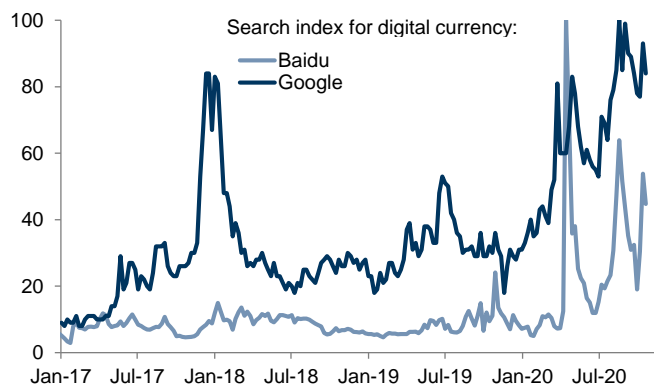
The what and why of digital currencies

Andrew Tilton explains Central Bank Digital Currencies (CBDC) and their potential macroeconomic impacts in China and beyond

Rapid innovation in digital payment applications, as well as the advent of "cryptocurrencies" based on decentralized blockchain ledger technology, have spurred central banks to explore the implications of digital currency as a substitute for, or even total replacement of, physical cash. China is at the forefront of sovereign digital currency development globally, already having rolled out a pilot program for its digital currency, known as DC/EP ("digital currency and electronic payment"). Sovereign digital currencies could offer numerous benefits in terms of payment system robustness and efficiency, real-time transaction information, and monetary policy transmission, but could also create new risks.

Broader interest in digital currencies has picked up

Searches for digital currency on Baidu and Google, index



Note: Volume of searches not directly comparable between Google/Baidu.
Source: Baidu, Google Trends, Goldman Sachs Global Investment Research.

Defining a digital currency

A central bank digital currency (CBDC) is "a new form of money, issued digitally by the central bank and intended to serve as legal tender."¹ From an accounting perspective, it is a third form of liability for the central bank, alongside cash and central bank reserves. As the name suggests, these two aspects—digital form and central bank issuance—are necessary components of all central bank digital currencies. Other design aspects of CBDCs may vary. One key distinction is between "wholesale" and "retail" CBDCs—the former are used only between central banks and financial institutions, while the latter is "digital cash" (M0) for use by households and businesses.

Central bank digital currencies differ from existing forms of payment in several ways. Currencies can generally be categorized by the type of issuer backing the currency, ranging from central bank claims, to commercial and private claims, and lastly to those without a backstop. And currencies can also be distinguished between account-centric and token-based forms of money, and, within tokens, between digital and physical ones. Cash is the classic example of a token-based instrument;

its use requires only physical possession of the bills, without any other information or identification.

Categorizing currencies

		Account-based		Token-based	
				Digital	Physical
Issuer/ backstop	Central bank	CB reserves	CBDCs (e.g. PBOC DC/EP)	Banknotes/ coins	
	Commercial bank	Bank deposits (e.g. Check, wire, debit cards)	Bank digital currencies (e.g. JPM Coin)		
	Private	Payment provider (e.g. Tenpay)	Stablecoins (e.g. Libra)	Prepaid cards**	
	None*		Bitcoin, most cryptocurrencies	Precious metals (e.g. gold)	

*Given these are supply constrained (by physical quantity or algorithm) and not backed by any entity, these tokens do not have a fixed nominal value.

**Technically, prepaid cards could be considered digital in the sense that they have a unique ID number that could be used in place of a physical bill.

Source: Goldman Sachs Global Investment Research.

Why would a central bank want to create a digital currency?

The emerging research literature and policymaker commentary on CBDCs cites numerous potential benefits to their issuance.

- **Reduced costs.** Managing cash has a nontrivial cost, not only for the central bank itself—in terms of having to provide secure physical vaults and transportation—but also for banks and other businesses. Amid the COVID-19 pandemic, physical cash has also been cited as a potential vector of disease transmission.

- **Cheaper and more efficient payments, including cross-border.** A fundamental advantage of digital payments would be to lower the cost and increase the convenience of transactions. While China and many developed markets already have quite efficient payment systems, some EMs do not. And friction in cross-border payments remains relatively high; household remittances can incur costs of 7% on average.

- **Enhancing payment system stability.** Current electronic payment systems are often quite concentrated and dominated by private companies. CBDCs could offer competition for large firms involved in providing electronic payments and enhance the resilience of existing payment systems.

- **Better transaction information tracking.** CBDCs could enable real-time transaction tracking and potentially better control of fraud, money laundering, and tax avoidance, etc.

- **Real-time economic monitoring.** Beyond the monitoring of individual transactions, CBDC transaction data could provide a timely and detailed picture of aggregate economic activity.

- **Protecting and enhancing monetary sovereignty.** Concerns that a credible and convenient digital alternative to sovereign money—either from domestic payment providers or foreign entities—could become available to citizens and ultimately reduce the ability of the central bank to influence domestic monetary conditions appears to be one motivation behind the acceleration in CBDC research and development.

¹ For more details, see "Central bank digital currencies," Bank for International Settlements, March 2018, and "The Rise of Digital Money", Tobias Adrian and Tommaso Grifoli, International Monetary Fund, July 2019.

- **Promoting financial inclusion.** DC/EP provides a safe and liquid government-backed means of payment to the public that does not require individuals to even have a bank account. This is particularly attractive for countries where access to banking services is limited due to geographical or income constraints.

- **Facilitating the transmission of monetary policy.** Given the potential ease of substituting large amounts of bank deposits for CBDC, changes in holding limits or interest payments on CBDCs would likely have fairly rapid and significant effects on deposit interest rates and ultimately lending rates and credit extension. To the extent cash is replaced by digital currency, CBDCs could also potentially ease the implementation of negative interest rates.²

- **Facilitating the transmission of fiscal policy.** In conjunction with identifiable accounts, CBDCs might facilitate "helicopter drops" of money directly to households.

- **Fostering innovation.** Another potential benefit cited by some central banks is providing a platform for further innovation in payments and financial services. CBDCs could potentially have interest rates (positive or negative), unlike cash, and advanced features like "smart contracts" based on distributed ledger technology could potentially enable conditional payments or credit applications.

What are the risks associated with digital currencies?

Despite its advantages, a digital currency brings with it a new set of risks to manage.

- **Digital security i.e. the risks of hacking or fraud.** Physical coins and cash have been a target of thieves throughout history, and sovereign digital currencies are unlikely to escape attention from society's criminal elements. In the cryptocurrency space, many substantial thefts have already occurred.

- **Banking-sector disintermediation:** In theory a CBDC—especially one that paid interest—could prove an attractive alternative to bank deposits, given its ease of use as a means of payment. A CBDC is base money and would require 100% reserves to limit credit creation, while commercial bank deposits are not and so only require a fractional reserve rate. If households or businesses viewed the safety and liquidity of CBDCs as outweighing the interest rate differential with bank deposits, they could shift from deposits to CBDC—leaving commercial banks more reliant on central bank support or wholesale funding. In extreme cases this could lead to rapid bank runs and instigate an abrupt tightening in credit supply to the real economy. To avoid this, the PBOC and other central banks could act to limit CBDC demand through instituting ceilings on holding amounts or other frictions although this may reduce some of the inherent advantages of a CBDC.

- **"Digital Dollarization".** In theory, well-established foreign CBDCs or private stablecoins could be attractive substitutes to a local physical currency. This is clearly a factor contributing to the sharp uptick in attention to CBDCs lately by global central bankers—by Chinese officials in response to Facebook's Libra announcement last year, and more recently by several other

Asian economies in response to China's rapid development of DC/EP.

China's progress on a digital Yuan

The rapid development of domestic payment providers, signs of increasing foreign attention in the digital currency space, and geopolitical frictions with the sovereign of the current global reserve currency have all contributed to the urgency of PBOC and Chinese policymakers to develop a digital Yuan. The DC/EP's primary goal is to supplement or replace traditional physical cash; it will therefore not pay interest. The PBOC plans to adopt two-tier issuance—the PBOC will issue digital currency to commercial banks and require 100% reserves. If individuals or companies want to use digital currency, they must request a commercial bank or qualified payment provider to open up a digital currency wallet on their behalf, with authentication by the PBOC. From a technology standpoint, DC/EP will be based on a centralized ledger operated by the PBOC, in contrast to cryptocurrencies, which rely on a decentralized ledger.

Though the PBOC is now conducting pilot programs at scale—a recent test in Shenzhen included more than 100,000 households—no target date for broad public use or a formal launch has yet been announced. We suspect this reflects the uncertainties about potential development challenges still ahead, and the need for an extremely high level of confidence in the safety and security of the CBDC.

What are other central banks doing on CBDCs?

Many central banks are working on CBDCs—more than 80 by the last count of the Bank for International Settlements—though at very different speeds. These efforts range from increased research on the subject in Japan, to the pilot of a blockchain-based "e-krona" in Sweden to The Bahamas' digital "Sand Dollar" to ensure robust and efficient payment services on islands without physical banking services and after natural disasters (see pgs. 20-21 for more examples of CBDC efforts.)

As for the world's reserve currency, US Federal Reserve Chair Powell said last week that "We have not made a decision to issue a CBDC and we think there is a great deal of work still to be done, as well as extensive public consultation". He suggested that potential improvements to the speed and reliability of the Dollar payments system are the main area of interest for the Fed, and also indicated that given the role of the US as a reserve currency, the bar for security and robustness would need to be especially high.

In the very near term, most CBDCs will remain on the drawing board or in a testing phase as policymakers iron out technical issues. But, according to the latest survey of the BIS, "central banks collectively representing a fifth of the world's population are likely to issue a general purpose CBDC in the next three years". So the implications of CBDCs for banking systems and macroeconomic policy will soon move from theory to reality.

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² While there are potential workarounds to impose negative interest rates on cash, it would clearly be much simpler with digital currency. See for example <https://blog.supplysideliberal.com/post/7704150112/robert-eisler-stable-money-the-remedy-for-the>

A snapshot of global CBDC efforts

				Motivations/Goals	Background/Developments	Timeline
A M E R I C A S	The Bahamas	Launched	Sand Dollar	<ul style="list-style-type: none"> Increase financial inclusion and access Reduce size of legitimate, unrecorded economic activities Strengthen national defenses against money laundering Deliver govt services through digital channels 	<p>The Project Sand Dollar pilot was launched in 2019 on the islands of Exuma and Abaco. On October 20, 2020, the Sand Dollar became available to all residents of The Bahamas, and can be used at any merchant with a central bank approved e-wallet</p>	<p>Nationwide launch occurred on October 20, 2020</p>
	Brazil	In development	-	<ul style="list-style-type: none"> Improve the efficiency of the monetary function and the underlying payment processes/systems Increase the level of financial inclusion Improve the user experience, partly by increasing consumer protection levels 	<p>The Central Bank of Brazil (BCB) has stated that one of the prerequisites for a CBDC is an efficient open payment system. To that end, in February 2020, the bank launched its own official payment network—Pix, which all major banks and BCB-licensed financial and payment processing institutions with 500k+ accounts will be required to participate in. Pix is scheduled to be launched to the public in Nov 2020, with mass adoption scheduled for 2021</p>	<p>BCB President Neto has announced he thinks Brazil will "have all the ingredients to have a CBDC...in 2022"</p>
	Eastern Caribbean	Pilot underway	DXCD	<ul style="list-style-type: none"> Help reduce cash usage within the Eastern Caribbean Currency Union (ECCU) by 50% Promote greater financial sector stability Expedite the growth and development of member nations 	<p>In February 2019, the Eastern Caribbean Central Bank (ECCB) and fintech company Bitt signed a contract to conduct a blockchain-issued CBDC pilot within the ECCU. The pilot has two phases: development and testing, followed by a rollout and implementation in pilot countries. The second phase is scheduled to begin in 2H20 in Barbuda, Grenada, Saint Lucia, and St. Kitts and Nevis</p>	<p>No launch date has been announced</p>
	Uruguay	Pilot completed	e-Peso	<ul style="list-style-type: none"> Eliminate the reliance on physical cash by providing digital bills with the same functions and uses as physical bills 	<p>The Central Bank of Uruguay successfully completed a digital currency pilot program in April 2018, issuing 20 million e-Pesos to 10k users, with transfers taking place via mobile phones. Results are being evaluated ahead of additional trials and potential broader issuance, although it remains unclear what the next steps will be</p>	<p>No launch date has been announced</p>
	United States	Research in progress	-	-	<p>The Federal Reserve is in early research stages. In August 2020, the Boston Fed began a multi-year collaboration with MIT to experiment with existing and new technologies that could be used for a digital Dollar. The New York Fed has established an innovation center in partnership with the BIS to identify critical trends and financial technology relevant to central banks</p>	<p>No formal dates have been announced</p>
E U R O P E	ECB	Research in progress	Digital Euro	<ul style="list-style-type: none"> Support the digitization of the European economy and strategic independence of the EU Mitigate risks to the normal provision of payment services Foster the international role of the Euro Support improvements in the overall costs and ecological footprint of monetary/payment system 	<p>No plans are currently being made to issue a digital Euro, but the ECB wants to be prepared to deploy one should the need arise. The ECB has recently published a Eurosystem High-Level Task Force report on a digital Euro and on October 12 launched a public consultation. The Eurosystem will decide by mid-2021 whether to pursue a formal CBDC project, with the possible launch of an investigation phase aimed at developing a minimum viable product</p>	<p>The decision as to whether to start a digital Euro project will be made by mid-2021 at the earliest</p>
	France	In development	Digital Euro	<ul style="list-style-type: none"> Provide a public, risk-free alternative to private digital solutions in the case that cash usage declines significantly Promote the inclusion of vulnerable populations 	<p>In May 2020, the Bank of France conducted its first experiment with Societe Generale to test the use of a blockchain platform to settle a transaction with CBDC. In July 2020, the central bank selected eight applicants to experiment with the use of a digital Euro for interbank settlements. The test will not be used commercially, but intends to investigate a digital Euro system</p>	<p>The Eurosystem will have final say over all decisions and be closely involved in national central banks' initiatives</p>
	Sweden	Pilot underway	E-krona	<ul style="list-style-type: none"> Ensure the general public still has access to a state-guaranteed means of payment as cash usage continues to decline Increase stability in the payment system in times of crisis 	<p>Sweden aims to implement a retail digital currency, and contracted with Accenture in December 2019 to test e-wallets, distributed ledger technology (DLT), and interoperability with banks. The Riksbank is running a digital currency pilot from Feb 2020 to Feb 2021 to simulate e-krona usage in an isolated test environment</p>	<p>No formal launch date has been announced; EA experiments will be closely monitored</p>

				Motivations/Goals	Background/Developments	Timeline
EUROPE	Ukraine	Pilot completed	E-hryvnia	<ul style="list-style-type: none"> • Increase the level of financial inclusion • Reduce the share of cash payments in circulation • Increase the competitiveness and transparency of payment services 	<p>The National Bank of Ukraine successfully completed a two-month pilot of the e-hryvnia in February 2019. Results were released in February 2020, but the central bank was unsure of the potential impacts on financial stability and will only release a digital currency when the technological feasibility can be fully verified</p>	<p>At this time, the central bank does not seem to be prioritizing issuance</p>
	United Kingdom	Research in progress	-	<ul style="list-style-type: none"> • Allow households and businesses to make fast, efficient, and reliable payments, and benefit from a resilient, inclusive, innovative, and competitive payment system 	<p>The BoE began research on a CBDC in 2017. In 2018, a successful DLT-based real-time gross settlement proof-of-concept was run. The BoE has not yet made a decision as to whether to introduce a CBDC, and intends to engage widely with stakeholders before doing so</p>	<p>No formal dates have been announced</p>
	Cambodia	Pilot completed	Bakong	<ul style="list-style-type: none"> • Promote financial inclusion • Attain efficiency (lower cost, faster speed, and more security) in payment systems • Reduce cash payments 	<p>In July 2019, the National Bank of Cambodia (NBC) tested Project Bakong, a real time interbank payment system with its own digital currency. Today, the system links 11 domestic commercial banks and payment processors. In October 2020, the NBC began experimenting with digital wallets for cross-border transactions</p>	<p>Launch was scheduled for early 2020, but did not take place; further timeline unclear</p>
ASIA	China	Pilot underway	Digital Currency/Electronic Payments (DC/EP)	<ul style="list-style-type: none"> • Promote digitization in China and keep up with the trend of a declining demand for cash • Replace significant portions of physical cash in circulation • Enhance the central bank's ability to monitor and control financial risks 	<p>China launched the DC/EP in 2017 amid a wider push to develop its high-tech sectors. In April 2020, China became the first major economy to pilot a digital currency, starting with four cities. The pilot expanded to 28 major cities in August 2020</p>	<p>No formal launch date has been announced</p>
	Japan	Research in progress	-	<ul style="list-style-type: none"> • Introduce a payment instrument alongside cash should cash in circulation drop significantly • Enhance the stability and efficiency of payment/settlement systems • Develop payment/settlement systems for a digital society 	<p>The Bank of Japan (BOJ) has begun more seriously considering a retail CBDC as China makes progress on the digital Renminbi. In July 2020, the BOJ highlighted universal access and resilience as the main technical barriers to CBDC that must be investigated, and announced the creation of a new team to further explore CBDC. The BOJ plans to start a proof-of-concept testing process in early FY21</p>	<p>No formal dates have been announced</p>
	South Korea	Pilot underway	-	<ul style="list-style-type: none"> • Respond proactively to the digital transformation occurring in payment/settlement systems globally • Effort was accelerated as other central banks began moving faster than expected on the CBDC front 	<p>In April 2020, the BOK launched a 22-month pilot program to research the legal and technical implications of CBDC. Phase 1 involved the designing and checking of the technology behind CBDC, and ended in July 2020. Phase 2 started recently and will focus on analyzing related processes, with external consulting on the process aimed to be completed early next year. Phase 3 will be the final phase, focusing on the distribution and circulation of CBDC</p>	<p>No formal launch date has been announced</p>
AFRICA	Thailand	Pilot underway	-	<ul style="list-style-type: none"> • Build technological capacity and readiness for the financial services and businesses rapidly entering into the digital age • Higher payment efficiency; increase flexibility for fund transfers and deliver faster and more agile payments 	<p>In August 2018, the Bank of Thailand (BOT) started multi-phase testing of a prototype decentralized CBDC for domestic interbank transfers and cross-border transfers. In May 2019, the BOT and HKMA announced a research collaboration. Phase 3 began in July 2020, with the BOT partnering with big businesses to pilot test the payment prototype system. This phase is expected to end by year-end 2020, and the next phase will involve partnering with retailers</p>	<p>No formal launch date has been announced</p>
	South Africa	Research in progress	Electronic legal tender	<ul style="list-style-type: none"> • Promote financial inclusion by reaching the unbanked 	<p>The South African Reserve Bank (SARB) has been researching the potential for a CBDC since 2016. In 2019, a feasibility project was announced to weigh the possibility, with the SARB inviting bids from private companies to develop CBDC infrastructure</p>	<p>No formal dates have been announced</p>

Note: Table does not constitute an exhaustive list of all central bank digital currency efforts ongoing/being contemplated; data as of October 27, 2020. Source: Central bank websites; Bank for International Settlements; Harvard Belfer Center, Atlantic Council; various news sources; Goldman Sachs GIR.

Glossary of GS proprietary indices

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For more, see our [GSDEER page](#), [Global Economics Paper No. 227: Finding Fair Value in EM FX, 26 January 2016](#), and [Global Markets Analyst: A Look at Valuation Across G10 FX, 29 June 2017](#).

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For more, see our [FCI page](#), [Global Economics Analyst: Our New G10 Financial Conditions Indices, 20 April 2017](#), and [Global Economics Analyst: Tracking EM Financial Conditions – Our New FCIs, 6 October 2017](#).

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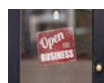
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