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The Future of the Monetary System

Leading perspectives to navigate the future

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The Credit Suisse Research Institute (CSRI) is Credit Suisse's in-house think tank. It was established in the aftermath of the 2008 financial crisis with the objective of studying long-term economic developments, which have – or promise to have – a global impact within and beyond the financial services industry. The Institute builds on unique proprietary data and internal research expertise from across the bank and in collaboration with leading external specialists. Its flagship publications, such as the Global Wealth Report, regularly attract more than 100,000 readers online, generating high press coverage and over three million impressions on social media. Further information about the Credit Suisse Research Institute can be found at www.credit-suisse.com/researchinstitute.

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Editorial deadline: 12 January 2023
Cover photo by Bill Oxford, Getty Images

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Editorial

As our in-house think tank, the Credit Suisse Research Institute (CSRI) studies long-term economic and financial developments with a global impact. In this report, we pull together facts and thoughts by our leading internal experts as well as external thought leaders about key developments in the international monetary system. This analysis draws on our CSRI Fall Conference 2022 on the same topic. It discusses how macroeconomic imbalances and geopolitics can catalyze change in the current largely USD-based monetary system, how central bank reserves have evolved so far and may be re-assessed going forward, and sketches out a vision for a gradually more multi-polar monetary system.

While declaring the demise of US dollar hegemony and dominance is premature, its fate as a backbone of the international monetary system depends on a number of factors, with the degree to which US policy makers would be able to maintain macroeconomic stability and trust relative to other countries of supreme importance. Understanding monetary developments and functioning is key to a global bank like Credit Suisse and to the broader financial sector, which plays a role in monetary transmission.

We hope this report and the insights shared by our authors and guest speakers at the CSRI Fall Conference 2022 make a valuable contribution to current macroeconomic thinking.

Axel P. Lehmann
Chairman of the Board of Directors
Credit Suisse Group AG

Introduction

The past three years have seen abrupt changes in the global economy, economic policy responses and the realm of geopolitics – the latter, in fact, date further back. Not surprisingly, these changes have triggered hefty reactions in financial markets, including money, bond and foreign exchange markets. As in past periods of economic and geopolitical turbulence, they have also raised the question as to whether the international monetary system may be subject to more long-term and fundamental changes. To discuss this question, the Credit Suisse Research Institute held a conference in November 2022, at which a number of academic experts and practitioners presented their perspectives on broader political and economic matters as well as more technical issues related to the evolution of the monetary system. This report presents some of the main areas of debate as well as insights from the conference.

Chapter 1 of the report provides a historical perspective on the evolution of the current, primarily dollar-based monetary system, drawing attention to the series of crises it has endured. Of particular relevance for our discussion are periods in which major shifts in US monetary policy generated stresses outside the United States and which, in turn, led to calls for reforms of the system or even its replacement.

Chapter 2 lays out the current geopolitical and economic context in greater detail. The geopolitical tensions between China and the West, which have been building over the past several years, and the Russia-Ukraine war potentially increase the risk of a rupture and potential realignment of the monetary system. Meanwhile, doubts as to whether US monetary and fiscal stability will be restored, together with significant imbalances in global capital flows, increase the potential for stresses in the US dollar-centric monetary system. Conversely, improved macro management in key emerging markets has arguably helped limit such stresses.

Chapter 3 analyzes to what extent changes in the composition of foreign reserves at the major central banks might be pointing to a longer-term diminution in the role of the US dollar.

Chapter 4 describes the concrete efforts that have been underway, especially since the financial crisis of 2008, to increase the robustness of the monetary system and, in particular, to better protect emerging markets from the stresses that emanate from the US dollar-centric system. It also points to the role that central bank digital currencies could play in such an enhanced insurance setup.

Chapter 5 provides a checklist with which to assess potential changes in the monetary system and concludes with a key message: when assessing the likely evolution of the monetary system and the role the US dollar (or for that matter any other currency) will play in it, the focus should not only be on central banks. At least as important is whether the dynamism of the US economy will suffice to continue to attract large pools of private and institutional investment capital from around the world.

Photo by Tanarch, Getty Images

1. The checkered history of the USD-centric monetary system

Since its launch at Bretton Woods in 1944, the USD-centric monetary system has undergone profound change, typically in response to "systemic" crises. High US inflation in the 1970s undermined trust in the US dollar, but the Federal Reserve under Chairman Volcker re-established credibility. However, shifts in US monetary policy continue to amplify business cycles or even trigger crises in other countries. While the Fed and other central banks have developed tools to limit the fallout, calls for systemic change persist.

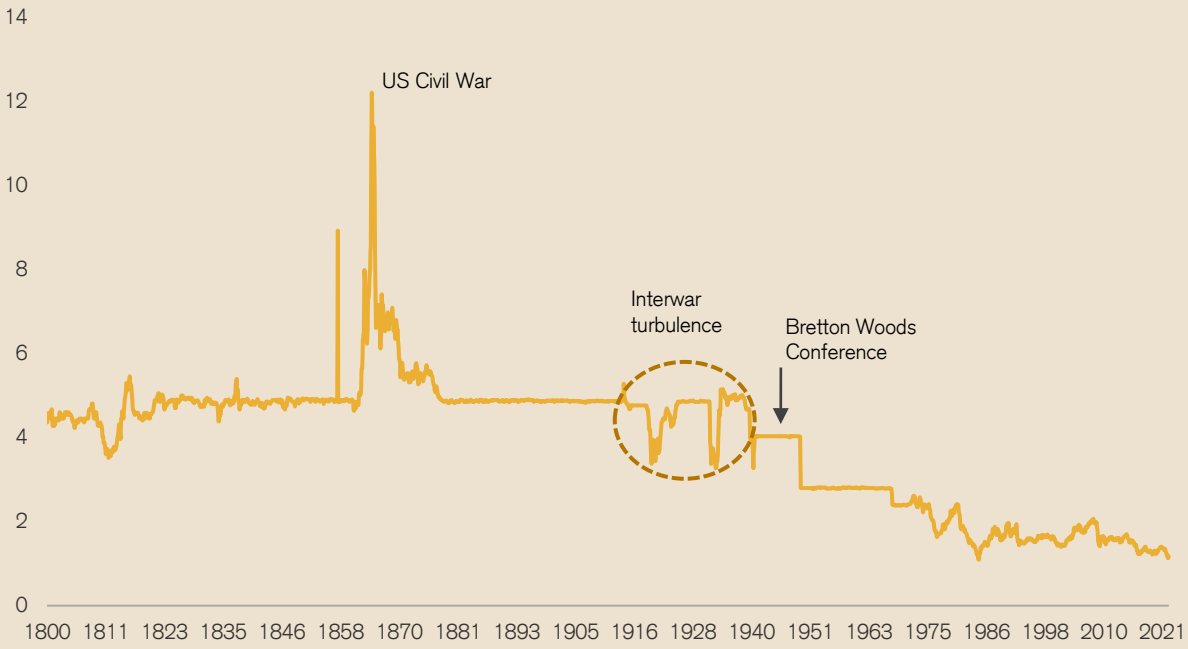
The goal of the Credit Suisse Research Institute Fall Conference held in November 2022, and which this publication draws on, was to discuss the future of the global monetary system. The term "system" might suggest that we are referring to a well-defined and, in some sense, rather mechanical set of economic relationships. Nothing could be further from reality. While the USD-centric system launched at the United Nations Monetary and Financial Conference at Bretton Woods in July 1944 (hence "the Bretton Woods system") was indeed conceived as a strict set of rules under which countries' exchange rate policies would operate, the system has undergone frequent and often profound change, typically in response to "systemic" crises. In the process, it has become more flexible, which has allowed the system to survive, but is no longer rule-driven. Moreover, many argue that the system remains crisis-prone, which has frequently produced calls for reform. Whether a truly new system might emerge, or whether the current system will continue to adapt and, if so, in which directions, are the key questions this report addresses. Reviewing the checkered history of the USD-centric system provides some insights into the weaknesses of the current system, especially its asymmetric impacts on third countries.

The Bretton Woods system as devised in 1944 was regarded as a response and solution to the chaotic monetary relations that reigned in the inter-war years. Many countries, notably Britain, had gone off the gold standard at the start of World War I in order to gain leeway for the monetary financing of war expenditures. Subsequently, high inflation in the post-World War I period, most dramatically in Germany, led countries to temporarily return to the gold standard in the mid-1920s, only to once again abandon that system in the early 1930s in order to escape its deflationary impact. This period of severe monetary system instability stands in marked contrast to the pre-World War I century of "Pax Britannica," in which the British pound was effectively the dominant global reserve and anchor currency (see **Figure 1**), with others, such as the French franc, German Reichsmark and US dollar playing far lesser roles.

Crises and evolution of the USD-centric system

As noted, the monetary history that formed the mental background for the participants at the 1944 Bretton Woods conference was the severe monetary instability of the inter-war period. On the "real" side of the economy, the key concern was to prevent renewed setbacks to world trade

Figure 1: From Pax Britannica to Pax Americana
GBP/USD exchange rate; a decline implies a weakening of GBP vs. USD



Source: Craighead (2010), Federal Reserve Board and ONS, Refinitiv Datastream

such as those of the inter-war period in which the imposition of tariffs had exacerbated the Great Depression (in that period, the imposition of tariffs was also a response to competitive devaluations of currencies by trading partners). In addition, the destruction caused by World War II called for a system that would not only ease trade, but also provide international capital to support reconstruction. Given the rise of the United States and the US dollar as the dominant economic and geopolitical power as well as currency, the Bretton Woods conference settled on the US dollar gold exchange standard (Bretton Woods I, or BWI).

In the eyes of John Maynard Keynes, who was a central figure at Bretton Woods and the preeminent economist of the time, this was a suboptimal solution. He recognized early on that monetary hegemony by a single country could lead to severe imbalances and stresses. His idea was to establish a globally accepted monetary instrument ("Bancor") and an International Clearing Union (ICU) that would manage the system and ensure that international trade would proceed smoothly; capital mobility between countries was not foreseen at the time as the norm. Keynes's idea was, however, swept aside at the conference, and the US dollar became the world's reserve currency. The value of the US dollar was pegged to gold at USD 35 per ounce and the exchange rate of other currencies was pegged to the US dollar. The International Monetary Fund (IMF) was established to address shorter-term liquidity problems of countries if their currencies came under undue pressure, while the International Bank for Reconstruction and Development (today's World Bank) was established to provide long-term capital for countries in need of aid.

The first major shock to the system: Breaking the gold peg

The first major shock to BWI was the abandonment of US dollar gold convertibility by US President Richard Nixon in 1971. As Perry Mehrling, Professor of International Political Economy at Boston University, pointed out at the CSRI Fall Conference, Nixon's decision was effectively an effort to end US responsibility for global monetary affairs and to provide the US Federal Reserve (Fed) with the freedom to fully focus on the domestic economy. Under BWI, the United States had emerged as an international financial intermediary, borrowing short term and lending long term like a bank. Convertibility of those short-term liabilities into gold, however, meant that the "bank" was vulnerable to a run in case of loss of confidence. Nixon's decision in 1971 to close the gold window led to a period of international instability, in which exchange rates between the US dollar and other major currencies floated, with some countries limiting fluctuations more than others; some countries maintained a fixed exchange rate to the US dollar or even instituted currency boards (e.g. Hong Kong in 1983). In retrospect, this period of instability can be understood as the birthing pains of a new Eurodollar system, in which international financial

Figure 2: USD setbacks limited after mid-1980s

USD exchange rates versus other major currencies; index (Jan. 1970 = 100)

Source: Haver Analytics, Credit Suisse

intermediation in dollars took place much more offshore, supported by central bank cooperation rather than the Fed acting on its own.

Nixon's decision to abandon the peg to gold had been preceded by years of increasingly expansionary US fiscal policy under Presidents Kennedy and Johnson to finance the Vietnam War and Johnson's "War on Poverty." The Fed had largely accommodated that policy by keeping interest rates below what was needed to avoid economic overheating and rising inflation. Indeed, the ending of the peg to gold was one of triggers for an inflationary dynamic in the United States, while the OPEC price shock that followed shortly after fully unleashed inflation in the United States and the rest of the world, and ushered in a period of general "economic malaise." The OPEC (Organization of Petroleum Exporting Countries) price shock also led to a large accumulation of petrodollars and the recycling of those petrodollars into US Treasuries, which made OPEC the first set of captive buyers for Treasuries (see Chapter 3).

Volcker's re-establishment of dollar dominance…

Not surprisingly, the abandonment of the dollar's gold peg and the period of high US inflation during the 1970 also triggered a marked weakening of the US dollar (see **Figure 2**), which naturally raised doubts about the sustainability of the dollar as the world's reserve currency. As William L. Silber recounts in "Volcker: The Triumph of Persistence," the legendary Fed Chairman attended a lunch meeting in October 1979 with German Chancellor Helmut Schmidt in Hamburg en route to the fall meetings of the IMF in Belgrade, Yugoslavia; with the dollar trading at 1.75 deutschmarks, the German Chancellor said "the world needs stability much more than anything else […]" a message Volcker had already heard from him six years earlier in 1973, when the dollar was still worth three marks. Now Schmidt expressed a more modest objective, one that reflected the dollar's weakened status: "I would like to get back to a world in which the dollar would be two marks and stable." A joint press release after the meeting noted that "… exchange rate stability and a strong dollar are in the interest of both countries." Perceptions of the rest of the world may well have influenced Volcker's decision to dramatically tighten monetary policy. Indeed, strengthening the dollar against the mark and other currencies required some radical monetary actions. While formally switching to a monetary growth target, the Fed raised its lending rate sharply, with the Fed funds rate reaching an unprecedented 20% in 1980. The actions worked: inflation peaked in the early 1980s and the dollar rallied.

…hurts many emerging markets

The combination of still-tight Fed policy with President Ronald Reagan's tax cuts (i.e. fiscal easing) kept real interest rates high into the mid-1980s. Now, the world's problem was no

longer lax US monetary policy and a weak dollar, but rather an excessively strong US dollar. This caused unease in advanced countries and led to the Plaza Accord of September 1984, in which the United States, France, (West) Germany, the United Kingdom and Japan agreed to jointly weaken the US dollar. Although concrete actions were limited, the declaration achieved its goals and the US dollar began to retrench. Meanwhile, the strong US dollar and high real interest rates in the early 1980s triggered outright crises in Latin American emerging markets (Mexico, Brazil and Chile). In the period of low real interest rates and a weak dollar of the 1970s, Latin American governments and banks had borrowed heavily in US dollars, in part from cash-rich oil exporters. With oil prices dropping after 1979 and the US economy going into recession in 1981/82, Latin American exports collapsed and foreign exchange reserves came under pressure as capital fled the countries. With real interest rates stubbornly high, debt could no longer be serviced. It took many years of negotiation and piecemeal interventions by the IMF until debt was finally rescheduled in the late 1980s and early 1990s under the so-called Brady and later Baker plans (named after the two US Treasury Secretaries). The "lost decade" of Latin America attests to the fact that it is not just periods of US dollar weakness (and lax US monetary policy) that can cause problems in the rest of the world, but that periods of tight Fed policy and a strong dollar can be even more disruptive.

Fairly smooth sailing during the 1990s and early 2000s

In fact, the experience of Latin America was largely repeated in Asia in the mid-1990s. With the purge of inflation by the Volcker Fed, interest rates declined in the second half of the 1980s and early 1990s, while US and global economic growth began to pick up. In the United States, the Savings & Loan crisis (also a partial result of high interest rates in the early 1980s) had gradually been resolved. Meanwhile, the fall of the Berlin Wall in 1989 and, above all, the entry of China into the world's trading system ushered in an era of rapid growth in global trade, with many other Asian countries (the Asian "Tigers") benefiting strongly. The combination of strong global growth and low US interest rates induced countries such as South Korea and Thailand to borrow heavily while adhering to a fixed exchange rate with the US dollar, with the intention to stabilize their exports. As the Fed under Chairman Greenspan began to raise interest rates in 1994, and with the US dollar once again appreciating, Asian currencies came under pressure and foreign exchange reserves dwindled rapidly.

The choice was to either impose capital controls (a choice made by, for example, Malaysia in the face of heavy criticism from the IMF) or to abandon the currency peg (Thailand's and South Korea's choice). With currencies sharply lower, but debt denominated in a strong US dollar, these countries came close to defaulting. In contrast to the Latin American experience, defaults were nevertheless avoided. Instead, the IMF provided substantial financing, albeit under strict conditionality, to Asian countries. While the adjustments were painful for these countries, the turnaround nevertheless occurred much faster than in Latin America.

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This was also due to the fact that, in contrast to the 1970s, the period of US monetary tightening in the 1990s was mild and short-lived. China's rise as the "factory of the world," a widespread trend to liberalize markets for goods, services and labor as well as well-anchored inflation expectations prevented inflation from rising anywhere near as much as in the 1970s. As a result, interest rates remained subdued. The extensive accumulation of US Treasuries by China in an effort to prevent yuan appreciation, combined with a significant improvement in the US fiscal position under President Bill Clinton contributed to the persistence of low interest rates. Alan Greenspan referred to this as a "conundrum," while his successor Ben Bernanke ascribed this phenomenon to a "global savings glut."

Indeed, when the US Fed once again began to tighten policy in mid-2004 in order to slow the US housing boom, it turned out that the preceding prolonged period of low long-term interest rates had led to a huge build-up of risk in US and European banks. While the leverage had supposedly been offloaded onto the "shadow banking" system, these exposures were revealed as effectively still being on the banks' balance sheets (see Pozsar, 2010).[1] What was initially regarded as a limited problem of subprime mortgages thus evolved into a full-blown global financial crisis (GFC). Meanwhile, emerging markets, which had "learned their lesson" in the 1980s and 1990s, largely avoided being caught in the crisis.

Significant expansion of Fed toolkit after the GFC

The Latin American and Asian debt crises did not lead to significant adjustments in the toolkit of the Fed, the "manager" of the USD-centric monetary system. Instead, reforms were implemented in the emerging markets themselves: macro management improved, with central banks moving to inflation targeting, similar to the policy approach in advanced economies, and exchange rate flexibility was increased to soften the impact of external shocks, while currency reserve policies were reviewed (see Chapter 3.) In contrast, the GFC called for reforms in the advanced economies and it did engender changes in the Fed's policy toolkit. The first lesson from the crisis, enshrined in Basel III, was that the banking system needed higher capital and liquidity reserves. These had clearly not been sufficient to maintain stability in the system, requiring the Fed to act as a lender of last resort to other central banks in order for them to be able to provide dollar liquidity to their commercial banks. The system of Fed swap lines was thus the key innovation in the USD-centric monetary system post-GFC (also see Chapter 4).

But an even more important legacy of the global financial crisis was the "birth" of quantitative easing (QE) as a standard and everyday policy tool. It was applied because the Fed, in contrast to the European Central Bank and other central banks in Europe, was not prepared to move interest rates into negative territory. It meant that the Fed's balance sheet expanded massively, with the central bank advancing to a major holder of US Treasuries (see **Figure 5** in Chapter 3). During the waves of money printing and zero interest rate policies that followed the GFC and the Eurozone debt crisis, the USD-centric monetary system had a relatively stable run. There were no meaningful financial crises and, until late in 2021, the key policy objective of targeting inflation at around 2% was easily achieved. For more than a decade, the main policy concern was deflation (always feared, though never realized), which central banks in the West fought with low policy rates and QE. Financial market volatility was repressed during this period and asset prices experienced a spectacular rise. Financial market professionals dealt mostly with technical shocks. The source of these shocks was the roll-out of Basel III, which imposed balance sheet constraints on global banks and dealers, other pieces of reform like money market fund reform, a shortage of collateral in Europe and Japan due to QE, and a shortage of reserves in the United States due to quantitative tightening (QT) during 2018–19. Rather than major crises, the main market events from 2015 onward were spread dislocations in US dollar funding markets involving Libor, cross-currency bases and repo rates, which the Fed managed to address by deploying new lending tools.

> "The current monetary system has repeatedly been criticized by senior policy makers, both in advanced economies as well as emerging markets

The key questions going forward are whether recent geopolitical and economic dislocations are likely to usher in renewed major disruptions in the monetary system and whether the USD-centric system will be preserved via a continued adaptation of policy tools as has been the case so far, or whether a more fundamental shift to a new system is on the horizon. On the one hand, this will depend on the geopolitical and economic

1. Pozsar et al. "Federal Reserve Bank of New York Staff Reports;" https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr458_July_2010_version.pdf.

fundamentals prevailing in the years to come, which we will discuss in the following chapter. It will also depend on whether true alternatives are already available or likely to emerge, a question we will address in Chapter 4. What is clear is that the current monetary system has repeatedly been criticized by senior policy makers, both in advanced economies as well as emerging markets, for the stresses it tends to generate and which we have described above. Not surprisingly, these criticisms have been especially fierce both in periods of excessive ease of US monetary policy (e.g. during the early and mid-1970s or immediately following the GFC) and in periods of strong policy tightening (e.g. the late 1970s and early 1980s, as well as in the mid-1990s) because the disruptions to other countries were then greatest.

Prominent criticisms of USD-centric monetary system

For example, during the onset of QE in 2009, Zhou Xiaochuan, then Governor of the People's Bank of China (PBoC), delivered a speech entitled "Reform the International Monetary System,"[2] in which he argued that fundamental reforms in the international monetary system were necessary because "…the frequency and increasing intensity of financial crises following the collapse of the Bretton Woods system suggests the costs of such a system to the world may have exceeded its benefits." He called for "…creative reform of the existing international monetary system towards a…super-sovereign… international reserve currency with a stable value, rule-based issuance and manageable supply… that is disconnected from individual nations and can remain stable in the long run, thus removing the inherent deficiencies caused by using credit-based national currencies."

A decade later, former Bank of Canada and Bank of England governor Mark Carney also lamented "the deep flaws in the international monetary and financial system ("IMFS")" and, in particular, that "growing dominant currency pricing (DCP) [i.e. in US dollars] was reducing the shock absorbing properties of flexible exchange rates and altering the inflation-output volatility trade-off facing monetary policy makers," and he suggested that a "new Synthetic Hegemonic Currency (SHC)…possibly provided by the public sector, perhaps through a network of central bank digital currencies" might lead to better outcomes.[3]

2. Zhou Xiaochuan, Governor of the People's Bank of China, Reform the international monetary system (essay published in BIS Review 41/2009, March 2009).
3. Mark Carney, The Growing Challenges for Monetary Policy in the current International Monetary and Financial System (Speech given at the Jackson Hole Symposium, 23 August 2019).

Figure 3: Key events during period of USD-centric monetary system

1944: US dollar formally anointed global reserve currency, replacing the British pound; US dollar pegged to gold, other currencies to US dollar.

1971: US dollar peg to gold abandoned; flexible exchange rates.

1979: Re-establishment of Fed credibility through massive policy tightening.

1984: Plaza Accord, a joint effort of major economies to limit US dollar strength.

1997: Most Asian "tigers" abandon US dollar peg, others accumulate Treasuries.

2008: Fed provides massive US dollar liquidity to other central banks and foreign banks via swap lines.

2008: Birth of Quantitative Easing (QE) as primary policy tool of Fed and others.

2015: Fed deploys new lending tools to address spread dislocations in US dollar funding markets involving Libor, cross-currency bases and repo rates.

2015–17: Cautious Fed rate hikes and start of Fed Quantitative Tightening (QT).

2022: Sharp Fed rate hikes to fight post-pandemic inflation surge.

Source: Credit Suisse

Photo by pookpiik, Getty Images

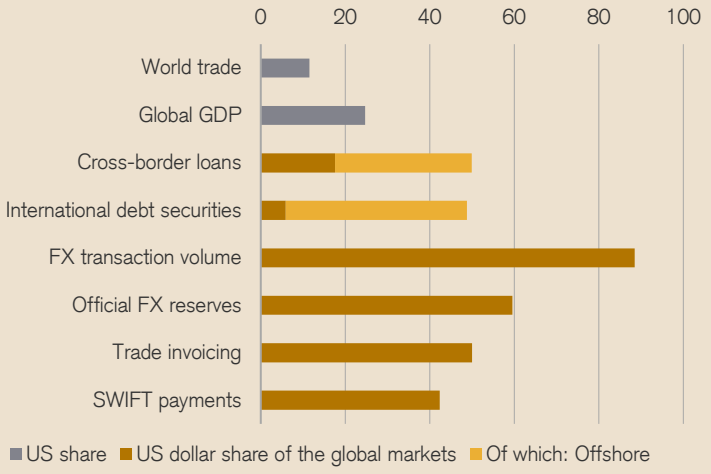
2. Macroeconomic imbalances and geopolitical conflict

Like other countries, the United States is battling a burst of inflation, while the economy slows. Meanwhile, fiscal and external imbalances have worsened substantially. This situation is somewhat reminiscent of the 1970s, when trust in the US dollar was significantly undermined. In addition, geopolitical tensions have escalated substantially in recent years. This combination raises the specter of a potential major pivot away from the US dollar. On balance, we believe this remains a fairly unlikely case for now and that a gradual evolution to a more multi-polar monetary system is more likely.

As our first chapter showed, the dollar-centric monetary system has suffered considerable volatility over its almost 70 years of existence, but has adapted and so far survived. In fact, despite the significant liberalization, expansion and deepening of non-US financial markets, the US dollar has largely maintained its prominence over the past several decades. Relative to the size of the US economy and its role in global trade, the US dollar certainly plays a very outsized role (see **Figure 1**). That said, the share of US dollars in central bank reserves has declined over the past decades (**Figure 2**), a topic we will return to in the following chapter.

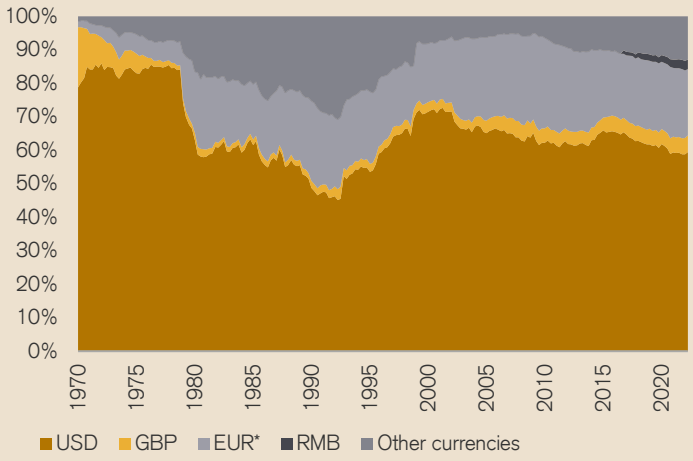
What stands out in the chart and is particularly relevant to the discussion in this chapter is that the US dollar's position as a global reserve currency weakened sharply, albeit only temporarily, in the period following the abandonment of the dollar's gold peg and the phase of US monetary instability that followed. Today, the US dollar represents slightly less than 60% of global FX reserves at central banks, compared to more than 80% in the 1970s.

Figure 1: US dollar dominance well beyond the USA's economic size (in %)



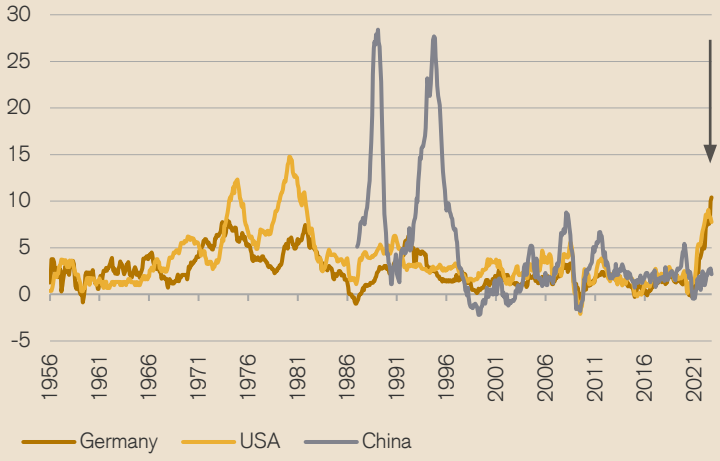
Source: BIS Quarterly Review, December 2022

Figure 2: Foreign currency reserves
Share of various currencies in % of global foreign currency reserves



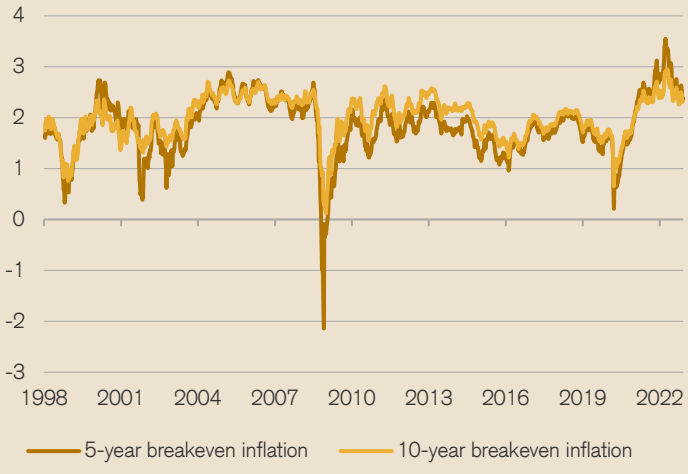
*EUR: Includes DEM, FRF, NLG between Q1 1970 and Q4 1998, and ECU between Q1 1979 and Q4 1998. Source: Haver, IMF, Credit Suisse

Figure 3: Inflation spike after many years of calm
Headline inflation rate (YoY %)



Source: Haver, IMF, Credit Suisse

Figure 4: US inflation expectations have remained anchored
Breakeven inflation, derived from TIPS (% YoY)



Source: Refinitiv Datastream, Credit Suisse

Focus on potential macro instabilities in the United States

When trying to assess the US dollar's future role in the global monetary system, close attention should be paid to potential macroeconomic instabilities in the United States. The picture in this regard is not particularly comforting. Inflation has increased markedly over the past 18 months, while economic growth has begun to slow. The US economy is thus suffering from stagflation, albeit so far clearly in a much milder form than during the 1970s. A "redeeming" fact is that inflation in other industrial countries, not least Germany, is currently just as high, in contrast to the 1970s, when the United States was the negative outlier (**Figure 3**). Conversely, a number of emerging markets, including China and other countries in non-Japan Asia and the Gulf region, are faring significantly better in terms of price stability. How US (and global) inflation evolves over the medium- to longer-term will depend on the actions of central banks. So far, it appears to us that the Fed, at least, is intent on bringing inflation under control. Hikes in the federal funds rate have been sharper than ever before, albeit from an extremely low level, and market expectations for inflation have receded considerably from their peak in March 2022 (**Figure 4**).

> "Inflation has increased markedly over the past 18 months, while economic growth has begun to slow

That said, there may be structural factors that make it hard to vanquish inflation. These include structural shortages in labor due to demographic change and possibly shortages of certain commodities even if some of these shortages, such as disruptions in the supply of oil and gas, are due to the war in Ukraine and should eventually abate. Similarly, shortages of computer chips have resulted from the US-China trade war and pandemic-related

disruptions. All these factors have led to extreme volatility and an unusually high level of uncertainty regarding the price level, which has translated into high volatility for interest rates and currencies. The latest indications are that volatility is declining, but it is probably premature to sound the all-clear as ongoing uncertainty over the evolution of price levels in major economies could harm the standing of the US dollar and other major currencies as stores of value (see Mehrling, 2019).[1]

Stagflationary forces could persist

In particular, if conflicts over trade were to further escalate (see below) and, combined with supply chain disruptions, were to impair global trade, the stagflationary environment might persist. So far, however, and contrary to perceptions, we observe that global trade has largely returned to its pre-pandemic trajectory (**Figure 5**), even if the share of trade in global gross domestic product (GDP) has declined from its peak in 2010 (**Figure 6**). The latter is most likely the result of slower growth in the world's largest trading nation, China, as well as its turn toward domestic demand as a growth driver, and less because of international trade conflicts. Nevertheless, the data suggest that this measure of globalization has peaked.

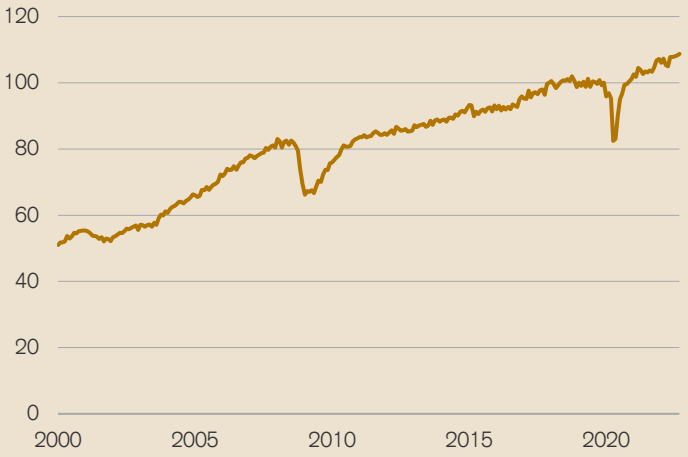
Fed tightening regardless of high government debt?

Possibly of greatest concern is that central banks might be unable or unwilling to raise interest rates sufficiently due to the heavy burden of government debt. Indeed, while the interest burden has so far been moderate in most advanced countries as governments were able to refinance and raise new debt at very low rates in the post-GFC period (the US Treasury's interest expenses are currently running at around 3% of GDP versus 4.6% at the peak in 1991), deficits and debt are on an "uncomfortable" path (**Figures 7 and 8**).

In the United States, the outsized fiscal expansions during the pandemic have caused massive deficits, although they have stabilized considerably in the meantime. In fact, the US deficit ratio is currently similar to Germany's and better than that of other advanced economies. Meanwhile, the fiscal position of China (which is difficult to measure due to the unclear delineation of government entities) has deteriorated sharply and is worse than that of the United States. The picture of government debt is similar: the debt ratio has been on a rising trend in the United States since the global financial crisis (GFC) and has surged as a result of the deficits in

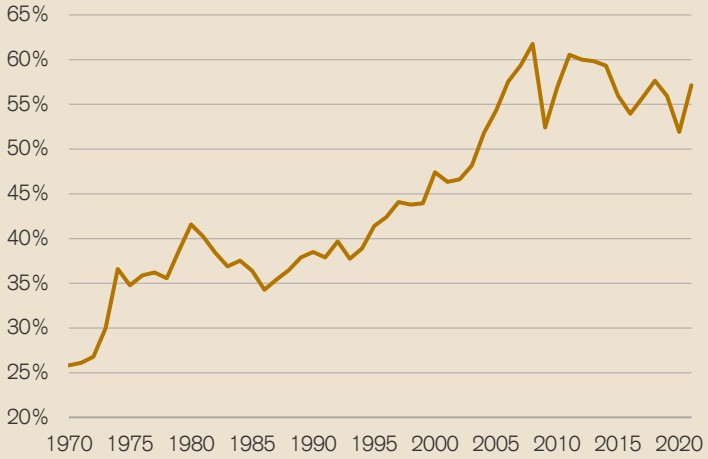
1. Routledge, 2019. "The Vision of Hyman P. Minsky." Journal of Economic Behavior and Organization 39 No. 2 (June 1999): 129–158.

Figure 5: Trade has recovered from the pandemic setback…
Volume index for world exports, Dec 2019 = 100



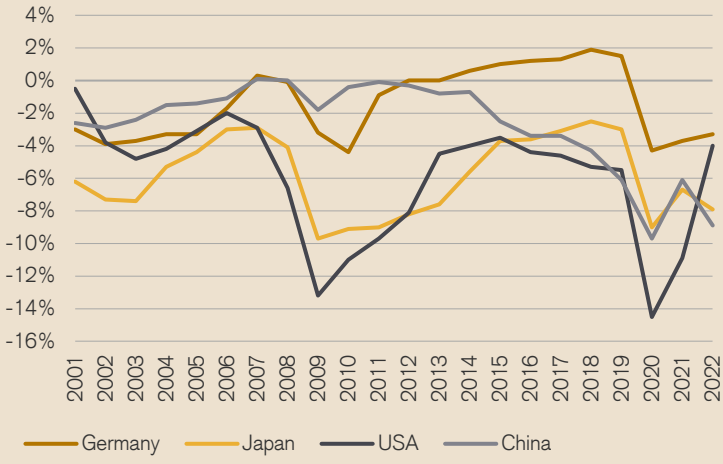
Source: DataStream, CPB Netherlands Bureau for Economic Policy Analysis, Credit Suisse

Figure 6: …but the share of trade in global GDP (a measure of globalization) has peaked
Sum of exports and imports of goods and services, in % of GDP



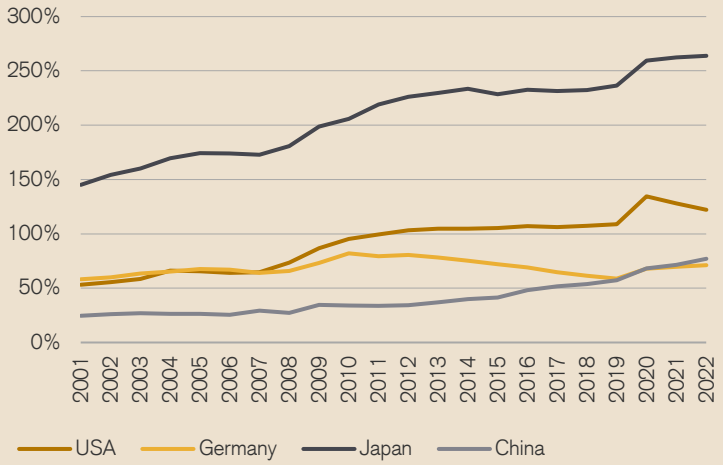
Source: Haver Analytics, Credit Suisse

Figure 7: Budget deficits have risen sharply in advanced economies...
Fiscal deficits in % of GDP, selected countries



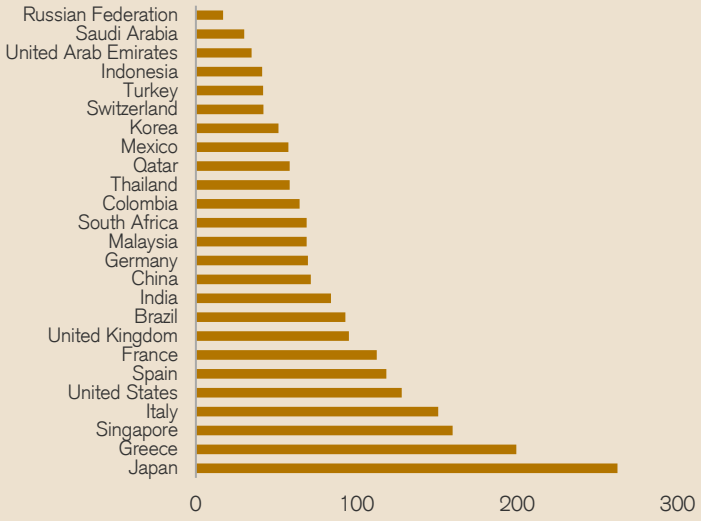
Source: Haver, IMF, Credit Suisse

Figure 8: ...further boosting government debt
Gross government debt, in % of GDP



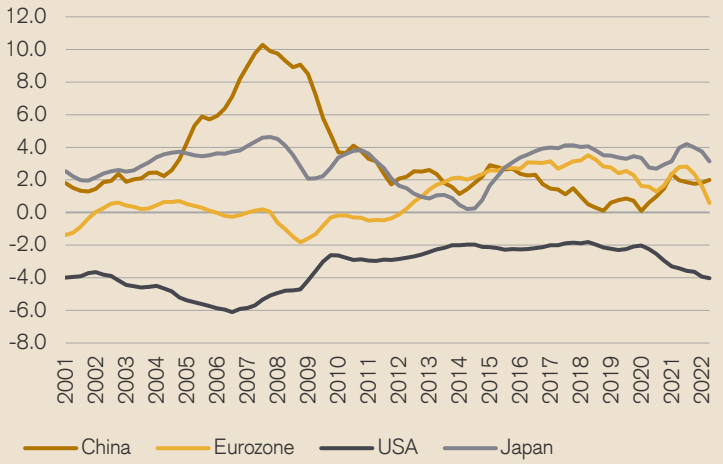
Source: Haver, IMF, Credit Suisse

Figure 9: Fiscal discipline better in many emerging markets
Gross government debt in 2021, in % of GDP



Refinitiv Datastream, IMF, Credit Suisse

Figure 10: US current account deficit close to pre-GFC peak
Current account balances in % of GDP



Source: Haver, Credit Suisse

the past two years, even though the latest data indicate some stabilization. The US debt position is clearly worse than Germany's. It is now of similar size to a number of other European countries such as the United Kingdom and France, but still significantly better than in Japan or Italy. Meanwhile, while China's public debt has been worsening faster than in the United States, even excluding the debt of the many semi-governmental entities, the situation is significantly better in many other emerging markets. Many Asian as well as some Latin American governments have continued to run a disciplined fiscal policy, while oil exporters in the Gulf as well as Russia have very low public debt (see **Figure 9**). However, as Zoltan Poszar, Global Head of Money Market Analysis at Credit Suisse noted during the CSRI Fall Conference, in a world that is re-arming, the risk is that debts will rise in many countries just as a potential trend toward re-shoring as well as efforts to decarbonize might be adding to inflation pressures.

The ultimate test: Willingness to finance the current account deficit

A further indication of US domestic economic imbalances (i.e. of excessive spending) is the country's rising current account deficit (**Figure 10**). The deficit ratio is now close to the peak of pre-GFC imbalances. While reserve currency countries "need to" run structural current account deficits in order to satisfy the global demand for investable assets, excessively large deficits risk undermining the trust needed to preserve the status of reserve currency (this paradox was first noted by the US-Belgian economist Robert Triffin in the late 1950s, hence the "Triffin dilemma"). With surpluses declining sharply in Japan and the Eurozone, the US (and UK) current account deficits are now largely being financed by the surpluses in China and other Asian emerging markets as well as the Gulf States and Switzerland. Whether or not these countries will "willingly" finance the US deficit remains to be seen. Part of the answer will be provided by non-US central banks and their decisions about foreign exchange reserve holdings, which we discuss in the next chapter, but also by other international investors.

So far, there are few signs in financial markets, at least, that trust in the US dollar has been seriously undermined – since the onset of the COVID pandemic the US dollar has appreciated markedly against most major currencies (**Figure 11**), including the Chinese renminbi (RMB) (**Figure 12**), suggesting that its historical position as a safe-haven currency remains intact. Similarly, real yields on US Treasury bonds, another indicator of trust in USD-denominated assets, remain moderate despite the recent rise.

In sum, while macroeconomic imbalances in the United States – the anchor currency of the dollar-centric system – are indeed considerable, it remains to be seen to what extent this will seriously undermine trust in the reserve currency. Investors will need to monitor whether US policy makers (both the Fed and the Congress) act to correct these imbalances, while analysts will want to monitor markets for signals that trust in the US dollar is being lost. One somewhat "redeeming" (albeit not particularly comforting) factor is that many other advanced economies are facing similar structural issues, suggesting that the relative position of the US dollar in an international "beauty contest" of currencies is less negative than its absolute position.

> So far, there are few signs in financial markets, at least, that trust in the US dollar has been seriously undermined

Geopolitical conflict as a potential pivot point?

Geopolitics has played a pivotal role for monetary systems in the past. World War II led to the emergence of the USD-based system. The creation of the euro, the most recent monetary experiment of scale, was also strongly influenced by geopolitical change, with the fall of the Iron Curtain and the reunification of Germany playing a major role. The CSRI Fall Conference 2022 thus debated whether the current geopolitical context might also be a catalyst for changes in the monetary system.

The end of cooperative multilateralism

The geopolitical environment has indeed changed substantially since 2016. The era of cooperative multilateralism and globalization that was initiated by the fall of the Berlin Wall and intensified significantly with China's reforms under Deng Xiaoping and China's ascent as the "factory of the world" to culminate when China joined the World Trade Organization (WTO) in 2001 has given way to intense and sometimes aggressive rivalry between the two major powers. Since the Trump administration introduced tariffs on a broad range of Chinese products in 2016, US-China relations have entered a period of tension. In the economic field, the relationship has also soured over issues such as the protection of intellectual property and US efforts to limit Chinese access to advanced IT capabilities as well as its investment in Western companies. In the sphere of geopolitics, tensions over Taiwan (Chinese Taipei), the South China Sea and other areas have at times flared up.

Figure 11: The USD has remained a safe-haven currency…
DXY currency index

Source: Bloomberg, Credit Suisse

Figure 12: …while the RMB has lost some of its luster
USD/RMB exchange rate

Source: Bloomberg, Credit Suisse

More recently, the Russia-Ukraine war has set Russia and the West on a conflictual path. At the CSRI Fall Conference, former US Presidential Advisor and independent economist, Dr. Pippa Malmgren, went further to suggest that we have already entered a "hot war in cold places" (the Arctic, space and on the high seas) and "cold war in hot places" (Africa, South Pacific Island chains, etc.) and suggests that "…the trend of multiple countries towards re-arming, re-shoring, re-stocking and re-wiring (all comms and power grids) are all symptoms of reduced mutual geopolitical and economic trust." Meanwhile, other large emerging market countries such as India, Indonesia and a number of Middle Eastern and Latin American countries are maintaining distance from these dominant geopolitical conflicts and trying to pursue their national interests in a non-aligned manner.

Russia-Ukraine war: Unprecedented conflict and unprecedented monetary sanctions

With the freezing of Russia's foreign exchange reserves by the G7 countries, the scale of the conflict in Ukraine has also triggered unprecedented Western sanctions against Russia; i.e. the conflict and its potential consequences for monetary affairs set it apart from any previous post-World War II geopolitical conflict. The question arises whether the reserve freeze could induce other central banks to attempt to diversify out of the US dollar due to the potential threat of sanctions, more than they would do otherwise. If so, such actions would, at the margin, help undermine the dominant role of the US dollar. Conference participants generally agreed that the answer to the question would depend significantly on the outcome of the conflict and on the evolution of geopolitical alliances in the conflict, both of which appear very difficult to predict.

Somewhat greater clarity may exist in the other more long-lasting geopolitical conflict, i.e. between the United States and China. This conflict has been building over a number of years, with the imposition of significant tariffs by the United States on China in 2016 as a first, very visible step. Since then, the conflict has shifted to the area of technology, with the United States as well as other Western countries trying to limit China's access to the means for producing high-tech goods, in particular advanced computer chips. As Dale Copeland, Professor of International Relations at the University of Virginia, pointed out during the Fall Conference, this conflict is highly sensitive because a severe cut-off of China from advanced technology would likely be seen by China as the crossing of a "red line" which might, in turn, increase the likelihood of China taking military action against Taiwan.

Will mutual interest in maintaining US-China trade prevail?

That said, the interest of both sides in the conflict to maintain trade seems very high. In the West, reliance on Chinese consumer and investment goods is still significant, while China's growth continues to require Western technology and still relies heavily on exports – with the Chinese economy under pressure due to problems in the real estate sector and, more short-term, due to the fallout from severe COVID restrictions and their sudden partial relaxation, this dependency has even increased in recent quarters. Moreover, there are indications that negotiations to resolve disputes over technology trade may be advancing. In sum, the base case is that a breakdown of relations between the two sides is unlikely, even if an intense geopolitical rivalry is most likely to remain in place for a long time.

> "A trend toward a more multipolar monetary system is indeed visible

This rivalry is also likely to affect the monetary system to some extent. As we show in Chapter 4, China has been at the forefront of efforts to develop an alternative international payments system as well as schemes to enhance mutual support by central banks in emerging markets. Moreover, the potential for military escalation cannot be ruled out. This already seems to have had a certain impact on how China manages its currency reserves (see next chapter). However, this in itself is not likely to lead to a major shift out of the US dollar as the major reserve currency. What is clear at this point is that China is not capable or willing to establish its own currency, the renminbi, as a serious rival for the US dollar; nor are there any other candidates for that role so far. That does not mean, however, that the position of the US dollar will remain unchanged and unchallenged: as we discuss in Chapter 4, a trend toward a more multipolar monetary system is indeed visible. Moreover, at some point in the more distant future, the ascendance of a new anchor currency similar to the US dollar can obviously not be ruled out.

Photo by andreygonchar, Getty Images

3. Rethinking foreign currency reserves

The weight of the US dollar in foreign exchange reserves remains an indicator of USD "hegemony." That said, floating exchange rates, better macro policies and the availability of central bank swap lines reduce the need for such reserves. Conversely, high reserves have often resulted from central banks' efforts to fight their currencies' appreciation against the US dollar. In the meantime, however, there is some evidence that major central banks are diversifying away from the US dollar, possibly to limit sanction risks.

In Chapter 2, we noted that foreign currency reserves denominated in US dollars and held by non-US central banks are clearly outsized relative to the size of the US economy and its role in international trade. That is, of course, typical for a global reserve currency. **Figure 2** in Chapter 2 also shows, however, that the share of the US dollar in global currency reserves has declined over the past two decades, effectively extending the trend that had set in during the late 1970s after the de-pegging of the US dollar from gold and the period of high macro instability in the United States. The figure also reveals three other trends.

First, the share of euros jumps in 1999, although it does not increase noticeably thereafter. Second, the share of other (non-euro) currencies increases gradually, in particular after 2008 (the global financial crisis). The third and final trend is the gradual increase in the share of Chinese renminbi since around 2015, although its share remains very low; in the context of its capital controls, the People's Bank of China (PBoC) limits the amount that foreign central banks can invest in Chinese bonds.

That said, the decline in the US dollar's share has proceeded in a rather steady manner throughout the past two decades. In other words, the world has gradually been moving toward a more multipolar currency system. The question is whether this process will continue in a fairly smooth manner, or whether we might see abrupt moves in one or the other direction, indicating that a structural break or pivot is underway.

As we noted in Chapter 2, one of the factors that could lead to a further sharp move out of the US dollar would be a serious weakening of US economic stability relative to other major economies, implying a loss of trust in the US dollar, similar to the 1970s. A second reason for some central banks to try to rapidly shed US dollars from their portfolios might be the threat of further reserve freezes in the context of a significant deterioration in relations between the United States (or the West in general) and other countries. For the moment, this appears somewhat unlikely, in our view. We noted, in fact, that efforts seem to be underway to somewhat calm the major geopolitical conflict, i.e. between the United States and China.

Even in the absence of geopolitical and economic calamities, a further diminution of the role of the US dollar in global foreign exchange reserves is possible, and in fact seems rather likely, in our view, for three reasons: first, because the need for foreign exchange reserves

diminishes in a world of floating exchange rates as well as improving macro management; second, due to active diversification policies of central banks; and, third, because the increased use of swap lines between central banks diminishes the quantity of reserves required.

> “A further diminution of the role of the US dollar in global foreign exchange reserves is possible, and in fact seems rather likely, in our view

Traditional reasons for holding reserves have diminished in a world of floating exchange rates

The traditional role of foreign exchange reserves, namely to provide a buffer to finance a country’s imports, has become far less important over the past decades. Trade finance is now generally extended by global private sector banks in both importing and exporting countries, which can refinance themselves in global money markets. This implies that central bank buffers are needed to a lesser extent, except in poorer developing countries. Therefore, traditional “rules” by which central banks were encouraged to hold a certain percentage of annual imports as foreign exchange reserves are far less relevant today. That said, because some commercial and central banks risk being cut off from the global (USD) money market in times of crisis, a considerable incentive remains to hold US dollar reserves, not least because the Fed’s swap lines are not available to all central banks.

For central banks that are confident they will be able to activate and draw on the swap lines in adequate amounts during times of crisis, the hoarding of foreign exchange reserves is less imperative; indeed, the global financial system has evolved such that many countries, instead of “pre-funding” with US dollars to deal with crises, can just access US dollars “on tap” when needed. For countries where imports are sourced to a large extent from areas with currencies other than the US dollar, central banks may want to hold fewer US dollars and instead acquire currencies of their main trading partners. They will especially want to do so if those currencies are structurally strong and thus particularly expensive in periods of stress. Conversely, if the goods traded (especially commodities) are denominated in US dollars, the reserve currency of choice will remain the US dollar (see below).

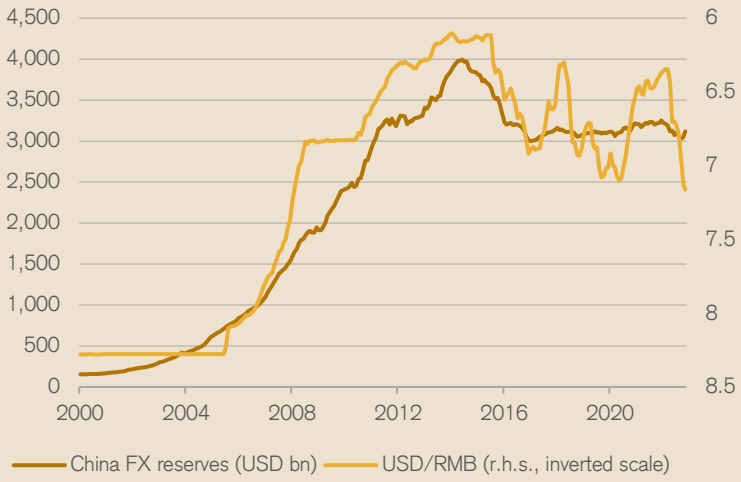
Second, and more fundamentally, in a world of (purely) floating exchange rates, the need for foreign exchange reserves to “defend” the home currency against depreciation pressures in principle no longer applies; countries can simply let their currencies depreciate until the market finds an equilibrium. The more credible economic policy making is, the more confident policy makers can be that extreme depreciation pressures can be avoided. The recent experience in many leading emerging economies, both in Latin America and Asia, has been just that – despite rapid policy tightening by the Fed, most emerging market currencies have remained far steadier than in past episodes of Fed tightening. Nevertheless, many countries may not want to rely fully on the rationality of foreign exchange markets, and their central banks will thus want to hold meaningful amounts of foreign exchange reserves in order to smooth currency fluctuations by means of foreign exchange market intervention.

Fighting appreciation pressure is a key reason for reserve accumulation

Of course, if central banks deem it necessary to intervene in foreign exchange markets to prevent their currency from appreciating against the US dollar or another reserve currency, they will automatically accumulate foreign exchange reserves. In fact, the most important reason that foreign exchange reserves have increased in many countries, notably in China in the period of rapid growth up to about 2010 or in Switzerland during the euro crisis, has been their central banks’ efforts to prevent the Chinese renminbi (RMB) and Swiss franc (CHF) from appreciating against the US dollar and, in Switzerland’s case, the euro.

Conversely, when appreciation pressures diminish or even reverse, these central banks may want to, or have to, actively sell some of their foreign exchange reserves. We would venture to say that the decline in US dollar reserves at the People’s Bank of China since

Figure 1: China buys (sells) dollars when the RMB becomes stronger (weaker)
China's foreign exchange reserves and the USD/RMB exchange rate



Source: Haver Analytics, Credit Suisse

Figure 2: Russia's reallocation of reserves has been the most marked
In USD bn

Source: Haver Analytics, Credit Suisse

2015 (**Figure 1**) has to some extent been due to active selling of US dollars by the Chinese central bank in order to slow RMB depreciation. In sum, movements in foreign exchange reserves are often an endogenous result of foreign exchange policy or, more broadly speaking, of efforts to protect the domestic economy from currency market gyrations.

However, finally and importantly, foreign exchange reserves and their composition do indeed change because of deliberate investment decisions by central banks. While central banks are far more constrained in their investment decisions than private sector investors because their asset allocation decisions must not undercut their monetary and exchange rate policies, they generally do have some leeway to reallocate reserves away from the US dollar, especially in periods in which their currencies are not under appreciation pressure, i.e. in periods when the US dollar is stable or strong – their investment choices will be limited, however, by the liquidity of other reserve currencies and the quality of assets that are available for investment.

Hence, with the RMB appreciation trend abating in the early 2010s, China ended its accumulation of US dollars and other G-7 reserve assets and shifted some of its existing stock of G-7 claims into gold. At the same time, the government also began funding newly established policy institutions like the BRICS Contingent Reserve Arrangement (CRA) and New Development Bank (NDB, also see Chapter 4). China also encouraged local commercial banks to recycle some foreign exchange inflows via long-term loans to fund the Belt and Road Initiative (BRI). These moves can be interpreted as a combination of straightforward risk diversification in the PBoC's asset portfolio, including a shift from nominal into real assets and an investment strategy intended to strengthen China's longer-term geopolitical and trade position.

Other major emerging markets changed their reserve management practices as well, each for a variety of reasons. Russia shifted from Treasury securities into gold and divested due to the threat of sanctions, and it moved its reserves to the eurodollar market through foreign exchange swaps (see **Figure 2**). The latest G-7 sanctions have, however, led to a blockage of these funds as well. Saudi Arabia, the largest member of OPEC (The Organisation of Petroleum Exporting Countries) and the largest holder of petrodollar reserves, also stopped accumulating Treasuries. It has increasingly focused on real assets instead, as did Brazil and India. Conversely, the Swiss National Bank (SNB) partly diversified its portfolio into US dollars and away from euros, which it accumulated in the course of fighting CHF appreciation to protect sales into

Switzerland's main export market, and it also increased its allocation to real assets – global equities in its case (**Figure 3**). Putting it simply, central banks that hold enormous foreign exchange reserves and therefore, whether implicitly or explicitly, also function as sovereign wealth funds, will want to optimize their portfolios to improve their long-term risk-return characteristics. In some cases, these institutions will no doubt also use investment decisions to support the geopolitical goals of their governments.

Central banks have some leeway to act as investment managers…

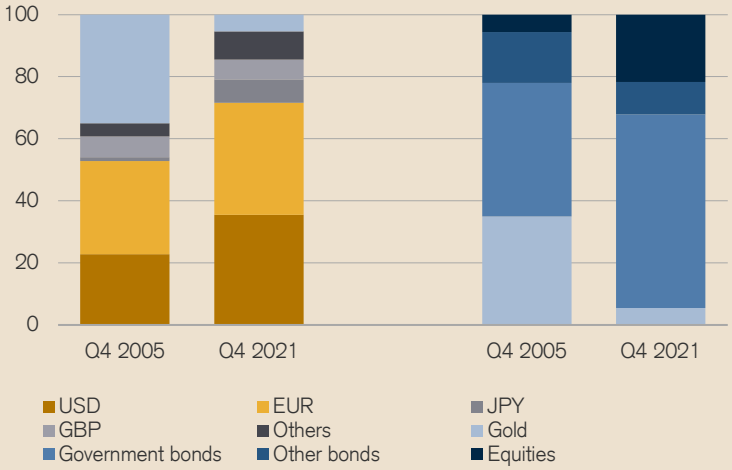
In short, the patterns of reserve management practices have been changing for a while on the margin. Captive buyers of Treasuries have started to "rebel," with their preferences shifting to assets other than US Treasuries. Whether this trend gathers pace remains to be seen and, as noted in Chapter 2, will to a large extent depend on macro developments in the United States. It will also, of course, depend on the degree of risk that central banks, in their role as asset managers, are willing to engage in. With yields on US Treasuries now considerably higher than a year or two ago, the incentive to reduce the allocation to these investments has arguably diminished.

That said, the key question for asset allocators will be how returns on US Treasuries are expected to evolve relative to those of other comparable reserve assets; the claim that investing in US Treasuries has been a particularly "bad deal" is certainly not borne out by the data, at least over the past two decades (see **Figure 4**); total returns on US Treasuries (measured in USD) have been somewhat better than for government bonds in other advanced economies, although they have indeed underperformed Chinese and other emerging market bonds.

Of course, central bank reserve managers will, in their role as investors, not only want to look at absolute returns, but also at risk-adjusted returns and, in particular, at the behavior of their reserve assets in times of crisis. In that regard, the US dollar has continued to act as a safe haven in periods of great uncertainty such as the current one. Meanwhile, second-tier reserve currencies, in particular the British pound, show significantly worse characteristics in crisis periods. Even the yen and euro have not held up as well as the US dollar, although the current account balances of these regions remain markedly better than in the United States. Their fiscal imbalances are, however, similar to or worse than in the United States and their central banks have become at least as lax with respect to inflation as the Fed.

Figure 3: Swiss National Bank has shifted into the US dollar and real assets

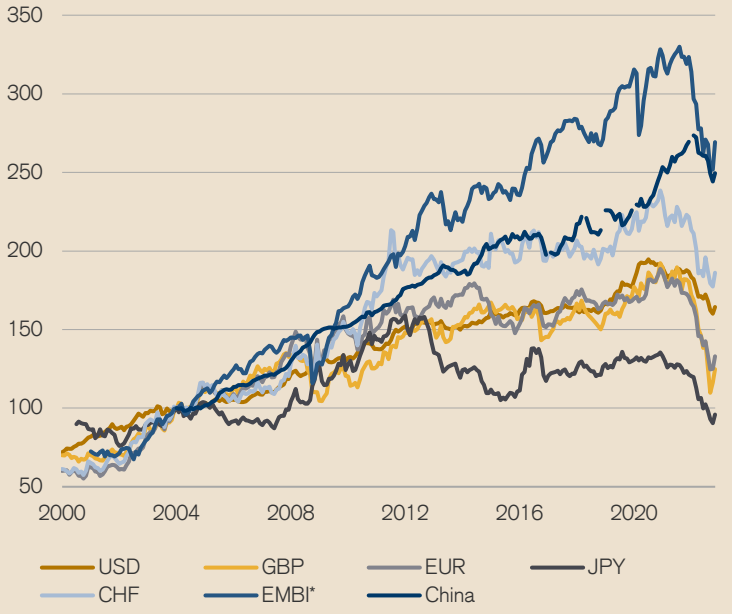
Asset and currency allocation of the SNB's foreign currency reserves (incl. gold) in 2005 and 2021, in % of total



Source: Swiss National Bank, Credit Suisse

Figure 4: US Treasuries have outperformed most other advanced economy bonds

Total returns on government bonds in USD, indices, Jan. 2004 = 100



* JPMorgan Emerging Market Government Bond Index
Source: Bloomberg, Credit Suisse

Note: Historical performance indications and financial market scenarios are not reliable indicators of current or future performance.

If the current period of price instability were to persist, the yen, pound or euro could suffer relatively more over time than the US dollar. The fact that commodities are typically not denominated in these currencies is a further disadvantage. The only advanced economy currency that does significantly better than the US dollar on a total and risk-adjusted return basis and that also exhibits clear safe-haven characteristics is the Swiss franc. However, the franc and its government bond market lack the depth to function as a substantial reserve currency.

…and are likely to focus on a broader range of real assets

With the return to higher inflation being a potential new risk for investors, preserving the real value of assets has also become a concern for reserve managers and is likely to influence their asset-allocation decisions going forward. As noted above, some reallocation from nominal to real assets has already taken place and this trend may well intensify. Apart from equities (e.g. in the case of the Swiss National Bank), these real assets may include a greater allocation to gold (or possibly other commodities) as well as investments in infrastructure, mining and industrial projects (e.g. in the case of China's investments in the BRI). As noted, the lines between some central banks and sovereign wealth funds will thus be blurred further.

Geopolitics has brought the issue of security and access to funds to the fore

Finally, the increased geopolitical tensions discussed above and the monetary sanctions imposed by the United States and other G-7 governments may influence reserve managers as well. As Jack Lew, former US Treasury Secretary warned in 2016, "…the more we condition the use of the dollar and our financial system on adherence to US foreign policy, the more the risk of migration to other currencies and other financial systems in the medium term grows.[1]" There could thus be more than meets the eye with regard to the freezing of Russia's foreign exchange reserves. Recognizing the growing risk of sanctions since it annexed Crimea in 2014, Russia sold all its US Treasury securities and moved its US dollars into the eurodollar market where it deployed them via foreign exchange swaps. The logic was simple: US Treasuries are direct onshore links with the US government, where asset freezes would be easy. On the other hand, the eurodollar market is offshore and effectively "stateless."

1. US Treasury Secretary Jacob J. Lew on the Evolution of Sanctions and Lessons for the Future, speech at the Carnegie Endowment for International Peace, March 30, 2016

After swapping out of US dollars, the Central Bank of Russia thus effectively deposited its euro, yen and pound sterling balances with the European Central Bank, the Bank of Japan and Bank of England. However, in 2022, the G-7 central banks in coordination with the US Treasury froze the deposits of the Central Bank of Russia at other central banks as well, expanding the asset freeze and further reducing Russia's access to its funds. The safety and accessibility of reserves has thus become a significant topic that may have ramifications for reserve policy in the future.

> "Preserving the real value of assets has also become a concern for reserve managers

The factors determining foreign exchange reserves going forward

To sum up, we have identified the main factors that are likely to drive the evolution of foreign exchange reserves going forward:

1. Reserve accumulation and decumulation will continue to be driven to a significant degree by efforts of central banks to limit both an excessive appreciation or depreciation of their home currencies against the lead currency (the US dollar) or the currencies of their countries' main trading partners.

2. Increased investments in currencies of main trading partners will be a natural outcome, with currencies preferred that are strong and liquid and that offer ample high quality reserve assets as investments.

3. Reserves will also be accumulated for countries to withstand external economic shocks and financial crises, although the availability of swap lines reduces funding needs. In any case, the safe-haven characteristics of reserve assets will remain an important consideration.

4. Insofar as central banks have leeway to make standard asset allocation decisions (so that they do not undercut their monetary and currency policy goals), we expect to see more

diversification across currencies and, more importantly, diversification into real assets ranging from equities to commodities and infrastructure. In this regard, the role of central banks and sovereign wealth funds might become even more blurred. In part, such investments will also support the respective country's geopolitical goals and ambitions. They will tend to be financed by shifts out of the dominant international reserve asset, US Treasuries.

5. Maintaining access to and safety of reserve assets will also remain a key driver given that geopolitical tensions and the threat of sanctions are likely to persist.

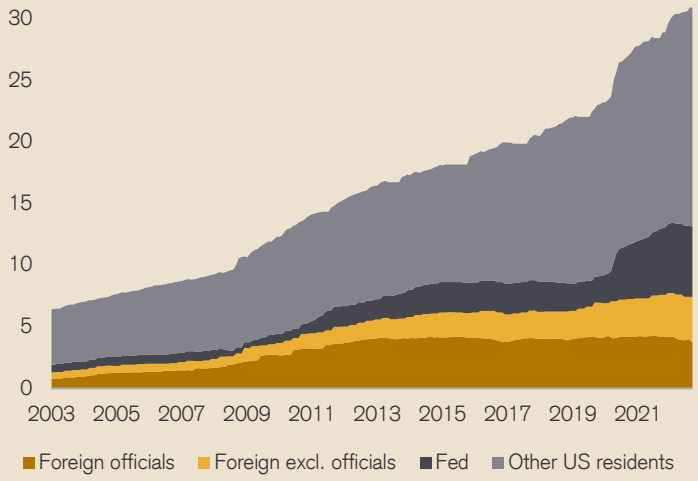
> "The key investors driving demand for US Treasuries remain US domestic investors

Base case: A gradual move out of USD reserves

Considering all these factors, we can assume that the trend of some of the major central banks in emerging markets to diversify parts of their reserves out of the US dollar and, more specifically, out of US Treasuries will contribute to a further, albeit gradual, diminution of the US dollar's role as the dominant reserve currency. That said, shifts would need to be significant for the US dollar to lose its position as the main reserve currency, and that seems quite unlikely in the foreseeable future. A tail risk in this regard would be that such diversification efforts, combined with the Fed's quantitative tightening (i.e. its own sales of US Treasuries) would undermine this asset class and thereby accelerate the decline of the US dollar as a reserve currency.

However, the key investors driving demand for US Treasuries remain US domestic investors (**Figure 5**), above all US pension funds, and risk-return considerations make it unlikely that these institutions will reduce their Treasury allocations in any meaningful way. In addition, private and institutional investors from around the world invest heavily in US Treasuries due to their liquidity and safe-haven nature. The role of foreign central banks in determining overall demand for US Treasuries and thereby the exchange rate of the US dollar is thus smaller than often assumed. Moreover, while the holdings of Treasuries by foreign central banks have flattened out since around 2014 and have dropped somewhat over the past year, other foreign investors have more than compensated for that decline. In fact, these investors now hold almost as many Treasuries as foreign central banks.

Figure 5: US domestic investors remain the dominant holders of Treasuries
Ownership of US Treasury bills and bonds (in USD trn)



Source: Refinitiv Datastream, Credit Suisse

Photo by Jose A. Bernat Bacete, Getty Images

4. How the monetary system could evolve

For the foreseeable future, there are no clear candidates to replace the US dollar as lead currency. Meanwhile, the creation of a global currency remains illusory – that would require an intensely cooperative geopolitical environment. However, capital market deepening and increased trade among major emerging markets is boosting the role of their currencies. Moreover, mutual insurance schemes to protect against the fallout from US dollar gyrations and an alternative payments system point to a more multipolar currency world.

In the preceding chapters, we first discussed the checkered history of the USD-centric monetary system and, more specifically, the type of macroeconomic situation that undermines trust in the "hegemonic" or predominant currency on the one hand, and the problems that can arise for third countries and their financial stability when the dominant currency becomes "too strong" on the other. In Chapter 2, we focused on the current economic and geopolitical setting to try and assess the potential impacts on the dominance of the US dollar going forward. In Chapter 3, we focused more specifically on the reserve policies of non-US central banks and to what extent they might affect the USD-centric monetary system. Our overall conclusion from the three chapters was that a gradual evolution of a more multipolar monetary system seemed the most likely outcome, with a more extreme pivot away from the USD-centric system a much less likely risk case.

The main question we address in this chapter is what the concrete features of a more multipolar monetary system might be. We also describe some of the efforts that have already been undertaken to develop such a structure. In this context, a topic of interest is what role central bank digital currencies (CBDCs) might play in the future. Before discussing these concrete issues of "system design," we will lay out why we believe that a more radical systemic shift, be it the creation of a truly new global currency, or the rise of an alternative "hegemonic" or anchor currency is, in our view, very unlikely in the foreseeable future.

Two unlikely scenarios: A common global currency or a different currency hegemon

As we noted at the outset of this publication, John Maynard Keynes had argued in the 1940s that an optimal monetary system to avoid the asymmetric stresses described above would be to create a joint global currency issued by a joint central bank. He termed this potential global currency "Bancor" (derived from the French words "banque" and "or"). In this system, the central bank would manage the quantity of a common and internationally accepted currency. Countries with current account deficits would borrow from surplus countries via a central clearing bank up to prescribed limits, after which a devaluation would be possible or even necessary. Meanwhile, surplus countries would be disincentivized from lending too much to deficit countries by having to pay an interest rate on lending beyond an agreed threshold. Keynes argued that such a system would keep global imbalances in check. At the Bretton Woods

conference, this idea was, not surprisingly, rejected by the United States, not least because the United States was at the time the dominant surplus country. Instead, the United States pushed through the proposal of the Bretton Woods institutions in which the US dollar became the lead currency. By pegging the currency to gold, it was thought that excessive money printing would be prevented and discipline would be preserved, i.e. other countries would benefit from an anchor currency that was "as good as gold." In addition, a multilateral institution, the International Monetary Fund (IMF), was set up to provide liquidity for temporary financing of current account deficits.

The creation of a world currency remains illusory, SDRs are no such thing

Keynes was not the only one to propose a global currency. Another prominent economist to do so (although much later) was the Nobel prize winning Canadian economist Robert Mundell.[1] Some prominent policy makers, especially from emerging markets, have made similar proposals, including the head of the People's Bank of China (PBoC) in the speech cited in Chapter 1. In his speech, Governor Zhou Xiaochuan also discussed the potential role of SDRs (Special Drawing Rights) in a redesigned monetary system. Indeed, sometimes SDRs are thought of as the base of a new global money. However, the volume of SDRs is determined by the amount of capital paid in by individual countries to the IMF. The IMF does not have the power to create additional SDRs "out of thin air" as would need to be the case for an effective global central bank.

It should not be surprising that proposals for a world currency have not come to fruition and, in the current fractious geopolitical setting, this is even less likely. Put simply, handing over the power to print money from one's own central bank to a supranational authority requires enormous mutual trust among countries. Such a handover is typically only likely when a political union is formed. It might in theory also be possible in a hypothetical world of many very small and weak countries that could find their interests best represented by an equilibrating supranational authority.

The creation of the euro was a truly exceptional political decision

In reality, the only group of countries to have voluntarily handed over the monetary reins to a common authority are members of the European Union (which, after all, is something close to a political union). Even in Europe's case, the creation of a common currency is, in retrospect, quite an extraordinary event. After all, one of the most powerful central banks in the world (and arguably the bank with the greatest credibility), the German Bundesbank, handed over the reins to an untested common central bank in which representatives from far less credible central banks have equal decision-making power. This "sacrifice" only came about due to very special geopolitical and regional circumstances. No other group of countries comes to mind that would, in the foreseeable future, agree on such a momentous step.

"

It should not be surprising that proposals for a world currency have not come to fruition

For the foreseeable future, neither the euro nor the renminbi qualify as alternative currency hegemons

The follow-up question is then whether there might be a currency other than the US dollar to take on a similarly dominant role in the global monetary system. Here the answer is also a clear "no," at least for the foreseeable future. There are two regions that are similar in economic size to the United States, and which by their scale might in principle qualify: the Eurozone and China. While the euro by now accounts for around 20% of global foreign exchange reserves, the second largest share behind the US dollar (see **Figure 2** in Chapter 2), and is also freely tradable across borders – a key prerequisite for a lead currency – Eurozone policy makers clearly do not strive for their currency to take on such a role. The focus of the European Central Bank (ECB) is almost exclusively on the domestic economy. Moreover, the Eurozone is (at least so far) still quite far from being a fully fledged fiscal union and therefore lacks a region-wide safe asset like US Treasuries. This implies that there is no highly liquid and uniform asset that the rest of the world could hold as reserves. The absence of an integrated capital market and banking union are further roadblocks. The lack of a banking union implies, in

1. Robert A. Mundell, "A Reconsideration of the Twentieth Century," Prize lecture, December 1999

particular, that the ECB cannot trade directly with region-wide money center banks, which reduces the liquidity of the euro.

In contrast, China is one fiscal entity and its few large banks can be regarded as money center banks. However, the renminbi lacks the third key characteristic which would qualify it as a competitor to the US dollar: international capital mobility. For the foreseeable future, it seems most unlikely that China will fully liberalize and open its financial markets for cross-border transactions; such a step would likely be too destabilizing. This is the key reason why the share of renminbi in global FX reserves is still so small. Other features, such as an internationally recognized legal system, also argue against the renminbi as a serious contender as a lead currency. Because of limited capital mobility, the renminbi is also not suitable as a currency to which other countries might peg their own currencies. It is noteworthy that the key hub for China's access to global financial markets, Hong Kong SAR, continues to tie its currency to the US dollar.

Base case: A gradual evolution of a more multipolar system

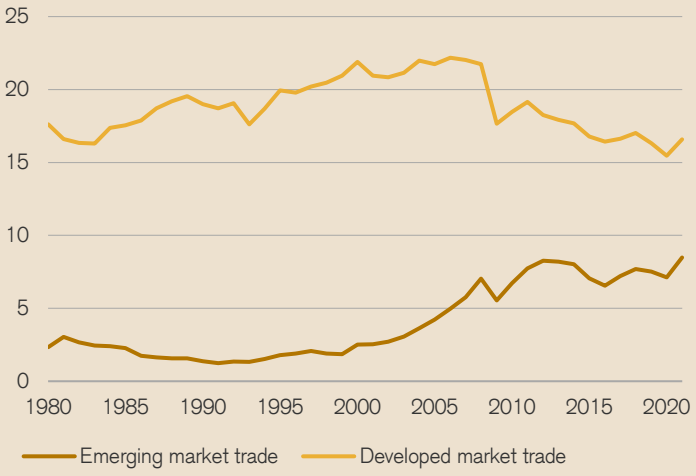
What might a future monetary system look like in the absence of either a new world currency or a full replacement of the US dollar as the lead currency? Essentially, we see a new – or rather adapted – more multipolar system resulting from three drivers: first, the trend increase in bilateral trade among many countries, which allows for returns to scale in the use of their respective currencies rather than the US dollar; second, the deepening of local capital markets in emerging markets; and, third, efforts (especially by leading emerging markets) to develop mutual insurance schemes against shocks resulting from shifts in US monetary policy. Over the past few years, a number of major emerging markets have been developing such a scheme.

More intra-emerging market trade one of the drivers of increased FX transactions

Currently, a large share of international trade is transacted using US dollars. While this typically adds two "legs" in any transaction, i.e. from the buyer's currency to the US dollar and then from the US dollar back into the seller's currency, the high degree of liquidity of the US dollar implies that overall transaction costs nevertheless remain limited. As bilateral trade among countries, both emerging and industrial, intensifies (**Figure 1**), the returns to scale in such transactions can lower the cost of directly transacting in the currency of the buyer or seller. An indirect confirmation of this trend is found in data on foreign exchange transactions published by the Bank for International Settlements (BIS). This data shows a continued increase in trading of emerging market currencies (**Figure 2**). As the authors point out, however, this increase is to a large extent also the result of significantly enhanced capital market transactions in emerging market assets.[2] In any case, the increased share of global trade and capital market transactions involving emerging markets suggests that the dominance of the US dollar will further diminish, rendering the global

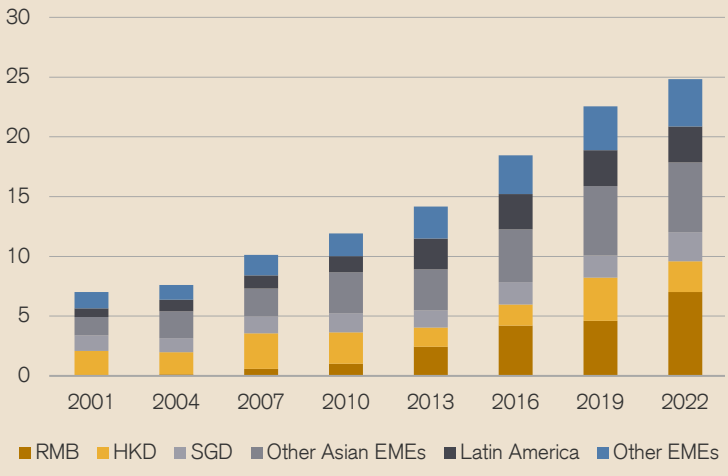
2. To quote the BIS: "Among the 39 currencies covered in the BIS Triennial Survey, the Chinese yuan (CNY) saw the fastest growth in FX trading between April 2019 and April 2022. CNY trading rose by over 70% after adjusting for exchange rate movements, to USD 526 billion per day. This rapid growth elevated the CNY to the fifth most traded currency in the world. Even so, CNY turnover remained low relative to the size of China's economy: 3% of annual GDP, compared with 30% of GDP for USD and 6% for the median EME currency."

Figure 1: Trade among emerging markets rising
Sum of goods imports and exports, in % of GDP



Source: Refinitiv Datastream, IMF, Credit Suisse

Figure 2: Increased transactions in emerging market currencies
Share of global foreign exchange turnover, in % of total



Source: BIS Quarterly Review, December 2022, Credit Suisse

monetary system more diverse and multipolar, with the currencies of major emerging markets gaining in importance.

A shift away from the US dollar in energy trading seems unlikely for now

A major shift in this direction would occur if international trade in commodities, particularly energy, were to shift away from the US dollar. Based on our calculations, the share of trade in crude oil in overall international trade has ranged between approximately 5% and 9% over the past ten years, with the level of the oil price a major determinant of that share. So far, a significant trend away from US dollar pricing is not visible, as Ibrahim AlMuhanna, Vice Chairman of the Saudi Association for Energy Economics confirmed at the CSRI Fall Conference. The denomination of energy trade in US dollars also reinforces the currency's still dominant role in the foreign exchange reserves of oil exporters.

That said, given the heavy weight of China as an energy importer, it is well possible that the renminbi will gain a greater share in energy trade. Moreover, if oil exporters were to increasingly accept the renminbi and if their access to Chinese assets were increased, this would in turn boost the role of the renminbi as a reserve currency. At the CSRI Fall Conference, Zongyuan Zoe Liu, a fellow for international political economy at the Council on Foreign Relations, pointed out that China has been developing a platform for trading commodities in renminbi that would support such a trend. In this context, trading volumes on the Shanghai crude oil futures market advanced to third-highest globally in 2019, although they remain significantly lower than for the WTI and Brent contracts. Moreover, at the China-Gulf Cooperation Council (GCC) summit in late 2022, Chinese President Xi called for the joint use of the renminbi in oil and gas pricing, although no formal agreement was reached. However, with expanded energy cooperation between China, Saudi Arabia and other GCC members, a move toward the greater use of the renminbi in oil and gas pricing, trading, and settlement between China and the region seems likely.

Additional insurance against USD-induced shocks

As we have noted in preceding chapters, the key problem with the current USD-centric system (or any monopolistic monetary system for that matter) is that shifts in US monetary policy, US interest rates and the US dollar have outsized effects on other countries. According to Mark Carney,[3] research by the Bank of England has shown that these effects have increased markedly over past decades even though the share of the United States in the global economy has diminished. The reason for the increased impact is the heightened role of short-term capital flows that amplify shifts in monetary conditions in the United States in third countries. These effects can be further amplified if commodity prices move in the "wrong" direction. For example, in 2022, the world witnessed a combination of rising US interest rates, a stronger US dollar and rising commodity prices. This amplified stress in countries reliant on international capital inflows and heavily dependent on commodity imports.

3. Mark Carney, The Growing Challenges for Monetary Policy in the current International Monetary and Financial System (Jackson Hole Symposium, August 2019)

> "Shifts in US monetary policy, US interest rates and the US dollar have outsized effects on other countries

Additional funds to protect against shocks, and more swap lines

To guard against such shocks, many countries, especially leading emerging markets, have improved their macroeconomic policies (self-insurance). But such adjustments may not suffice, and additional shared insurance may be required; indeed, sharing or "pooling" insurance schemes is by nature more cost-effective than going it alone. The USD 100 billion "Contingent Reserve Arrangement" (CRA) that was established by the BRICS countries (Brazil, Russia, India, China and South Africa) in 2015 is one such scheme. Its purpose is to provide protection if member countries face external liquidity pressures. Interestingly, members are allowed to draw up to twice their paid-in capital in a situation of stress, with the exception of China, which can only draw half of its paid-in funds. In other words, China would act as a (partial) lender of last resort within the scheme. Even if the CRA is still limited in size relative to the lending power of the IMF, its establishment is an important step toward a more multipolar system.

A second, and arguably more flexible, system to provide insurance is the provision of swap lines between central banks. While the Fed remains the primary provider of swap lines to other central banks and increasingly to emerging market central banks, which can lend onward to their domestic banking system, the number and volume of bilateral swap lines between other central banks has increased substantially since the global financial crisis. Swap lines between Asian central banks have increased most markedly, with China playing the dominant role (see **Figure 3**).[4]

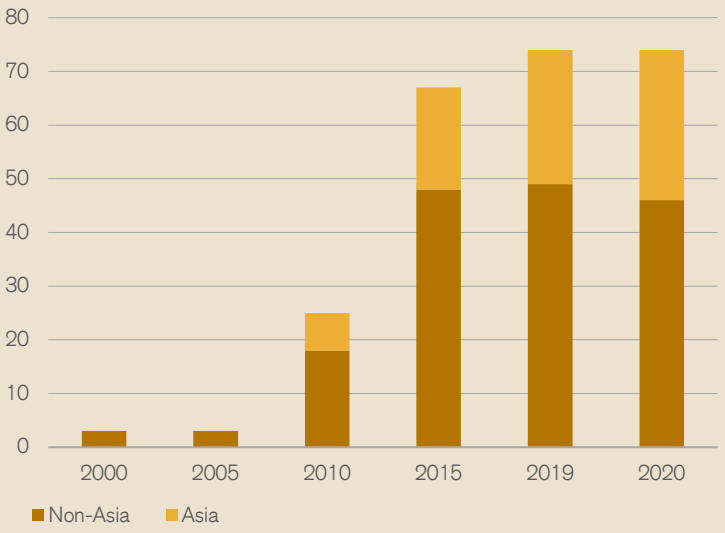
An alternative global payments system?

China has also been at the heart of efforts to develop an alternative international payments system.[5] In the current hierarchical system Fedwire (for net settlement at the Fed), CHIPS (for netting between its current 47 commercial bank members) and SWIFT (for messaging) are the key institutions for international payments. This system has enormous scale, of course, and thereby contributes to lowering international transaction costs. At the same time, it reinforces the US dollar as the dominant currency: every bank that has a reserve account effectively banks with the Fed and, if one makes a payment to another, money never leaves the Fed's balance sheet. Money just moves between reserve accounts at the Fed. In geopolitical terms, the system can also be seen as bolstering the US strategic position.

Similarly, China's efforts to develop an alternative system can be seen in those geostrategic terms. The main feature of this alternative system is that it is more "flat" than hierarchical (**Figure 4**) because it has many more bilateral swap lines and because it does not require correspondent banks. It also combines clearing, netting and messaging functions into one. The three layers of the new system are: (1) the PBoC, (2) central banks with renminbi swap lines, and (3) local

Figure 3: The number of swap lines has expanded significantly

Number of bilateral swap lines among central banks

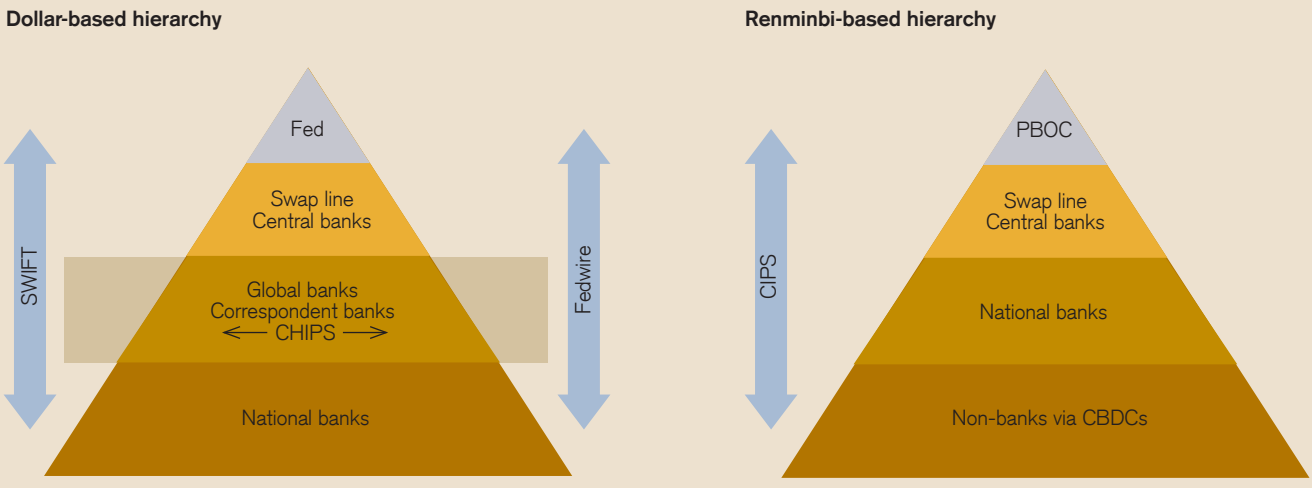


Source: Perks, M. et al. (2021), Evolution of Bilateral Swap Lines, IMF Working Paper

4. IMF Working Paper 21/210: Evolution of Bilateral Swap Lines (August 2021). The authors point out, however, that the number of swap lines established by the PBoC stopped increasing after 2015.

5. These and other efforts to develop an alternative monetary system are laid out in detail in Zongyuan Zoe Liu and Mihaela Papa, Can BRICS De-dollarize the Global Financial System? Cambridge University Press (2022)

Figure 4: Alternative monetary systems



Source: Credit Suisse

banks with accounts at correspondent central banks. The messaging, netting and clearing functions of this system run on China's Cross-Border Interbank Payments System (CIPS), which was launched by the PBoC to allow banks to clear cross-border renminbi transactions directly onshore instead of via clearing banks in offshore renminbi hubs.

This flatter system might also be more suitable for the implementation of one or more central bank digital currencies (CBDCs). Indeed, the PBoC is arguably the major central bank that is most advanced in the development of its digital currency although other central banks, including the Fed, are also considering the viability of launching CBDCs. If volumes transacted on this system were to increase substantially, the move to a more multipolar monetary system would naturally be reinforced.

The pros and cons of a hegemonic currency

In this publication, we have discussed the factors that might, or might not, undermine the current "hegemonic" position of the US dollar in the global monetary system. Here we provide a short overview of the benefits and costs of a hegemonic monetary system for both the emitter of the lead currency and the other users.

Benefits for the emitting hegemon

1. The most immediate benefit for the monetary hegemon is that its central bank earns more so-called "seigniorage" than other central banks. The reason is that foreigners tend to hold substantial amounts of cash denominated in the lead currency cash and their banks hold substantial reserves at the Fed. Based on a paper by Cutsinger and Luther,[1] we have calculated the nominal value of this measure of seigniorage. For the period from 1977 to 2021, seigniorage contributed by foreigners averaged USD 5.9 billion per annum compared to USD 7.5 billion from domestic residents. That said, this measure varies strongly due to changes in interest rates. In recent years, seigniorage has been very low given extremely low interest rates.[2] Even when interest rates are high, the overall contribution of seigniorage to the United States' tax receipts is very limited.
2. A looser measure of the main benefit that the monetary hegemon enjoys is the so-called "exorbitant privilege,"[3] i.e. the unusually high degree of monetary and fiscal autonomy. This arises because the world "must" hold the hegemonic currency. Hence the hegemon cannot go bankrupt. Moreover, in many cases, foreign central banks are "captive" buyers of the government bonds of the hegemon, as we have pointed out in the chapter on foreign exchange reserves, which eases the fiscal constraint of the hegemon.

That said, if the hegemon were to systematically abuse this exorbitant privilege and thereby continually debase its currency, trust in the reserve currency would vanish, as the period of the 1970s showed in the case of the US dollar. In reality, the exorbitant privilege is therefore limited.

Costs for the hegemon

1. If the hegemon is of a "benign" nature, it will also take on some responsibility for global stability. In this case, monetary policy may need to deviate from the pursuit of purely domestic goals, which may have negative impacts on the domestic economy, e.g. if monetary policy is tightened or eased excessively in pursuit of global stability. If the hegemonic central bank extends extensive swap lines to other central banks, this may, for example, imply an excessively loose policy.
2. The hegemon's central bank also faces the risk of other central banks defaulting on the loans that have been provided. In reality, this scenario is quite unlikely, however. In fact, the hegemon's central bank extending swap lines is likely to make a positive return on those loans.

Benefits for other countries

1. The main benefit of a hegemonic currency for third countries is that it is globally traded. Due to scale effects, transaction costs are likely to be lower than would be the case in a more fragmented foreign exchange market.
2. In the case of a crisis, central banks may find it easier to coordinate their policies with one hegemonic central bank rather than with many central banks in a more fragmented system.
3. A further benefit would arise if risk-adjusted returns on reserve assets (specifically US Treasuries) were higher than on alternative investments. As we have shown above, however, this is not systematically the case.

Costs for other countries

1. Prices of goods (especially commodities priced in US dollars) and services will be substantially affected by movements in the hegemonic currency's exchange rate; this can be especially costly for importers if the value of the currency is positively correlated with the prices of traded goods.
2. More generally, the business cycle of other countries will be strongly influenced by gyrations of the hegemonic currency and its interest rates. Business-cycle fluctuations will thereby be amplified. The leeway for countries with weak macro fundamentals to offset such shocks is limited. Especially in periods of monetary tightening by the hegemon, such countries will need to tighten their policy even more strongly to prevent capital outflows, which will exacerbate the economic downturn and cause a liquidity crunch or even a financial crisis (emerging market debt crises, etc.).

1. "Seigniorage Payments and the Federal Reserve's New Operating Regime," Bryan P. Cutsinger and William J. Luther; Free Market Institute Research Paper No. 4086897, April 2022.
2. Cutsinger and Luther note there are three definitions of overall seigniorage: one is the net earnings of the central bank on the assets it holds. The dramatic expansion of the Fed and other central banks' balance sheets has boosted this measure enormously in past years, although the payment of interest by the Fed on reserves held by commercial banks has partly offset this. A second measure is simply the annual issuance of new high-powered money (cash and reserves held at central banks), which fluctuates considerably, depending on whether the central banks pursue expansionary or contractionary policies. However, the economically most meaningful "true" measure of seigniorage is the opportunity cost incurred by holders of (non-interest-bearing) cash.
3. The term was first used by Valéry Giscard d'Estaing in the 1960s when he was the French Minister of Finance.

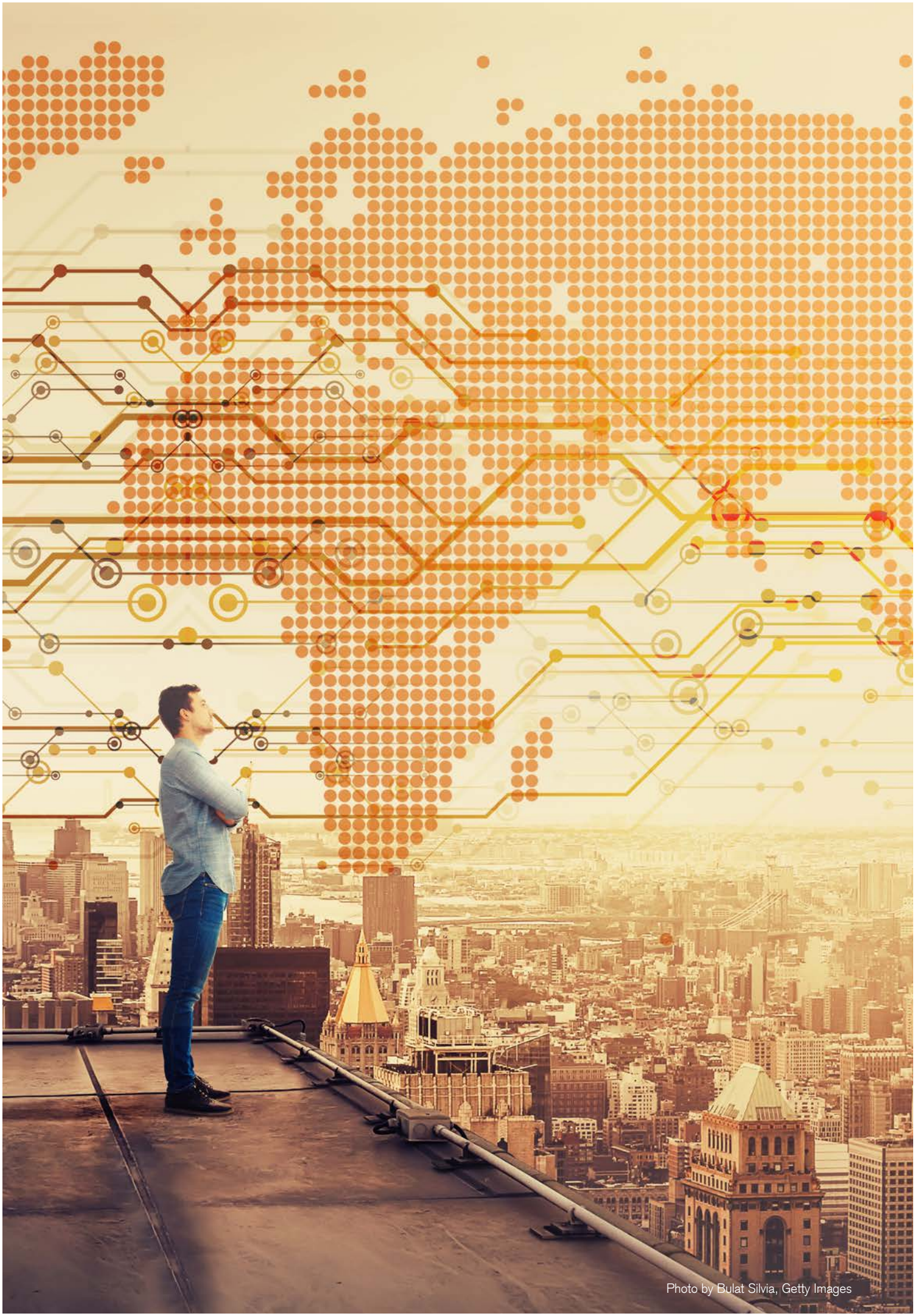


Photo by Bulat Silvia, Getty Images

5. Conclusion: What (else) will count

This publication has examined various aspects of the global monetary system. The main question we tried to answer is whether a significant shift away from the US dollar as the dominant "hegemonic" currency is likely to occur in the foreseeable future, and in which direction the monetary system might develop. The key conclusion was that the fate of the US dollar as the currency hegemon depends on a number of factors, with the degree to which US policy makers would be able to maintain macroeconomic stability relative to other countries of supreme importance.

Table 1: Assessing USD dominance – a checklist

Geopolitics	Evolution and solidity of "pro" or "anti"-US alliances Application of sanctions, reserve freezes and reactions Foreign aid policies of major powers
Macro policies and stability	Inflation, budget deficits and government debt Fed stability orientation Current account balances
Long-term economic performance	Real productivity and GDP growth Other measures of innovation
International trade	Evolution of US vs. non-US-related trade Pricing of commodities in USD or other currencies
Capital market depth, openness	US versus other markets Specifically: China's capital mobility policies
FX reserve trends and policies	Shares in FX reserves: USD vs. other currencies Asset allocation decisions (esp. vis-à-vis US Treasuries)
Central bank cooperation	Swap lines of Fed, other support measures Swap lines between other central banks, other measures
International payments systems	Development and use of Fed-based system Development and use of alternative China-based system
Private investor behavior	Private investment flows into US vs. other countries
Market indicators	FX trading volumes (USD vs. others) Safe-haven measures: behavior of USD & US yields

Source: Credit Suisse

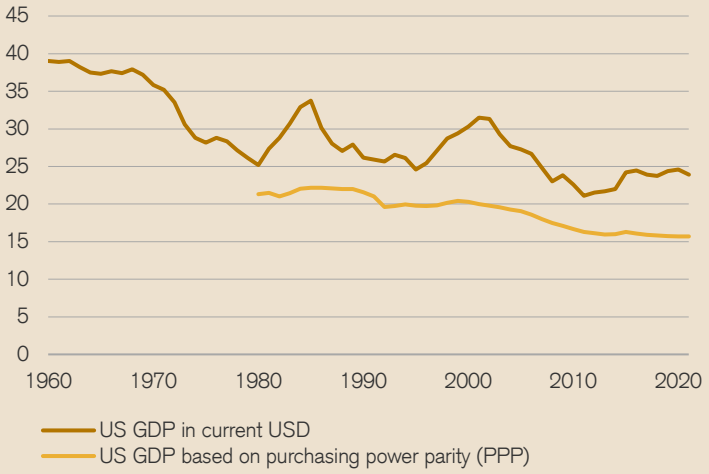
Only if stability is maintained will the US dollar retain its position as the safe-haven currency of choice. How foreign reserve managers in the major surplus countries deploy their (excess) FX reserves will also depend strongly on US macroeconomic stability. **Table 1** provides a "checklist" of the main factors that we believe need to be monitored to assess the probability of a shift away from the current USD-centric system.

> "Declaring the demise of US dollar hegemony may be premature

What is clear is that, in the long run, the overall geostrategic position of the United States relative to rising powers will ultimately be of key importance for the global monetary system, as has been the case for former currency hegemons. While domestic US politics as well as the evolution of international alliances will be important determinants of the United States' position in the geopolitical sphere, this will ultimately also depend on the overall economic success of the United States. Put simply, the question is whether the US economy can retain its leadership position as the driver of innovation power. That will, in turn, determine whether private investors will continue to channel their savings into US enterprises.

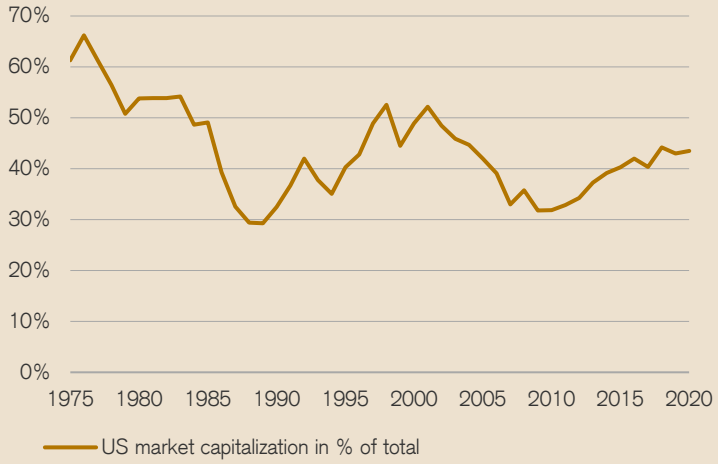
In that context it is notable that the share of the US economy in the global economy (**Figure 1**) as well as the share of its stock market in the global market (**Figure 2**) have remained fairly stable over the past decade after a period of decline; the latter indicator is probably the best measure of private sector trust in the vitality of an economy. As always, past performance is not a predictor of future success, but this data does suggest that declaring the demise of US dollar hegemony may be premature.

Figure 1: The United States' share of global GDP has stabilized after the global financial crisis
In % of global GDP



Source: Refinitiv Datastream, IMF, Credit Suisse

Figure 2: The US stock market retains its dominant position



Source: Haver Analytics, World Bank, Credit Suisse

Panel of experts

The Rt. Hon. Sir John Major KG CH, former Prime Minister of the United Kingdom and Senior Advisor of Credit Suisse, became involved in politics at the age of 16 and, in 1968, won his first Election to a local authority in Lambeth. He stood for Parliament twice in the 1970s before securing election to Huntingdon in 1979. In Parliament, Sir John served in the Government for 16 years, joining the Cabinet in 1987 as Chief Secretary to the Treasury. In July 1989, he was appointed Secretary of State for Foreign and Commonwealth Affairs, a position he held for 94 days before being appointed Chancellor of the Exchequer in October of that year. He became Prime Minister in November 1990 and led the Conservative Party to an unprecedented fourth term in Office at the General Election in April 1992. Sir John retired from the House of Commons at the General Election in May 2001.

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Dr. Ibrahim AlMuhanna is a member of the Board of Directors of the Arab Gulf States Institute in Washington and Vice Chairman of the Saudi Association of Energy Economics. Dr. AlMuhanna has had a distinguished career in academia and public service, serving as advisor to four ministers of energy of the Kingdom of Saudi Arabia from 1989 to 2022, as well as previously serving as vice-chairman of the World Energy Council. In addition, he was a member of a small team that established an independent research and information center in Saudi Arabia that led to the creation of the King Abdullah Petroleum Studies and Research Center in 2010. Mr. AlMuhanna has written on a wide range of energy, economic, political and communications issues for news and academic journals. He holds a PhD in international relations from American University in Washington, DC.

Dr. Pippa Malmgren is a former US Presidential Advisor and former Advisor to the UK Cabinet. She served under President George W. Bush in the White House as Special Assistant to the President and on The National Economic Council. More recently, she advised the British Cabinet on Brexit and was an advisor to The Mayor of London and on the Infrastructure Advisory Board for London. Her most recent bestseller, "The Infinite Leader," won the International Press Award for the Best Book on Leadership for 2021. She lectures at Sandhurst and in the Duke Fuqua Business School Global Executive MBA Program. She is a Senior Advisor to The Monaco Foundry, a start-up incubator for impact-led founders, and a Special Advisor to Avonhurst, a legal and consulting firm in the UK. She has a BA from Mount Vernon College and an M.Sc. and PhD from LSE.

Perry Mehrling is Professor of Economics at Pardee School of Global Studies at Boston University. Prior to that, he was Professor of Economics at Barnard College in New York City for 30 years, where he taught courses on the economics of money and banking, the history of money and finance, and the financial dimensions of the US retirement, health and education systems. He is the author of the books "The New Lombard Street: How the Fed became the dealer of last resort" (Princeton 2011), and "Fischer Black and the Revolutionary Idea of Finance" (Wiley 2005, 2012). He recently released a new book called "Money and Empire: Charles P. Kindleberger and the Dollar System" (Cambridge 2022). Currently, he directs the educational initiatives of the Institute for New Economic Thinking, one of which is his course "Economics of Money and Banking."

Izabella Kaminska is the founder and editor of The Blind Spot, a media venture that focuses on finance, market and media news in both short- and long-form, aiming to deliver a healthy mix of analysis and opinion-led commentary. She is an alumna of the Financial Times, where she spent 13 years in reporting roles, most recently as the editor of FT Alphaville, the Financial Times'

award-winning markets and finance blog. She was also an FT columnist and opinion writer focused on tech, finance and markets. Prior to that she was a senior producer at CNBC in London, producing the channel's flag-ship program Squawk Box. With The Blind Spot, Izabella is initiating a two-part plan to help reconfigure how journalistic information is organized on the internet.

Mihaela Papa is a Co-Investigator on the Rising Power Alliances research project and an Adjunct Assistant Professor in Sustainable Development and Global Governance at the Fletcher School, Tufts University, USA. She is a trade economist specializing in coalition-building and complex multiparty negotiations, especially with respect to the rise of new powers. She has recently co-authored "Can BRICS De-dollarize the Global Financial System?" (Cambridge University Press, 2022) and has been developing a BRICS Convergence Index with her research team. She has extensively published on rising powers in global governance and is also an active practitioner with extensive experience advising institutions on global strategies and managing international collaborations.

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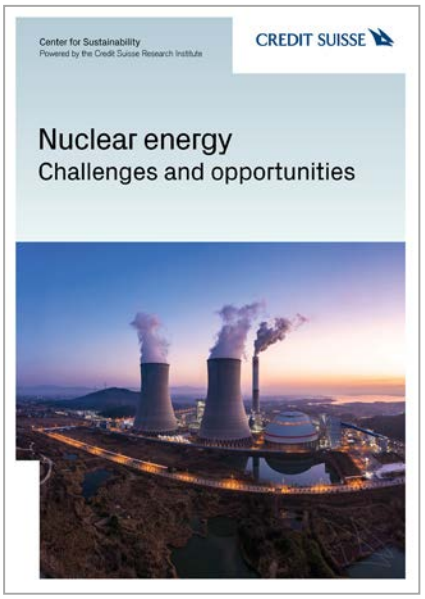

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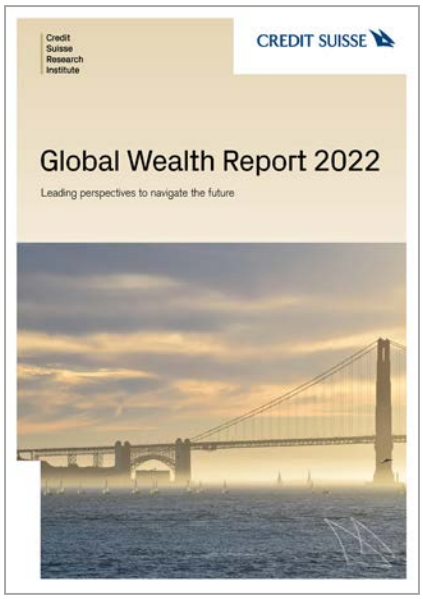

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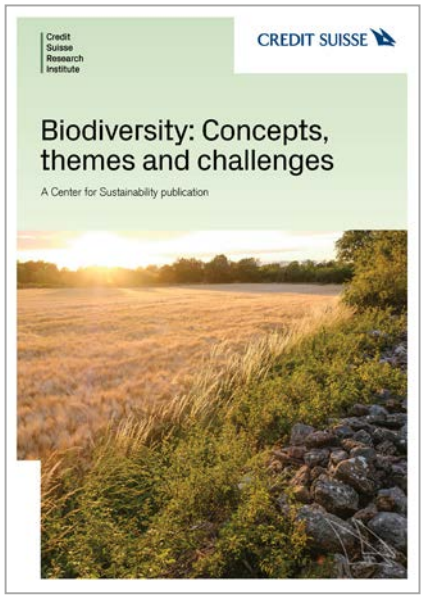

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