

DIGITALISATION AND GEOPOLITICS: CATALYTIC FORCES IN THE (FUTURE) INTERNATIONAL MONETARY SYSTEM

edited by
Nicola Bilotta and Fabrizio Botti



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Ananya Kumar is the associate director of digital currencies at the GeoEconomics Center. She manages the Center’s work on the future of money and coordinates research on central bank digital currencies (CBDCs), stablecoins, cryptocurrencies, and other digital assets. Her research on CBDCs has been cited by the Financial Times, Bloomberg, the Wall Street Journal, the Federal Reserve, and the IMF. Kumar previously worked in research assistant capacities at the Carnegie Endowment for International Peace and the Foreign Policy Institute at the Johns Hopkins School of Advanced International Studies (SAIS). She has also worked as a legal analyst at Sidley Austin LLP in New York City. She holds a MA in strategic studies and international economics from SAIS, where she was a Merrill Center fellow. Kumar graduated cum laude from Bryn Mawr College with a BA in economics and political science.

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Erwin Voloder has been involved in the blockchain sector since 2017, first as a start-up founder in Canada and currently as a regulatory and technical expert in Europe. He is a former economist with both the European Commission and European Central Bank. Currently he is Senior Policy Fellow at the European Blockchain Association. He frequently participates in working groups on programmable money and decentralised finance both at EU level and internationally including advising national governments and private sector companies. His areas of expertise include tokenisation, monetary policy, regulation, geopolitics and programmable money. His current line of research focuses on the future of digital currency areas and CBDC/stablecoins in a cross-border context alongside the challenges of regulating decentralised finance.

List of abbreviations

ABLI	Asian Business Law Institute
ADCC	Asia Digital Common Currency
AML	anti-money laundering
APEC	Asia-Pacific Economic Cooperation
API	Application Programming Interface
ASEAN	Association of Southeast Asian Nations
BIS	Bank for International Settlements
BIS CPMI	BIS Committee on Payments and Market Infrastructures
BoE	Bank of England
BoR	Bank of Russia
BRI	Belt and Road Initiative
BRICS	Brazil, Russia, India, China and South Africa
BSN	Blockchain-based Service Network
CBDC	Central Bank Digital Currency
CBR	Central Bank of Russia
CCP	Chinese Communist Party
CHIPS	Clearing House Interbank Payments System
CIPS	Cross-Border Interbank Payment System
CNY	Chinese yuan renminbi
COFER	Composition of foreign-exchange reserves
DCAs	Digital currency areas
DEPA	Digital Economy Partnership Agreement
DeFi	Decentralised finance
DIDs	Decentralised identifiers
DLT	distributed ledger technology
DvP	Delivery vs. payment
EBSI	European Blockchain Services Infrastructure

ECB	European Central Bank
ECCU	Eastern Caribbean Currency Union
ECIA	e-CNY Industry Alliance
EMU	Economic and Monetary Union
EPI	European Payments Initiative
EUR	Euro
FAO	UN's Food and Agriculture Organisation
FRED	Federal Reserve Economic Data
FX	foreign exchange
GDP	Gross domestic product
GDPR	General Data Protection Regulation
ICT	Information and communication technologies
IFCERT	China's National Committee of Experts on Internet Financial Security Technology
IMF	International Monetary Fund
KYC	Know-your-customer
M2M	Machine-to-machine
mCBDC	Multi CDBC
MIT	Massachusetts Institute of Technology
MPAC	Master Plan on ASEAN Connectivity
OECD	Organisation for Economic Co-operation and Development
OPEC	Organisation of the Petroleum Exporting Countries
PBoC	People's Bank of China
PIPL	Personal Information Protection Law
PRC	People's Republic of China
R&D	Research and development
RCEP	Regional Comprehensive Economic Partnership
RMB	Renmimbi
RTGS	Real Time Gross Settlement
sCBDC	synthetic CBDC
SCO	Shanghai Cooperation Organisation
SDN	Specially Designated National
SDR	Special Drawing Right

LIST OF ABBREVIATIONS

SME	Small and medium-sized enterprise
SPFS	System for Transfer of Financial Messages
SSI	Self-sovereign identity
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TIPS	TARGET Instant Payment Settlement)
UAE	United Arab Emirates
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
US	United States
USD	US dollar
WTO	World Trade Organisation

Introduction

Nicola Bilotta and Fabrizio Botti

The decision by the United States and the European Union to disconnect selected Russian banks from the Society for Worldwide Interbank Financial Telecommunication (SWIFT) and to freeze Russia's foreign reserves might have significant, long-term effects on the international monetary system. While transformations within this system have historically been slow to materialise, the range and scope of the recently deployed sanctions will most likely catalyse a global push to diversify away from the US dollar-centric global financial system. Whether the US and European countries, as well as their allies, strengthen or reduce financial sanctions against Russia in the future, their "weaponisation" of finance against a G20 country like Russia sets a historical precedent that will amplify concerns around the globe that one day any country could be disconnected from Western-led financial infrastructure.

Since the global economy relies on the US dollar as the primary medium for cross-border transactions, unit of account and foreign reserves – and because it is grounded on Western-led payment infrastructure – the US derives significant economic and national-security benefits from its central role in the global financial system. Inertia and friction are key forces that tend to consolidate the hegemony of the US dollar, but, in this context of growing politicisation of money, the process of financial digitalisation could be a crucial force for change in pushing diversification and empowering the creation of new alternatives. The current, rapidly growing interest – albeit in small-scale implementation – in Central Bank Digital Currencies (CBDCs) around the world could foster transformations in the long run. If multi-CBDC arrangements are

established, central banks would be enabled to act as foreign-exchange dealers for intermediate currency flows between local banking systems – all without referencing the US dollar or going through the Western banking system. Moreover, with the advent of automated and electronic trading platforms, which significantly lower transaction costs, central banks have gained much easier and cheaper access to foreign currencies – thereby incentivising reserve diversification.

Even though no other contender could challenge the existing US-dominated dollar system in the short to medium term, it is essential to strategically reflect upon the long-term implications if its thus-far undisputed leadership in the global monetary system were to be eroded. This volume addresses the key question of whether recent geopolitical tensions and economic dislocations could be a catalyst for transformation in the current international monetary system. It analyses the potential long-term implications for major global powers of this dynamic and of the growing interlinking within the financial system – studying geostrategic, economic and political drivers. In the first chapter, Luca Fantacci and Lucio Gobbi analyse historical precedents, current trends and future prospects in the international monetary system. Building upon an assessment of the strengths and weaknesses of the US dollar in its various international roles, the authors envisage five different scenarios of how the international monetary system could be shaped in the future: restabilisation; geographical fragmentation; functional specialisation; definancialisation and reform; and reform of the international monetary system. In the second chapter, Ananya Kumar presents an overview of the approaches, features and implications of CBDCs. Kumar's text briefly explores the current literature on CBDCs and provides concrete examples of this innovation's stage of development around the world. The author also provides an analysis of the pros and cons arising if the US were to decide to issue a digital dollar, stressing that the implications would blur the boundaries of domestic monetary policy.

In the third chapter, Nicola Bilotta and Erwin Voloder analyse the geostrategic drivers behind the digital-euro project. The authors stress that a digital euro might have a double strategic target: reducing the European Union's dependency on foreign payment systems while also pushing the international use of the euro. Nevertheless, a digital euro

is not a panacea to achieve such policy goals. It should, instead, be considered as an additional piece in a broader puzzle in which the EU will need to invest if it aims to ultimately strengthen its global role. In the fourth chapter, Maaïke Okano-Heijmans and Brigitte Dekker discuss two dynamics produced by the digitalisation of financial systems: concentration versus diversification of players in the financial sector and regulatory harmonisation versus the fragmentation of digital finance. Building on the interaction of these two forces, the authors investigate four scenarios while assessing the implications for EU institutions: regulated Big Tech banking, interoperable financial ecosystems, Big Tech banking goes local and the decentralised crypto-economy.

In the fifth chapter, Kai von Carnap investigates whether the e-CNY (China's digital yuan) could provide Beijing with additional geopolitical or economic leverage to internationalise its currency. The author emphasises that the e-CNY cannot mitigate the structural issues that are currently holding back the fiat yuan. However, the e-CNY could help internationalisation if deployed with programmability in trade settlement, but China currently faces a major barrier as it lacks bilateral cross-border data agreements with other countries. In the last chapter, Daniel McDowell analyses how, despite participating in a fast-evolving technological world, Russia has been relying on an antiquated asset to evade Western sanctions: gold. The yellow metal is helping Moscow to minimise the trade-off between liquidity and security as it can be more easily traded outside of regulated financial systems. Technology innovation can, however, help to make gold trade even more untraceable – settling cross-border transactions using “digitised” gold, which could help to avoid the risks and transaction costs associated with the physical transfer of bars.

1.

The Future of the International Monetary System: Geopolitics and Technology

Luca Fantacci and Lucio Gobbi

Today, the international monetary system remains indisputably dominated by the United States. The US dollar is by far the most widely used currency as a unit of account, means of exchange and store of value by both private and public entities worldwide. However, the ability of the United States to maintain its global monetary hegemony has recently come under scrutiny in the wake of geopolitical and technological upheavals that have produced more consensus on the magnitude than on the direction of their impact on the international monetary order. On the geopolitical front, recent sanctions against Russia over its invasion of Ukraine are ambivalent: they can be read as a proof of the enduring ability of the United States to control international payments, but also as an incentive for an increasing number of countries to abandon the dollar as a reserve asset and as an instrument for cross-border settlements. On the technological front, the proliferation of cryptocurrencies, global stablecoins and Central Bank Digital Currencies (CBDCs) may have equally ambivalent effects, allowing other forms of money to gain international traction but also offering the dollar itself the opportunity to take advantage of the possibility of circulating in new digital guises.

In this Chapter, we discuss the prospects of the international monetary system, present, past and future. We start by analysing the current state of the international monetary system, assessing the strengths and weaknesses of the dollar in its various roles and reviewing the most common contentions, pro and con, about the resilience of US-dollar hegemony. The prevailing argument in favour of the ability of the dollar

to preserve its dominance is that it is the only currency that can offer a safe haven for global savings in the form of liquid financial markets, while its main rivals – particularly, the Chinese renminbi – are subject to various forms of restrictions on capital mobility (Section 1).

In a historical perspective, this situation appears quite paradoxical, since the dollar itself became the dominant global currency within a setting, established at the Bretton Woods Conference in 1944, which was characterised by capital controls: US monetary hegemony was originally based on the *solidity* of its gold reserves rather than on the *liquidity* of its financial markets. In 1971, the dollar ran the risk of losing its international status when persistent balance-of-payments deficits fuelled by military expenditure led to the suspension of gold convertibility and to the unleashing of inflationary pressures that were only aggravated by the subsequent oil shocks. The dollar's devaluation was halted and its prestige restored only thanks to financial liberalisation and to an unprecedented series of interest-rate hikes by the chairman of the Federal Reserve ("the Fed"), Paul Volcker. (Section 2).

In prospect is the potential undermining of the dollar's prestige by sanctions, which deprive targeted countries of access to reserves and payments in dollars, and by mounting inflationary pressures. The Fed has responded by embarking on an aggressive programme of interest-rate increases that has been appropriately compared with the Volcker shock that ended the inflation and restored the credibility of the dollar in the early 1980s. Apparently, the move seems to be working, having allowed the dollar to appreciate with respect to all other major currencies. Can the trick work again? Will dollar hegemony continue to be preserved by the ability of the United States to offer safe assets to the rest of the world? Or are alternatives gradually emerging – in the form of digital or real assets, if not in the form of competing national currencies? Even though the dollar has no obvious successor as a global hegemonic currency, is it possible to imagine that it will be gradually usurped, in different functions and in different geographical areas, by a variety of different instruments? Should we expect perhaps not a transition from one global hegemon to another, but a fragmentation of the international monetary system? What scenarios can we envisage on the basis of historical precedents and current trends? (Section 3)

1. TODAY: THE CURRENT STATE OF THE INTERNATIONAL MONETARY SYSTEM

Data on the global use of the dollar seem to suggest that it is indeed preserving its role at the basis of an international monetary system that still deserves to be called a “dollar standard” to all intents and purposes. The ability of a national currency to serve as an international one can be measured, following Cohen (1998), by the degree to which it serves the basic monetary functions of reserve asset, unit of account and means of payment for both official and private actors (Table 1.1).

Table 1.1 | International monetary functions

Function	Store of value	Means of payment	Unit of account
Official use	1. Official reserves	2. Swap lines	3. Anchor currency
Private use	4. Banknotes held abroad	5. International settlements	6. - Trade invoicing - Denomination of bank liabilities - Denomination of securities

Source: Authors' adaptation from Cohen (1998).

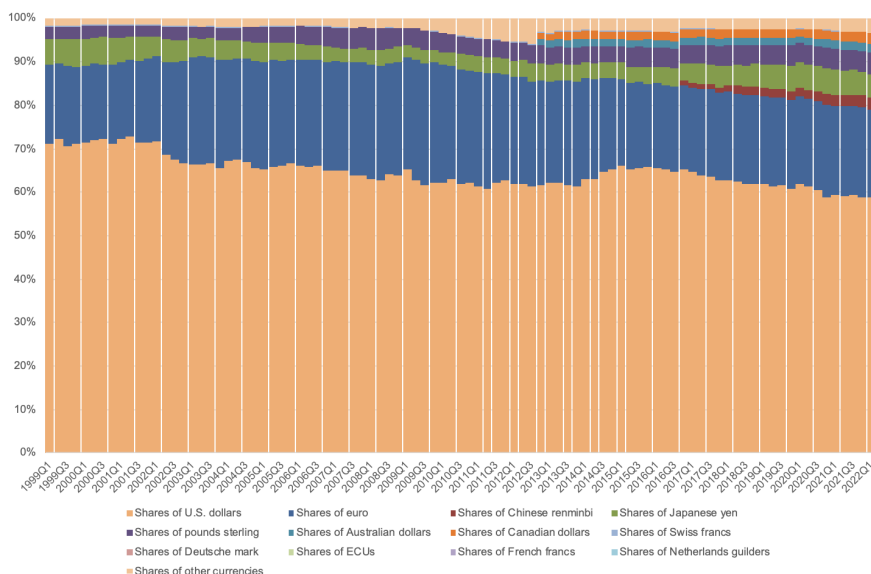
Indeed, the statistics confirm that the dollar has no close rival in performing any of the main monetary functions, as we show in the following subsections, reviewing the six functions in turn.

1.1 Official use – Store of value

International Monetary Fund (IMF) statistics on the composition of foreign-exchange reserves (COFER) show the relative importance of major currencies as reserve assets for central banks throughout the world. Over the last two decades, the dollar has gradually reduced its share in this respect (from 71 per cent in 1999 to 59 per cent in 2022). However, the declining share of US dollars mostly reflects the increase of minor currencies such as the Canadian dollar, the Australian dollar and the Chinese renminbi (Arslanalp et al. 2022). Instead, the share of the dollar's closest rival, the euro, after increasing in the early years of the single currency, dropped again in the wake of the sovereign-debt

crisis and has remained substantially stable around 20 per cent since then (Figure 1.1).

Figure 1.1 | Official reserves



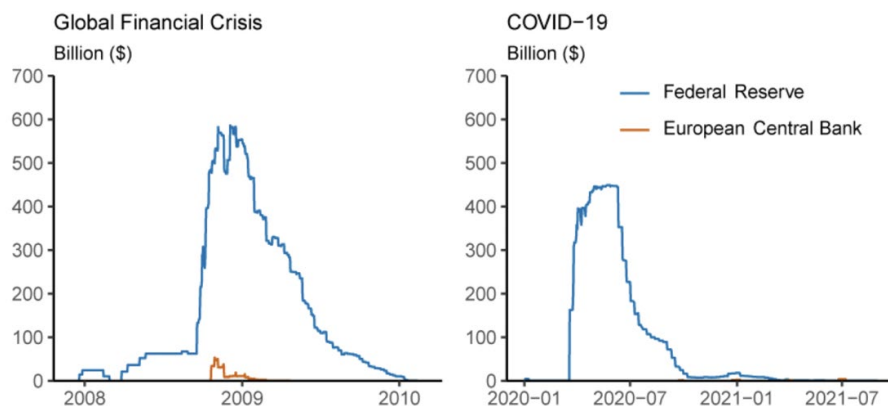
Source: IMF Data, *Currency Composition of Official Foreign Exchange Reserves (COFER)*.

1.2 Official use – Means of payment

US dollar reserves are mostly used by foreign central banks to prop up national currencies and to refinance local commercial banks when they need to meet their liabilities denominated in dollars. The role of the US dollar as an instrument for central-bank intervention has been greatly enhanced by the willingness of the Fed to provide swap lines to other central banks throughout the world. These swap lines represent a means of payment provided to central banks in order to allow them to act as lenders of last resort in case of emergencies, such as currency crises or banking crises. Fed swap-line provisions reached a value of 586 billion US dollars in April 2008 during the global financial crisis and 448 billion US dollars in May 2020 during the Covid-19 crisis. The amounts are not trivial if compared with the total value of US dollar reserves – equal to 6,878 billion US dollars in the first quarter

(Q1) of 2022 – and they are indeed huge if compared with analogous swap lines provided by the European Central Bank, which have barely reached 50 billion US dollars (Figure 1.2).

Figure 1.2 | Swap lines

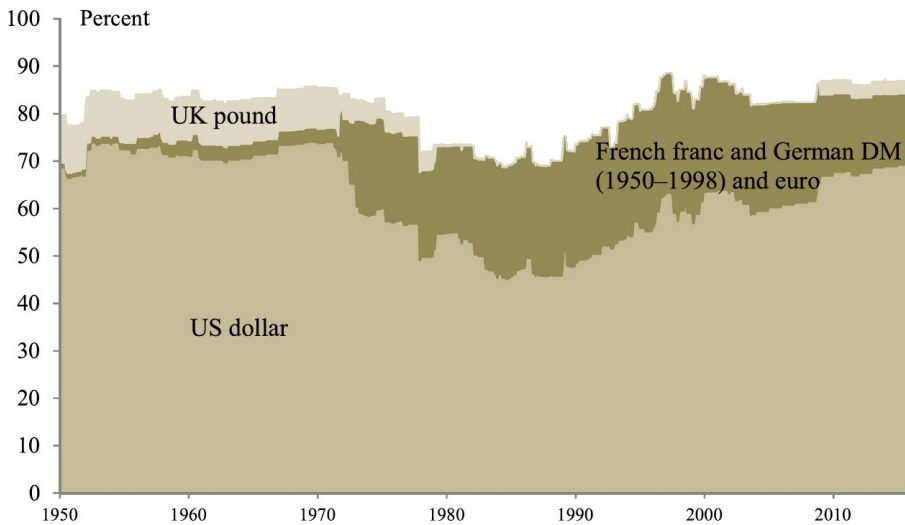


Source: Bertaut et al. (2021).

1.3 Official use – Unit of account

Another measure of a currency's importance within the international monetary system is the degree to which it is used as an anchor or reference for other currencies. There are a variety of exchange-rate regimes through which a currency can be linked to another, from fixed pegs to more or less narrow bands. According to the classification of Ilzetzki et al. (2019), the number of countries whose currencies are anchored to the dollar have increased over the past few decades and now represent roughly 70 per cent of world gross domestic product (GDP), while those linked to the euro represent less than 15 per cent (Figure 1.3). The anchor to a currency is related to its use as a unit of account in private commercial and financial relationships, since the reason for maintaining a stable exchange rate with respect to a major currency mostly reflects the fact that a country's foreign trade and foreign liabilities are denominated in terms of that currency. As we shall see in Subsection 1.6 below, the dollar has indeed increased its share substantially in the denomination of assets traded internationally.

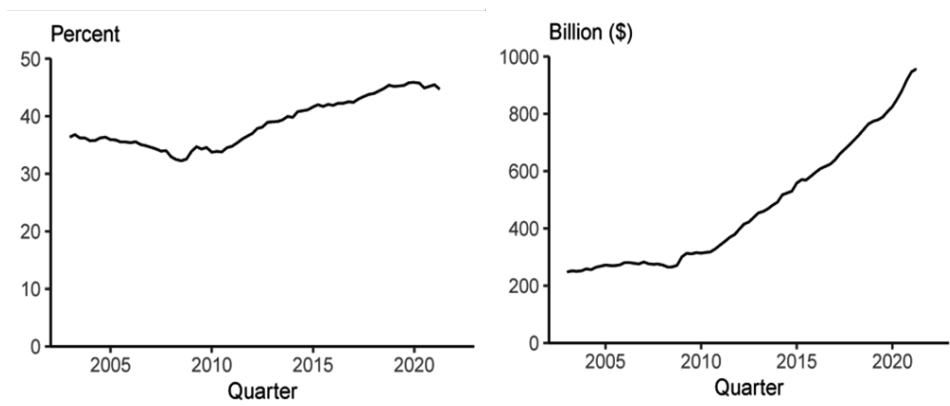
Figure 1.3 | Major anchor currencies: Share in world GDP, 1950–2015



Source: Ilzetzki et al. (2019: 616).

1.4 Private use – Store of value

The international use of the dollar is also reflected in the quantity of physical currency circulating worldwide in the form of banknotes. The share of dollar banknotes circulating outside the United States has increased over the past two decades from 36 per cent (in 2002) to 45 per cent (in 2021), corresponding to an increase in absolute terms from 248 billion US dollars to around 950 billion (Figure 1.4). Although the actual use of banknotes is by definition non-traceable, it may be assumed that this sum is mostly used by private operators as a store of value (and as a means of payment in illegal transactions). By comparison, cumulative global shipments of euro to destinations outside the euro area were around 157 billion euro and declining (-6.1 per cent year on year) in December 2021 (ECB 2022).

Figure 1.4 | US dollar banknotes held abroad

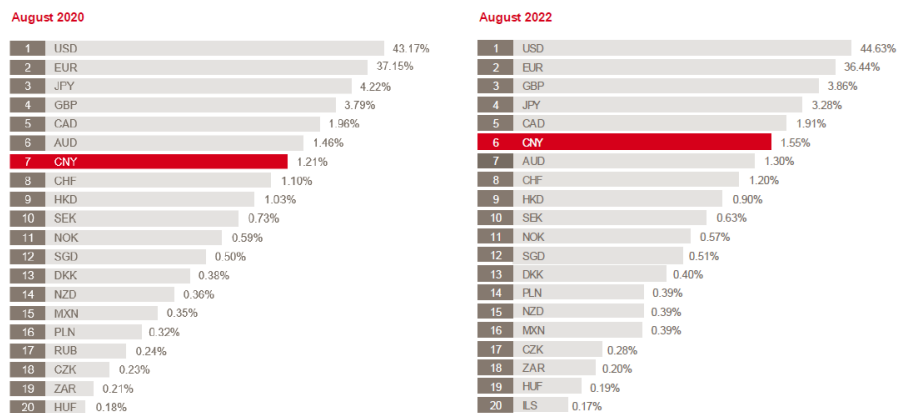
Source: Bertaut et al. (2021).

1.5 Private use – Means of payment

The dollar also remains dominant as an international means of settlement, as measured by transaction volumes within the Society for Worldwide Interbank Financial Telecommunication (SWIFT) network – albeit by a narrower margin than hitherto. Indeed, the dollar retains here a share of almost 45 per cent (Figure 1.5), with the euro following (even without considering intra-eurozone payments) at around 36 per cent and other currencies at much lower levels (the pound at 3.86 per cent; the yen at 3.28 per cent; the Canadian and Australian dollars, together with the renminbi [represented in Figure 1.5 by its International Organisation for Standardisation code: CNY] and the Swiss franc, between 1 and 2 per cent).

The closest proxy to a legal definition of international currency, the notion of “freely usable currency” as defined in the IMF’s Articles of Agreement, refers to the use of a currency not only as a means of exchange but also as *an object* of exchange. In fact, a “freely usable” currency is defined by the IMF as “a member’s currency that the Fund determines is, in fact, widely used to make payments for international transactions, and is widely traded in the principal exchange markets”. Also according to this measure, the dollar is the undisputed leader – appearing in 88 per cent of foreign-exchange transactions (with the euro following at 32 per cent) (BIS 2019).

Figure 1.5 | Share of currencies in SWIFT payments based on value (excluding payments within the eurozone)



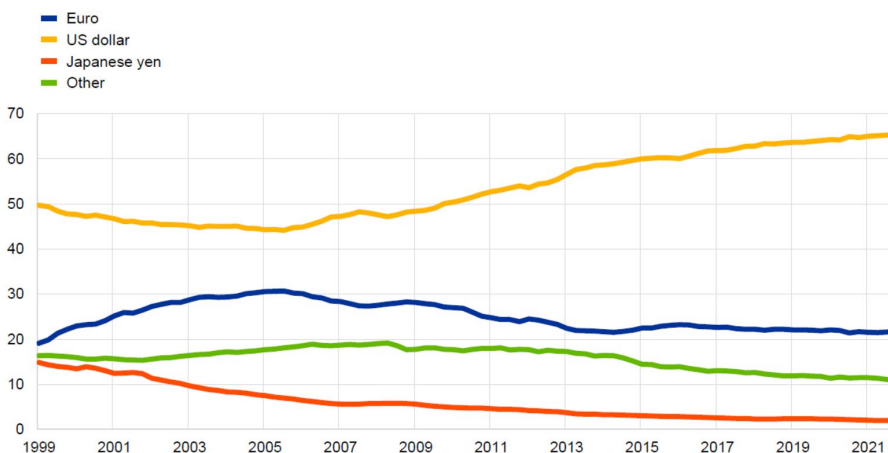
Source: SWIFT (2022).

1.6 Private use – Unit of account

The last monetary function comprises the use of a currency as a unit of account for the purpose of denominating international commercial and financial relationships. The share of the dollar in the denomination of trade transactions largely reflects its use as a means of settlement (Subsection 1.5 above). “Over the period 1999-2019, the dollar accounted for 96 percent of trade invoicing in the Americas, 74 percent in the Asia-Pacific region, and 79 percent in the rest of the world. The only exception is Europe, where the euro is dominant” (Bertaut et al. 2021). The share of the dollar in the denomination of the foreign-currency claims and liabilities of banks, though decreasing in the last five years, remains the highest at 57 per cent, while its closest competitor, the euro – despite recent increases – remains at less than half that figure, at 23 per cent. However, an area in which the strength of the dollar is not only persistent but indeed growing is in the denomination of international debt securities. Here, the dollar’s share has been steadily increasing since 2005: up to that year, it had fallen, retaining only a slight advantage over the share of the euro – but it has been recovering ever since, reaching a quota that is

now more than three times larger than that of its closest competitor (Figure 1.6). The growing “weight” of the dollar on international financial markets finds a confirmation in its increasing importance as a global anchor currency (see Subsection 1.3, above).

Figure 1.6 | Denomination of international debt securities
(percentages at constant Q4 2021 exchange rates)



Source: ECB (2022: 19).

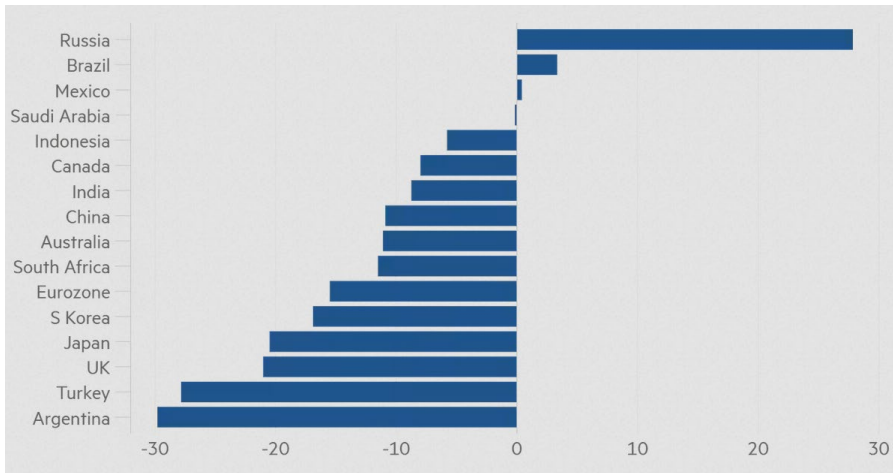
Of course, these statistics do not yet reflect the implications of ongoing geopolitical and technological changes related to Western sanctions against Russia and to the development of global stablecoins and CBDCs. We shall discuss these in Section 3.

However, the data does allow us to highlight the major trends that have emerged over the past couple of decades. In particular, we observe that the use of the dollar has: (i) declined slowly but relentlessly as a reserve asset; (ii) remained stable as a means of payment; and (iii) increased as a unit of account to denominate financial assets.

Together, these trends seem to suggest a shift from material to financial expansion, following a pattern of systematic cycles of accumulation that also historically characterised the rise and fall of past capitalist powers, from the Genoese to the Dutch to the British (Arrighi 1994). Indeed, there is today a general consensus that the dollar maintains its global hegemony primarily thanks to the unri-

valled liquidity of US financial markets, which provide the world with an ample supply of safe assets in times of uncertainty. The recent appreciation of the dollar with respect to all major currencies, fuelled by massive capital inflows in the wake of geopolitical and economic turmoil, testifies to the overwhelming financial power of the United States (Figure 1.7).

Figure 1.7 | Appreciation of the dollar, January–September 2022



Source: Wolf (2022).

Today, all seem to agree that the dollar maintains its dominance, despite some signs of weakening, thanks to the freedom of capital movements in and out of the United States. Viewed in a historical perspective, this is somewhat puzzling since the dollar started its “adventure” as a global currency in the context of an international monetary regime characterised by strict capital controls. Today, any currency that wants to rival the dollar is asked to open its capital account. Yet even the United States did not allow free capital flows when the dollar became the leading global currency at the end of World War II. This apparent paradox invites a historical digression: we thus briefly retrace below how dollar hegemony started, before turning back to consider if and how it might be drawing to an end.

2. YESTERDAY: HOW THE DOLLAR BECAME THE WORLD'S CURRENCY

2.1 The Bretton Woods regime of capital controls

The current monetary system has its roots in the agreements made at the Bretton Woods Conference in 1944 by the countries that would eventually prevail in World War II. The main objectives that guided the Conference, following the principles of the Atlantic Charter, were to ensure free trade and peace in the post-war period.

Despite a formal parity among the delegations of the Allied countries, the Conference agreements were actually drafted and imposed by the American delegation (Amato and Fantacci 2012). This was due to the position of economic dominance that the United States had acquired during the war years. In contrast with other Allied countries, in fact, the United States did not suffer destruction to its productive system from the conflict; on the contrary, military production allowed the US economy to finally recover from the Great Depression and to run at full capacity. As a result, the US current-account surplus reached 4 per cent of GDP, a level that it never saw again, and, as a consequence, the Fed managed to accumulate the largest gold reserves in the world (Reinhold and Wen 2019).

The monetary system conceived at the Conference was a *gold-exchange* standard, but should more appropriately be called a *gold-dollar* standard. It defined a fixed conversion rate between the dollar and gold; all other currencies were eventually pegged to the dollar. Formally, according to the letter of the Bretton Woods agreements, the US dollar was given a merely nominal function in the international money system, alongside gold, as “a common denominator” for the expression of the par values of other currencies (Article IV). However, since most countries eventually managed to join the system only in 1958, deciding to peg their currencies to the dollar (rather than to gold), the dollar ceased to be a mere unit of account, and became a reserve asset, used by central banks throughout the world to defend their peg. In the meantime, it was also widely used as a means of payment – having gained circulation through US foreign aid and military expenditure throughout the world. Thus, the

dollar became in all respects the dominant international currency within the Bretton Woods system, even if the Conference itself had not formally stipulated a superiority of the currency of the United States over those of other countries (Amato and Fantacci 2012).

At the same time, the Bretton Woods agreements envisaged restrictions on short-term capital flows. In this context, the system's free-trade objective implied that a country would finance any imbalance of its current accounts mainly by resorting to loans from the International Monetary Fund and increasingly, given the small amount of resources mobilised by the IMF, through long-term foreign capital investments or aid.

Despite the atmosphere of cooperation among the victors, the systemic contrast between the United States and the Soviet Union gave rise to another conflict: the Cold War.

The gold-exchange standard did not prove to be capable of financing a war with the same sustainability that it had demonstrated in times of peace. Analysing the current account of the balance of payments, Høst-Madsen (1963) shows how the military expenditures incurred to finance the Korean War and the policy of containment essentially nullified the US trade surplus. Furthermore, the Vietnam War, which in contrast to the Korean conflict was financed principally through fiscal monetisation, resulted in a twin deficit that pushed inflation up. More precisely, in 1964, US inflation was 1.3 per cent while it reached 5.8 per cent in 1970 (FRED 2022).

In this context, US President Richard Nixon's decision to abandon the gold-exchange standard was inevitable. In fact, it was not possible for the United States to simultaneously maintain gold parity, a deficit in the trade balance and a monetary policy that guaranteed an abundance of dollars on international markets – as had been anticipated by Robert Triffin (1960).

2.2 Fiat money and the oil shocks

The end of the Bretton Woods system was set in an unstable economic and geopolitical context that preceded the 1973 oil crisis (Fantacci and Gobbi 2018). The Yom Kippur War and the rise in oil prices were important factors in the redefinition of the international monetary system. Given the low price elasticity of oil demand, the trade deficits of Organisation for Economic Co-operation and Development (OECD) countries grew con-

siderably, from 3 million US dollars to 35 million between 1973 and 1974 (Hallwood and Sinclair 1981). However, Organisation of the Petroleum Exporting Countries (OPEC) nations showed a low capacity to absorb the revenues generated from the sale of raw materials. This led to an increase in financial assets issued by OECD countries and held by Arab OPEC countries from 7 billion US dollars to 117 billion in five years (Basosi 2012; Hallwood and Sinclair 1981). The majority of these trade surpluses were invested in assets denominated in dollars and major European currencies, as well as in the eurodollar markets (Amato and Fantacci 2012). The last-named institutions, characterised by a high level of anonymity, provided investors with protection against political risk and possible asset freezes such as those incurred by Egypt during the Suez Crisis of 1956 (Einzig 1973).

Thus, the international monetary system shifted from a commodity-money to a fiat-money regime. The suspension of gold convertibility and the possibility of creating international money virtually without limit fuelled inflation. The liberalisation of capital markets facilitated the dampening of inflationary pressures, by allowing the overflow of liquidity in dollars to be diverted from commodity markets to financial markets (Fantacci 2014).

This process of financial liberalisation was supported by two further concomitant factors: an improvement in information and communication technologies (ICT) and a different orientation of policymakers towards financial-market efficiency. The ICT revolution made the integration of financial markets feasible, while complete financial-market integration was made possible only by a widespread ideological belief that the removal of all restrictions on capital movements would sustain strong economic growth (Bhagwati 1998; Eichengreen 2011, 2019).

2.3 Financial liberalisation

The 1970s were years in which inflation reached high levels. Generally, the inflation of the time is attributed to the oil crisis and the subsequent inability of central banks and governments to cope with a supply shock. This led to a period of “stagflation”. In 1979, Paul Volcker became chairman of the Fed and carried out a contractionary monetary policy, raising interest rates above 17 per cent when inflation was around 10 per cent;

this was followed by a tax cut, and hence by an expansionary fiscal policy, implemented by incoming US President Ronald Reagan.

As a consequence of Volcker's aggressive interest-rate hikes, in the early 1980s inflation was tamed: it peaked in 1980 at 11.6 per cent and then quickly declined to 1.8 per cent in 1986, despite the fact that there was an increase in military spending from 5.15 to 6.63 per cent of GDP and in overall government spending from 20.7 to 21.6 per cent of GDP during the same period. This was possible only thanks to the liberalisation of capital movements that allowed the American government to monetise its growing debt on international markets (US public debt grew from 30.7 to 44.1 per cent of GDP in the period 1980–86). Contrary to what has often been claimed, Reagan's economic policies were not those of austerity but of fiscal expansion driven by military spending.

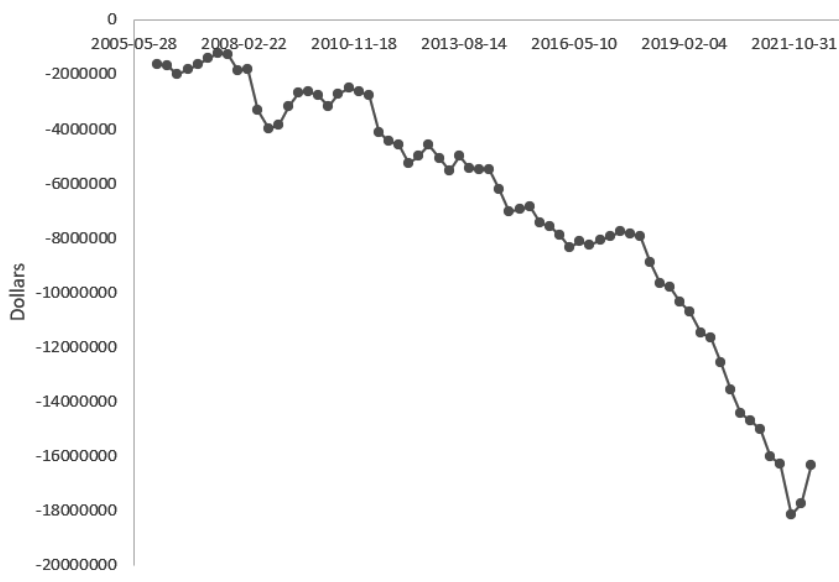
3. TOMORROW: SCENARIOS FOR THE INTERNATIONAL MONETARY SYSTEM

Since the 1908s, the ability of the United States to attract capital from all over the world has been the basis for its enduring monetary hegemony. Massive capital inflows, however, also resulted in the deterioration of the international investment position of the US (Figure 1.8). Net external debts for roughly 16 trillion US dollars (around 80 per cent of GDP) are a sign of both the strength and the weakness of the United States, pointing to the ambiguous nature and to the intrinsic fragility of the current international monetary system.

Within this setting, there are two main novelties that threaten to undermine the ability of the US to preserve monetary hegemony in the medium-to-long term:

- On the geopolitical front, the dollar could suffer a loss of credibility due to “weaponisation of the dollar”, i.e. the escalation of economic sanctions.
- On the technological front, the dollar may face competition from new players, particularly in the form of global stablecoins and CBDCs.

Let us review the potential impact of both these factors, before attempting to draw some scenarios.

Figure 1.8 | International investment position of the United States

Source: US Bureau of Economic Analysis, <https://www.bea.gov/data/intl-trade-investment/international-investment-position>.

3.1 Technological challenge: The rise of cryptocurrencies

The rise of cryptos appears to be so far a mild and distant threat. Cryptocurrencies are too unstable to perform any of the monetary functions. Stablecoins are still struggling with major flaws in technology and accountability. In the realm of cryptocurrencies, the most credible threat to the dollar in international payments are global stablecoins. Perhaps for this very reason, Facebook's initiative with Libra was immediately blocked. To date, stablecoins have very limited use for monetary purposes outside the realm of crypto trading. To successfully promote their use, there is a need for enhanced regulation. But this will quite likely subordinate stablecoins to national currencies in the hierarchy of money, imposing on them similar constraints to those that apply to bank deposits, e-money or other forms of liquid assets that are already endowed with monetary functions.

A more credible challenge comes from CBDCs. The issuance of central-bank money in digital form may well be a vehicle to promote the

internationalisation of a national currency. This certainly applies to the yuan, since China was the first major country to experiment with a CBDC. The use of a digital yuan beyond Chinese borders could indeed be promoted in the context of the country's Belt and Road Initiative and leveraging existing systems (WeChat, AliPay), although it may also be obstructed by privacy concerns on the part of foreign users. A more direct challenge to the dollar comes from mBridge, a multi-CBDC platform for international payments promoted by the People's Bank of China (PBoC) in cooperation with the innovation hub of the Bank for International Settlements (BIS), together with the Hong Kong Monetary Authority, the Bank of Thailand and the central bank of the United Arab Emirates.

The European Union is moving more slowly in the direction of a CBDC. However, the ability of a digital euro to defend the international role of the single currency outside the eurozone has been emphasised by top European Central Bank (ECB) officials: "the international role of the euro could be undermined, especially if other large economies introduce central bank digital currencies that can be used across borders" (Lagarde and Panetta 2022). Further CBDCs are being created by other countries, including Russia.

3.2 Geopolitical challenge: The impact of economic warfare

Western countries have adopted against Russia several packages of sanctions of various sorts: (i) blocking of assets of Specially Designated Nationals (SDNs); (ii) exclusion of commercial banks from SWIFT payment system; and (iii) freezing of central-bank reserves.

Although they are an expression of the economic and financial clout exerted by the United States, sanctions could have the side effect of undermining dollar hegemony for a variety of reasons.

Russia was the first G20 country to suffer a freezing of the reserves of its central bank (the Bank of Russia – BoR). The unprecedented measure has further reduced confidence in the US dollar as a reserve asset in a context in which this use of the dollar was already declining, as we have shown above (Subsection 1.1). Indeed, several smaller central banks have started to diversify away from the dollar, reducing its share in foreign-exchange reserves over the period 2020–21 – not only in Russia (from 22.2 to 16.4 per cent) but also in Israel (from 66.5 to 61 per cent)

and in Brazil (from 86 to 80 per cent) (Mendez-Barreira 2022). At the same time, the exclusion of banks from the SWIFT payments network has encouraged the development of alternative payment systems – China’s Cross-Border Interbank Payment System (CIPS), the European special-purpose vehicle INSTEX, and Russia’s System for Transfer of Financial Messages (SPFS) – and the use of local currencies in bilateral trade (e.g. ruble–rupee, up from 6 per cent in 2014 to 30 per cent in 2019).

More generally, the escalation of economic warfare has strengthened inflationary pressures that were already present before the outbreak of the war in Ukraine. The current inflationary environment is potentially explosive for major Western bloc economies (Table 1.2). Indeed, the combination of high interest rates, high inflation and high government debts implies difficult trade-offs for policymakers, which will inevitably trigger political, economic and social repercussions. In September 2022, the Fed, ECB and the Bank of England (BoE) jointly raised their key interest rates to, respectively, 3.5, 1.5 and 2.25 per cent in order to curb inflationary pressures. At the same time, Russian and Chinese interest rates were at 7.50 and 3.65 per cent, respectively. Analysing market data, the *Financial Times* predicts that, at the end of 2022, US rates will exceed 4 per cent, eurozone ones will exceed 2 per cent and British rates will remain slightly below 4 per cent (Romei 2022). In any case, expectations for the coming years are above the inflation targets set by all central banks.

Table 1.2 | Inflation rates

Country	Inflation (%)	Last update	Inflation (%)	Previous update	Source
Eurozone	10.0	September	9.1	August	ECB
UK	9.9	August	10.1	July	BoE
US	8.3	August	8.5	July	Fed
Russia	14.1	September	14.3	August	BoR
China	2.5	August	2.7	July	PBoC

Source: Trading Economics.

High inflation and high interest rates bring two main implications: low growth and reduced fiscal capacity. According to OECD (2022), GDP growth expectations have worsened for China (from 4.4 to 3.2 per cent),

the UK (from 3.6 to 3.4 per cent) and the US (from 2.5 to 1.5 per cent) while they appear to have improved for Russia (from -10 to -5 per cent) and the eurozone (from 2.6 to 3.1 per cent). However, for the last two economies the uncertainty linked to the Russian-Ukrainian conflict weighs more substantially than for the others.

Economists and analysts tend to compare the period we are currently experiencing with that of the Volcker shock (Subsection 2.3). However, it should be noted that there are significant differences from the 1980s. Indeed, in terms of the debt-to-GDP ratio, Western economies are facing this crisis with considerably higher debt levels. The United States' debt-to-GDP ratio was around 31 per cent in 1980, while it was 137 per cent at the end of 2021. The European situation is even more dramatic, the most emblematic being the Italian case: in 1980, Italy had a debt-to-GDP ratio of around 58 per cent; at the end of 2021, it was over 151 per cent of GDP. However, other major European countries have followed similar trends (Table 1.3). By contrast, the main countries competing with the Western bloc – China and Russia – had debt levels of, respectively, 66.8 per cent (December 2020) and 18.2 per cent (December 2021) before the inception of the Russian-Ukrainian conflict.

Table 1.3 | Public debt (% GDP)

	1980	2021
US	31	137
UK	37	96
Japan	34	266
W. Germany	15	69
France	13	113
Italy	51	151

Source: IMF Datamapper, *Global Debt Database*, <https://www.imf.org/external/datamapper/datasets/GDD>.

Volcker's rate hike produced a series of defaults and debt restructurings by emerging countries. Table 1.4 presents the number of cases for Central and South American countries, where the average number of these events rose from 0.25 in 1975 to 6.5 in 1990.

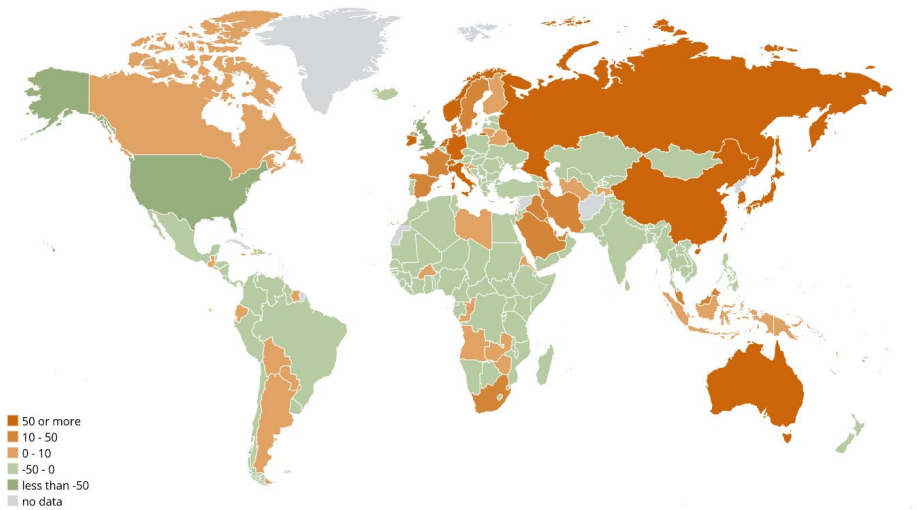
Table 1.4 | Number and mean of public-debt default/restructuring events per year (Central and South America)

Default/Restructuring	1975	1980	1985	1987	1990
Argentina	0	0	4	6	9
Bolivia	0	1	0	2	5
Brazil	0	0	3	5	8
Chile	4	0	3	5	8
Colombia	0	0	0	0	0
Costa Rica	0	0	5	7	10
Dominican Republic	0	0	4	6	9
Ecuador	0	0	4	6	9
El Salvador	0	0	0	0	0
Guatemala	0	0	0	0	0
Honduras	0	0	5	7	10
Mexico	0	0	4	6	9
Nicaragua	0	2	7	9	12
Panama	0	0	3	5	8
Paraguay	0	0	0	2	5
Peru	0	1	3	5	8
Uruguay	0	0	3	1	1
Mean	0.24	0.24	2.83	4.47	6.52

Source: Reinhart and Rogoff (2009).

Today, the fear that a chain of defaults in the Global South may occur is very widespread. Unlike the 1980s, when the chain of sovereign-debt defaults did not create major problems for the financial systems of core countries, a financial shock today could manifest simultaneously in core and peripheral countries. In fact, a recent analysis shows that the currencies of the G10 countries (excluding the US) are currently performing even more badly than those of emerging countries. From January 2021 to September 2022, the loss in value of the former against the dollar was about 20 per cent, compared with 12 per cent for the latter (Authers 2022). This is probably due to the fact that emerging economies have benefited from the higher income generated by the increase in commodity prices. This phenomenon tends to be reflected in positive current accounts in the balance of payments for those countries (Figure 1.9).

Figure 1.9 | Current account (billions of US dollars, 2022)



Source: IMF Datamapper (2022).

The fact that emerging-market currencies have performed better than those of “advanced” economies does not, however, give us any certainty about their resilience to rising interest rates. These could have lingering effects. As Table 1.4 suggests, the highest number of bankruptcies and restructurings of government debt occurred 10 years after the start of the rate hike.

In the light of these events, it is not possible to predict the future course of the international monetary system or the persistence of US-dollar hegemony. In the following subsections, we present different scenarios that we believe to be plausible, under various circumstances, and we try to make explicit the underlying assumptions.

SCENARIO 1: RESTABILISATION

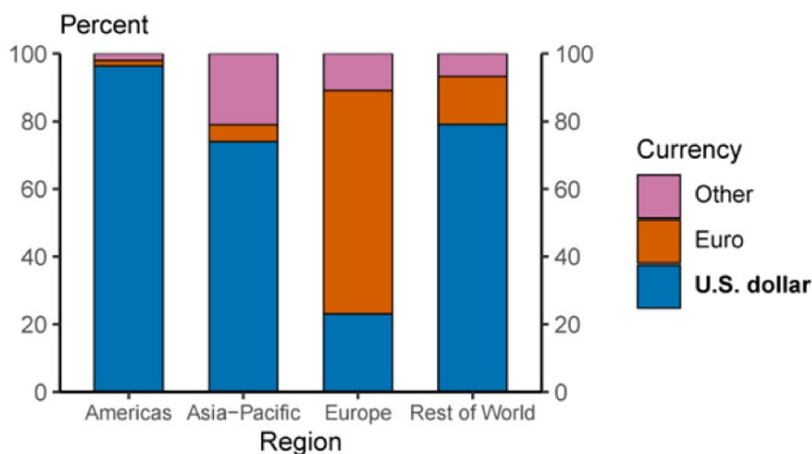
The baseline scenario, on which most expectations seem to be predicated, assumes that the dollar will manage to maintain its position at the helm of the international monetary hierarchy, if only for a lack of plausible alternatives. This, of course, requires that the Fed be successful in reining in inflation, without triggering a major recession (which

would further worsen the current account and the international investment position of the US) and without worsening the budget deficit (which would imperil the sustainability of US public debt and possibly trigger a confidence crisis similar to the one that is currently battering the UK). The main arguments in favour of this scenario are the relative strength of the US economy in a global perspective, together with path dependency (strengthened not just by psychological inertia but also by the opportunity costs of a changeover to another reserve asset, unit of account or means of payment).

SCENARIO 2: GEOGRAPHICAL FRAGMENTATION

The resilience of the dollar is not uniform across the globe. Already, looking at past data – particularly those concerning the currency composition of international invoices by region (Figure 1.10) – it is quite evident that the predominance of the dollar is more concentrated in certain areas (the Americas) and less in others (Europe and Asia).

Figure 1.10 | Share of export invoicing



Source: Bertaut et al. (2021).

Currently, the escalation of geopolitical tensions and the waging of economic warfare in the form of sanctions – particularly in the course of the Ukrainian conflict – has opened a rift even in international monetary

and financial relations. As mentioned above (Subsection 3.2), it is not only the countries that have experienced a freeze in their central-bank reserves that have an obvious incentive to diversify their reserve assets away from the US dollar, but also others that might fret about similar restrictions. Several clues lend likelihood to the hypothesis of a geographical fragmentation of the international monetary system. Particularly significant, in this respect, are the talks between the Eurasian Economic Union and China to set up an alternative international standard based on a basket of regional currencies and raw materials. Another hint in this direction is the news recently reported by the *Wall Street Journal* about an agreement between Saudi Arabia and China to denominate oil exports in renminbi (Said and Kalin 2022). In general, as the process of deglobalisation proceeds, together with the “friendshoring” of supply chains, the balance of costs and benefits may gradually tilt away from the continuation of dollar dominance and towards the emergence of regional payment systems and currency blocs.

SCENARIO 3: FUNCTIONAL SPECIALISATION

Having distinguished from the beginning of this Chapter between different uses of a currency in the global economy, it is only logical to infer that the relative strength of the dollar with respect to its alternatives can vary – not only from one geographical region to another but also from one monetary function to another. As we observed above, the dollar appears indeed to be strengthening its financial role (as a unit of account in which to denominate financial assets, and particularly safe assets, traded across the globe) even as it is losing ground in terms of its commercial role (as a payment instrument for international trade).

In the wake of recent shocks to the world economy caused by the war in Ukraine and by the resulting sanctions, the United States has renewed its commitment to ensure global financial stability, by also providing “swap lines” to foreign monetary authorities (Mehrling 2022). However, precisely because the Fed acts as a central bank not only for the US but also for a large part of the world operating in dollars, the tightening of credit conditions is causing strains to producers and workers in the most fragile and highly indebted regions and sectors, as shown in the latest

Trade and Development Report (UNCTAD 2022). Dollar dominance is increasingly a financial dominance (Costantini 2022), leaving the real economy to face a lack of liquidity and to devise alternative exchange systems such as countertrade (Raman and Singh 2022).

This foreshadows a third scenario, in which there may be a functional specialisation in the international monetary system leading to the use of different currencies for different purposes (e.g. international trade and global finance). This is not entirely new: history offers manifold examples of complementary currency systems, with different monies performing different functions (Amato and Fantacci 2020). Of course, the fault lines surrounding this division may overlap to a certain degree with the borders of geographical fragmentation (Scenario 2) to the extent that certain sectors may be more important for certain economies.

SCENARIO 4: DEFINANCIALISATION

Referring particularly to their store-of-value function, the use of currencies as reserve assets may be substituted by real assets, in the form of commodities, infrastructure, or other kinds of real capital. The dollar may quite likely remain the currency of choice to hold savings in a liquid form. “Nonetheless, although liquidity is of great importance, it is not the only goal reserve managers follow. [...] The question of alternative reserve currencies cannot be looked at independently of what reserves are used for”, observes Isabelle Mateos y Lago of BlackRock. “There is no other currency that enjoys the liquidity and safety of the US dollar. That’s true. But what if a significant chunk of your reserves can be invested in such a way that safety and liquidity are a secondary consideration? Then there are more alternatives” (Mendez-Barreira 2022). Other commentators point out that the financialisation of the world economy has reached a dead end. In their view, there is simply too much capital looking for returns. Global debt reached 300 trillion US dollars in 2021. As shown above (Subsection 1.6), most of it is denominated in US dollars. A possible alternative might be not exchanging some financial assets for others but scaling down official currency reserves in order to invest in real economic capacity. “If you are a major oil exporter like Saudi Arabia looking to reduce your dollar exposures, ‘what do you turn that into?’, says Turek

[founder and CEO of JST Advisors]. “‘Could it be invested domestically?’ I think a lot of it will be. That’s probably part of what the Saudi Vision 2030 is all about, and a similar dynamic is taking place in China.” In Turek’s view, “this new trend will mark this decade” (Mendez-Barreira 2022).

As the dollar runs the risk of eroding its liquidity, due to both sanctions and inflation, commodities may appear a plausible alternative. In fact, China has started to diversify away from foreign-exchange reserves and into commodities. A keen observer of market dynamics like the investment strategist Zoltan Pozsar suggests that this could potentially usher in an entirely new international monetary system, a “Bretton Woods III”, no longer based on the dollar:

When this crisis (and war) is over, the U.S. dollar should be much weaker and, on the flipside, the renminbi much stronger, backed by a basket of commodities. From the Bretton Woods era backed by gold bullion, to Bretton Woods II backed by inside money (Treasuries with un-hedgeable confiscation risks), to Bretton Woods III backed by outside money (gold bullion and other commodities). After this war is over, ‘money’ will never be the same again ... (Pozsar 2022: 4).

Of course, the outright introduction of a new international currency backed by commodities would require an explicit agreement, as envisaged in the next (and last) scenario.

SCENARIO 5: REFORM OF THE INTERNATIONAL MONETARY SYSTEM

As many have emphasised, the original sin of the international monetary system consists in the use of a national currency as a global currency (Keynes 1941; Triffin 1960; Rueff 1971; Zhou 2009; Eichengreen 2011). Mounting global imbalances and ensuing political tensions follow from linking the supply of global liquidity with the balance-of-payments deficit of the country issuing the key currency. The ultimate solution to this dilemma lies in the establishment of a truly global currency. Following Triffin’s recommendations, the second amendment of the Bretton Woods agreements introduced a global currency in the form of Special

Drawing Rights (SDRs) issued by the International Monetary Fund. SDRs have performed only a marginal role in the international monetary system – as testified by their limited amount in relation to global reserve assets, despite recent allocations: the Fund has allocated a total of SDR 660.7 billion (equivalent to about 935.7 billion US dollars), including four general allocations and a one-time special allocation; SDR 456.5 billion (equivalent to about 650 billion US dollars) was allocated on 23 August 2021, by far the largest allocation to date (IMF 2021). The use of SDRs could also be strengthened thanks to digital technologies – as envisaged, for example, by then Bank of England governor Mark Carney (2019) with his plan for a “synthetic hegemonic currency”. Other proposals are inspired by Bancor, the international currency conceived by Keynes as a virtual reserve asset that could not be indefinitely accumulated by countries with a current account surplus but had to be spent to maintain the equilibrium of global trade, and which was ultimately backed by the main raw materials and foodstuffs marketed across the world (Fantacci 2017). Similar proposals for an international currency backed by commodities were elaborated within the United Nations Conference on Trade and Development (UNCTAD) and the UN’s Food and Agriculture Organisation (FAO) in the 1940s and 1950s, and have been recently recalled as a possible way to stabilise commodity prices and economic cycles (Costantini 2022). The likelihood of any such agreement rests upon the foresight, the boldness and the ability of political leaders to recognise that the defence of national interests ultimately depends on the establishment of a fair and balanced international setting.

REFERENCES

- Amato, Massimo and Luca Fantacci (2012), *The End of Finance*, Cambridge, Polity
- Amato, Massimo and Luca Fantacci (2020), “Complementary Currencies”, in Stefano Battilossi, Youssef Cassis and Kazuhiko Yago, eds, *Handbook of the History of Money and Currency*, Singapore, Springer, p. 501-522
- Arrighi, Giovanni (1994), *The Long Twentieth Century. Money, Power, and the Origins of Our Times*, London/New York, Verso

- Arslanalp, Serkan, Barry J. Eichengreen and Chima Simpson-Bell (2022), "The Stealth Erosion of Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies", in *IMF Working Papers*, No. 22/58, <https://www.imf.org/en/Publications/WP/Issues/2022/03/24/The-Stealth-Erosion-of-Dollar-Dominance-Active-Diversifiers-and-the-Rise-of-Nontraditional-515150>
- Authers, John (2022), "Why the Emerging-Markets Dog Didn't Bite Yet", in *Bloomberg*, 7 October, <https://www.bloomberg.com/opinion/articles/2022-10-07/emerging-markets-defied-this-crisis-but-be-aware-rich-world-recessions-in-2023>
- Basosi, Duccio (2012), *Finanza & petrolio. Gli Stati Uniti, l'oro nero e l'economia politica internazionale*, Venezia, Studio LT2
- Bertaut, Carol, Bastian von Beschwitz and Stephanie Curcuru (2021), "The International Role of the U.S. Dollar", in *FEDS Notes*, 6 October, <https://doi.org/10.17016/2380-7172.2998>
- Bhagwati, Jagdish N. (1998), "The Capital Myth: The Difference between Trade in Widgets and Dollars", in *Foreign Affairs*, Vol. 77, No. 3, May/June, p. 7-12
- BIS-Bank for International Settlements (2019), *Triennial Central Bank Survey of Foreign Exchange and Over-the-counter (OTC) Derivatives Markets in 2019*, 8 December, <https://www.bis.org/statistics/rpfx19.htm>
- Carney, Mark (2019), *The Growing Challenges for Monetary Policy in the Current International Monetary and Financial System*, Speech given at Jackson Hole Symposium 2019, 23 August, <https://www.bis.org/review/r190827b.htm>
- Cohen, Benjamin J. (1998), *The Geography of Money*, Ithaca/London, Cornell University Press
- Costantini, Orsola (2022), "Dollar Dominance is Financial Dominance", in *INET Articles*, 23 November, <https://www.ineteconomics.org/perspectives/blog/dollar-dominance-is-financial-dominance>
- ECB-European Central Bank (2022), *The International Role of the Euro*, June, <https://www.ecb.europa.eu/pub/ire/html/ecb.ire202206~6f3ddeab26.en.html>
- Eichengreen, Barry (2011), *Exorbitant Privilege. The Rise and Fall of the*

- Dollar and the Future of the International Monetary System*, Oxford/
New York, Oxford University Press
- Eichengreen, Barry (2019), *Globalizing Capital. A History of the International Monetary System*, 3rd ed., Princeton, Princeton University Press
- Einzig, Paul (1973), *The Euro-Dollar System. Practice and Theory of International Interest Rates*, 5th ed., London, MacMillan
- Fantacci, Luca (2014), "From the Great Depression to the Current Crisis: More Than Analogy, Genealogy", in *History of Economic Ideas*, Vol. 22, No. 3, p. 23-46
- Fantacci, Luca (2017), "Reconciling Money and Goods: Keynes's Commodity and Currency Plans for the Postwar World", *Annals of the Fondazione Luigi Einaudi*, Vol. LI, June, p. 149-176, DOI 10.26331/1008, <https://www.annalsfondazione.luigi.einaudi.it/?p=562>
- Fantacci, Luca and Lucio Gobbi (2018), "Mobile Capital as the Ultimate Form of War Finance", in Jocelyn Pixley and Helena Flam, eds, *Critical Junctures in Mobile Capital*, Cambridge, Cambridge University Press, p. 93-112
- FRED-Federal Reserve Economic Data (2022), *Inflation, Consumer Prices for the United States*, updated 3 May, <https://fred.stlouisfed.org/series/FPCPITOTLZGUSA>
- Gourinchas, Pierre-Olivier (2022), "Shifting Geopolitical Tectonic Plates", in *Finance & Development*, Vol. 59, No. 2, June, p. 10-11, <https://www.imf.org/en/Publications/fandd/issues/2022/06/shifting-geopolitical-tectonic-plates-straight-talk>
- Hallwood, Paul and Stuart W. Sinclair (1981), *Oil, Debt and Development. OPEC in the Third World*, London, G. Allen & Unwin
- Høst-Madsen, Poul (1963), "The Changing Role of International Capital Flows", in *The Journal of Finance*, Vol. 18, N. 2, p. 187-210, DOI 10.1111/j.1540-6261.1963.tb00716.x
- Ilzetzki, Ethan, Carmen M. Reinhart and Kenneth S. Rogoff (2019), "Exchange Arrangements Entering the 21st Century: Which Anchor Will Hold?", in *The Quarterly Journal of Economics*, Vol. 134, No. 2, p. 599-646, DOI 10.1093/qje/qjy033, <https://scholar.harvard.edu/rogoff/node/503441>

- IMF-International Monetary Fund (2021), *Questions and Answers on Special Drawing Rights*, 23 August, <https://www.imf.org/en/About/FAQ/special-drawing-right>
- IMF Datamapper (2022), *Current Account Balance U.S. Dollars*, <https://www.imf.org/external/datamapper/BCA@WEO/OEMDC/ADVEC/WEOORLD>
- Keynes, John Maynard (1941), "Proposals for an International Currency Union, Second Draft, November 18, 1941", in Donald Moggridge, ed., *The Collected Writings of John Maynard Keynes. Vol. 25: Activities 1940-1944*, London, Macmillan, 1980, p. 42-66, <http://la.utexas.edu/users/hcleaver/368/368keynesoncu.htm>
- Lagarde, Christine and Fabio Panetta (2022), "Key Objectives of the Digital Euro", in *The ECB Blog*, 13 July, <https://www.ecb.europa.eu/press/blog/date/2022/html/ecb.blog220713~34e21c3240.en.html>
- Mehrling, Perry (2022), "'Where's my swap line?' A Money View of International Lender of Last Resort", in *Jahrbuch für Wirtschaftsgeschichte*, Vol. 63, No. 2, p. 559-574, <https://doi.org/10.1515/jbwg-2022-0019>
- Mendez-Barreira, Victor (2022), "Will the Dollar Remain the World's Reserve Currency?", in *Central Banking*, Vol. 33, No. 1, p. 84-89
- OECD-Organisation for Economic Cooperation and Development (2022), *OECD Economic Outlook, Interim Report September 2022: Paying the Price of War*, Paris, OECD Publishing, <https://doi.org/10.1787/ae8c39ec-en>
- Palley, Thomas (2022), "Theorizing Dollar Hegemony, Part 1: The Political Economic Foundations of Exorbitant Privilege", in *PKES Working Papers*, No. 2220, August, <https://www.postkeynesian.net/working-papers/2220>
- Pozsar, Zoltan (2022), "Bretton Woods III", in *Credit Suisse Economics*, 7 March, <https://static.bullionstar.com/blogs/uploads/2022/03/Bretton-Woods-III-Zoltan-Pozsar.pdf>
- Raman, Neha and Jahanwi Singh (2022), "Countertrade Can Work in Crisis Situations", in *The Hindu Business Line*, 25 April, <https://www.thehindubusinessline.com/opinion/article65353381.ece>

- Reinbold, Brian and Yi Wen (2019), "Historical U.S. Trade Deficits", in *Economic Synopses*, No. 13, <https://doi.org/10.20955/es.2019.13>
- Reinhart, Carmen M. and Kenneth S. Rogoff (2009), *This Time Is Different. Eight Centuries of Financial Folly*, Princeton, Princeton University Press, <https://carmenreinhart.com/this-time-is-different>
- Romei, Valentina (2022), "Central Banks Set to Hit Peak Rates at Faster Pace", in *Financial Times*, 18 September, <https://www.ft.com/content/3d7bfcd5-512d-4d67-8daf-52308db94c37>
- Rueff, Jacques (1971), *The Monetary Sin of the West*, New York, Macmillan, <https://mises.org/library/monetary-sin-west>
- Said, Summer and Stephen Kalin (2022), "Saudi Arabia Considers Accepting Yuan Instead of Dollars for Chinese Oil Sales", in *The Wall Street Journal*, 15 March, <https://www.wsj.com/articles/saudi-arabia-considers-accepting-yuan-instead-of-dollars-for-chinese-oil-sales-11647351541>
- SWIFT (2022), *RMB Tracker September 2022*, <https://www.swift.com/swift-resource/251895/download>
- Triffin, Robert (1960), *Gold and the Dollar Crisis. The Future of Convertibility*, New Haven, Yale University Press
- UNCTAD-UN Conference on Trade and Development (2022), *Trade and Development Report 2022: Development Prospects in a Fractured World: Global Disorder and Regional Responses*, United Nations, <https://unctad.org/webflyer/trade-and-development-report-2022>
- Martin Wolf, "Why the Strength of the Dollar Matters", in *Financial Times*, 27 September, <https://www.ft.com/content/daf5c774-fb7f-4ef3-a4ba-c92e3b373066>
- Zhou, Xiaochuan (2009), *Reform the International Monetary System*, 23 March, <https://www.bis.org/review/r090402c.htm>

2.

CBDCs and the US Dollar: Motivations and Emerging Issues

Ananya Kumar

1. WHAT IS A CBDC?

A CBDC (Central Bank Digital Currency) is a virtual store of value, medium of exchange and unit of account. It is the virtual form of a country's fiat currency. It is distinct from both private cryptocurrency and e-money. Much like private cryptocurrency (henceforth referred to as cryptocurrency), a CBDC can be based on distributed ledger technology (DLT); however, unlike cryptocurrency it is issued by a central bank. Similarly, unlike e-money CBDCs are a liability of the central bank and not a commercial entity.

Since 2017, countries have shown growing interest in providing a CBDC. According to the Atlantic Council's CBDC tracker, 105 countries are exploring such digital currencies and 50 are in the advanced stages of development (Atlantic Council 2022). This advanced stage is attributed to countries that have fully launched, piloted (in a limited fashion or otherwise) and produced technical designs and proofs of concept for a digital currency issued by a central bank (i.e. "Development").¹

¹The tracker categorizes six levels of exploration: "Launched", "Pilot", "Development", "Research", "Inactive" and "Canceled". The advanced stage of CBDC exploration refers to countries at the launch, pilot or development stages.

2. MOTIVATIONS FOR DEVELOPING CBDCs²

The vast majority of countries are motivated by financial inclusion, believing that greater digitalisation of their monetary system could expand access to financial services for their citizens. Some are also driven by the need to introduce competition and redundancy in their existing payments systems, which might be monopolistic. Countries are also interested in the advantages of a blockchain-based system: payments transactions could be made faster, cheaper and safer using the technology. Finally, countries are interested in the programmability functions of a CBDC and the potential advantages for monetary- and fiscal-policy implementation. Due to these overall benefits, some countries have raced ahead with developing their CBDCs.

The below section highlights the countries in the above-mentioned advanced stages of development, and parses through their motivations for developing CBDCs. In the cryptocurrency world, there has been a generally accepted axiom that lower-income countries are more likely to use decentralised tokens, networks and exchanges, and to do so at a faster pace than that of higher-income countries. This claim has already driven private investments in many emerging markets.³ It is primarily based on private cryptocurrency adoption and use in emerging markets. Indeed, of the top 20 nations with the highest rates of cryptocurrency adoption, only one is a high-income country (Chainalysis 2021). Is this discrepancy in adoption also true in the case of CBDCs? To answer this question, I rely on data from the Atlantic Council's CBDC tracker to look at the spread of low- and high-income countries globally. In doing so, I find that, regardless of income grouping, a country's financial-inclusion motivations have a great deal of influence on (1) whether that country will create a wholesale or retail CBDC, and (2) how quickly the country will launch a CBDC. Table 2.1, below, shows that while more lower-income countries are in the advanced stages of CBDC development, it is only in the launched

²This section draws from a paper I wrote for the University of Pennsylvania's Perry World Colloquium.

³For example, see Binance's investments in India (Sarkar 2022) and Latin America (Aldaya 2022).

stage that there is a considerable divergence in number – eight lower-income countries in comparison with three high-income ones.

Eight out of the eleven countries that have launched their CBDC projects are a part of the Eastern Caribbean Currency Union (ECCU), which made its CBDC – Dcash – available to the public on 31 March 2021. Financial inclusion is the primary issue driving the countries that have launched their CBDCs, since a good proportion of their populations (over 20 per cent) have no access to financial services (Soderberg et al. 2022: 4). In addition, the ECCU and the Bahamas, both consisting of island nations, need to deal with the issue of dispersed geography whereby it has been difficult for traditional banks to build infrastructure and expand services (*ibid.*). The geography of island nations also makes them prone to natural disasters, and digital-payment systems like a CBDC could address those needs (Soderberg et al. 2022: 6). Moreover, the operational costs of maintaining and transacting in cash and cheques in these nations are very high, and a CBDC could reduce them. At the launch of its Central Bank Digital Currency, JAM-DEX, it was announced that Jamaica would be able to save the 7 million US dollars that it currently spends on handling and storing cash (Gail 2022).

Compared with these island economies, Nigeria is a clear outlier when it comes to CBDC motivation. Nigeria's focus is on digitising its economy; however, it is also interested in improving financial inclusion with the launch of the eNaira. Bank-account ownership (or banked population) in Nigeria is around 45 per cent, and the country has one of the seven economies with the most unbanked adults in the world (Demirgüç-Kunt et al. 2022). However, more than half of Nigeria's unbanked population has access to a mobile phone (*ibid.*). The Nigerian government is interested in a CBDC to improve the efficiency of welfare payments, tax collection and cross-border payments such as remittances (Central Bank of Nigeria 2021). There is, therefore, an acute financial-inclusion motivation for Nigeria, accompanied by the economic conditions and ambitions that have facilitated the introduction of the eNaira.

The ECCU's DCash was developed in 2019 and launched in 2021. The Jamaican government began developing the JAM-DEX in 2020 and was able to launch in June 2022. Nigeria began researching the eNaira in 2017 and launched in 2021. The Bahamian Sand Dollar was developed in 2019

and launched in 2020.⁴ This means that, on average, these countries took two and a half years to develop and launch their CBDCs.

The countries that have launched a CBDC all have specific incentives in addition to financial inclusion, and are relying on digitising their fiat currency in order to meet their needs. In digital-currency parlance, there are well-defined and actualised use-cases for these 11 economies, which has led to the fairly swift introduction of their CBDCs.

Table 2.1 | Country CBDC and income status: Advanced stage

	High income	Lower income
Development stage (25)	Canada Israel Bahrain Japan Australia Germany* France* Italy* Spain* Netherlands* Estonia* Switzerland	Haiti Belize Venezuela Brazil Turkey Iran Lebanon Mauritius India Bhutan Cambodia Indonesia Palau
Pilot stage (14)	Sweden UAE Saudi Arabia Singapore Hong Kong Lithuania South Korea	Ukraine Kazakhstan Russia China South Africa Thailand Malaysia
Launch stage (11)	Bahamas Antigua & Barbuda† St Kitts & Nevis†	Anguilla† Montserrat† Dominica† St Lucia† St Vincent and the Grenadines† Grenada† Jamaica Nigeria

Legenda: * European Union member state; † Eastern Caribbean Currency Union member state.

⁴Sand Dollar website: *History*, <https://www.sanddollar.bs/history>.

Next, let us look at a few examples of nations in the pilot stage of CBDC exploration. On the lower-income side, China stands out as a country with an expansive and well-developed CBDC project, which began in 2017 and is currently run in 11 regions (Kumar 2022b). China is motivated by the introduction of competition to its domestic-payments architecture, which is dominated by WePay and AliPay. Russia is interested in building its CBDC in order to reduce its dependence on dollar-based transactions – although it is unclear how a domestic, retail CBDC will be able to achieve this.

Around 90 per cent of the population of both Russia and China has access to bank accounts (Demirgüç-Kunt et al. 2022). Similarly, most other countries in the pilot stage (both lower and high income) have between 85 and 99 per cent of their population with bank accounts (*ibid.*). Eight of them (Singapore, Hong Kong, UAE, Saudi Arabia, South Africa, Thailand, China and Malaysia) are interested in wholesale CBDCs, which allow for bank-to-bank or institutional transfers – primarily for foreign-exchange (FX) settlements. This could provide the technological benefits of digital currencies (faster, cheaper and safer payments) in a cross-border use-case (Atlantic Council 2022). In other words, instead of the financial-inclusion use-case demonstrated by countries that have launched CBDCs, here we see a largely cross-border use-case emerging among most countries in the process of developing wholesale CBDCs.

In the development stage, all high-income countries working on CBDCs have high rates of financial inclusion and are instead interested in the monetary- and financial-policy advantages of these digital currencies – along with their programmability functions. On the lower-income side, there are variations in the banked population across the countries: India is at 78 per cent and Brazil at 84 per cent, while Cambodia is at 33 per cent (Demirgüç-Kunt et al. 2022). However, the financial-inclusion incentive is strong – over a quarter of the world’s unbanked population resides in India and Indonesia alone (*ibid.*: 34). It is not surprising that most of these countries are interested in retail CBDCs because of their financial-inclusion benefits.

Some of the high-income countries have been contemplating these projects for a long time: Japan and the European Central Bank have been working on Project Stella, a wholesale-CBDC platform, since 2016; Can-

ada began Project Jasper in 2017; and Australia and Switzerland began their (separate) research in 2019 (Atlantic Council 2022).

Interesting results emerge as we analyse both low- and high-income countries at the launch, pilot, and development phases. In both groups, a high unbanked population – along with other strong economic incentives, such as improving the resilience of financial services and modernising digital infrastructure – creates an incentive to launch a retail CBDC. Some of these countries have done so at a surprisingly fast rate. For lower and higher-income countries with a low unbanked population rate, the use-case for domestic retail CBDC is less developed; instead, these countries are seen to focus on cross-border advantages through wholesale-CBDC development. Other lower-income countries with high unbanked populations have begun to focus on retail CBDCs and, given precedence, will move faster than higher-income countries. Table 2.2 summarises these findings.

Table 2.2 | Country and unbanked rate analysis

Lower-income country	High unbanked rate (in %)	Retail-CBDC development; faster
High-income country	High unbanked rate (in %)	Retail-CBDC development; faster
Lower-income country	Low unbanked rate (in %)	Mostly wholesale-CBDC development; slower
High-income country	Low unbanked rate (in %)	Mostly wholesale-CBDC development; slower

Given this situation, we are likely to see retail-CBDC developments progressing at a much faster rate in lower-income countries than in higher-income countries. As the analysis shows, this is because CBDC uptake is highest in countries with clearly articulated financial-inclusion benefits along with additional conducive economic conditions. It is likely that the lower-income countries in the “Development stage” row of Table 2.1 will develop retail CBDCs at a faster rate than the high-income ones.

This is certainly true for economies like the United States and United Kingdom, which are further behind in their CBDC exploration than their G20 counterparts such as India, China and Indonesia (Atlantic Council 2022). The Eurozone is an interesting case, in which, despite a relatively highly banked population, the European Central Bank (ECB) is interested in the kind of digitisation benefits

of CBDCs often sought by lower-income economies (Lagarde and Panetta 2022). The ECB is also further ahead of the US and the UK in its exploration.

Moreover, central banks such as the ECB, the Federal Reserve and the Banks of Japan and England have an added responsibility as their fiat currency is held in reserves in countries around the world. The US Fed has an increased responsibility as the issuer of the world's reserve currency to maintain financial stability not just domestically but also internationally. It is evident that the slower CBDC movement in these banks has been the result of caution.

3. CYBERSECURITY AND PRIVACY CONCERNS

Being primarily digital products, CBDCs raise cybersecurity concerns previously not considered by central banks (Fanti et al. 2022). Presently, central banks like the Federal Reserve ("the Fed") secure and check existing systems of interbank transfers such as FedWire. This includes contingency testing, building redundancy and the back-up storage of data, and transaction limitations (*ibid.*: 5-6). Similarly, the Society for Worldwide Interbank Financial Telecommunication (SWIFT), which is a messaging system that banks use to conduct international transactions, was revealed to have vulnerabilities that its member banks have now addressed, which has led to stronger security and faster responses to security issues (*ibid.*: 5-6). Additionally, credit- and debit-card fraud represent the main cybersecurity risks in retail payments, and risk management relies on adhering to voluntary standards.

However, as Giulia Fanti et al. elaborate, new risks are being posed by CBDC provision by central banks across the world. These risks are as follows (*ibid.*: 15):

- It is possible that central banks will store sensitive data on user activity and transactions. This centralisation of data leads to greater threats from malicious actors trying to access a single point of failure.
- Some design models will limit the amount of data that regulators can access, which makes tracking illicit flows of funds more difficult.
- Design models can also rely on third-party validators, which

requires the enhanced protection of these parties. Compromising their security can lead to failures for the whole system.

- New developments on custodial arrangements, including encryption to prevent any compromise on privacy, can affect cybersecurity efficiencies.
- Some countries rely on hardware such as microchips or smartphones. Compromising the integrity of these systems can lead to failures.
- Some design variants prevent any revocation of fraudulent transactions. This is a concern for regulators looking to protect a system from fraud.
- The programmability of transactions through smart contracts can also lead to failures. This is especially amplified if revocation is difficult in the system architecture.

Fanti et al. (2022: 7) analyse the different design models based on the “CIA triad” – confidentiality, integrity and availability – defined in their paper as follows:

Confidentiality requires that data are only accessible to those who are authorized. [...] Integrity means that data are “correct, authentic, and reliable” and can thus be trusted to not have been tampered with. [...] Availability means that the system is up and running, allowing users to have timely and reliable access.

Their main conclusion for designers and policymakers is that privacy-preserving designs are not inherently in competition with secure systems. In fact, models that preserve privacy by collecting less information are often the most reliable in managing cybersecurity risks as well.

Other policy take-aways from the paper are as follows (*ibid.*: 32-40):

- There are existing standards for cybersecurity risk management, but policymakers must update gaps to address fragmentation.
- Due to privacy concerns, policymakers must decide the extent of digital-identity proof that they want to use. They need to decide where it will be deployed and how to best do it to preserve the integrity of the system.
- Regulators must also determine the role of privacy regulations

- that clearly specify who has access to which data and for how long.
- In order to identify vulnerabilities, policymakers must encourage experimentation and testing. A great example of this is shown by the role of the Bank for International Settlements (BIS), in which countries have established knowledge-sharing hubs for testing. In fact, Israel, Hong Kong and the BIS are currently testing cybersecurity features with their joint Project Sela (Hong Kong Monetary Authority 2022).

3.1 A cross-border use-case for CBDCs

The previous section established the fact that privacy and cybersecurity go hand in hand. Moreover, cross-border applications of CBDCs are becoming increasingly common as countries look to develop alternatives to expensive international transactions. A growing number of people, especially in the Global South, are dependent on remittances as their primary form of income. The technological benefits of CBDCs – speed, cost and transparency – are valued by countries looking to develop cross-border financial architectures. This section explores the cross-border applications of CBDCs.

We begin with a consideration of the way in which the dollar, the world's reserve currency, moves across borders today: SWIFT is a messaging platform that connects 11,000 banks (including their correspondent networks) across more than 200 countries. This makes it the primary mode of communication across banks. It is headquartered in Brussels, and is mainly managed by EU- and US-based banks. Actual dollar transactions occur through the Clearing House Interbank Payments System (CHIPS), which is owned by the Federal Reserve. On average, CHIPS cleared close to 1.8 trillion US dollars in transactions daily.⁵ The system has forty-three direct participants (Clearing House 2021), which are all US banks or foreign banks with US branches, and 11,000 indirect participants, which are banks without US branches that are engaged in

⁵ Clearing House website: *About CHIPS*, <https://www.theclearinghouse.org/payment-systems/chips>.

the system through their accounts with direct participants. Through its participants, CHIPS covers over 96 per cent of dollar-denominated cross-border transactions. The system works in tandem with FedWire, which connects banks within the US.

This settlement mechanism makes the dollar immensely powerful globally. This is a source of strength for Americans, who can obtain credit at lower prices than anyone else. It is also the mechanism that fuels financial sanctions on adversaries. Since Russia's invasion of Ukraine, its economy has been dealt significant blows because, at the end of the day, the dollar dominates currency reserves and payments "pipelines", and provides liquidity and exchangeability for other currencies – including the Russian ruble and China's yuan.

Given this situation, countries have begun to look for alternatives to the dollar-based international financial system. This has led to the creation of alternative messaging and transaction architectures like Russia's System for Transfer of Financial Messages (SPFS) and China's Cross-Border Interbank Payment System (CIPS), as well as the development of alternative ways of conducting FX transactions. As financial-technology alternatives like mobile wallets gain increasing acceptance in the retail space, finding alternatives in the wholesale space has become popular amongst US allies and adversaries alike looking to reduce their reliance on the dollar. One such alternative is represented by wholesale, cross-border CBDCs (Kumar and Lipsky 2022).

There are a dozen cross-border experimentations occurring, which build DLT-based architectures for transferring value. These are shown in Table 2.3, below.

Several of these experiments can make domestic payments in a foreign currency (BIS Innovation Hub 2022). In early October, the BIS wrapped up its current phase of the mBridge project, which resulted in 12 million US dollars being issued on the platform and 22 million US dollars in transfers across 160 transactions between 20 banks across China, Hong Kong, Thailand and the UAE (Shen 2022). With new projects such as Sela and Icebreaker announced this year, cross-border applications are gaining momentum – and the BIS Innovation Hub serves as an important agent fostering collaboration and dialogue.

Table 2.3 | Cross-border CBDC projects

Project name	Participants
Multiple CBDC Bridge (mBridge)	Thailand, China, Hong Kong, UAE and the BIS
Project Dunbar	Australia, Singapore, Malaysia and South Africa
Project Helvetia	Switzerland and the BIS
Project Jasper	Canada, the UK and Singapore
Project Aber	Saudi Arabia and the UAE
Project Jura	France and Switzerland
Onyx/Multiple wCBDC	France and Singapore
Project Sela	Israel, Hong Kong and the BIS
Project Icebreaker	Israel, Norway, Sweden and the BIS
Project Mariana	France, Switzerland, Singapore and the BIS
Project Rosalind	UK and the BIS
Project Aurum	Hong Kong and the BIS
Project Helvetia	Switzerland and the BIS

However, there are emerging challenges to such cross-border experiments. One crucial test lies in harmonising legal and regulatory guidelines across jurisdictions. Legal challenges include the basis for transfer and issuing of CBDCs, which will determine the settlement validity of these transactions (BIS CPI et al. 2022). Regulatory hurdles such as incongruent privacy, cybersecurity, digital ID and other standards across countries will determine which design options are chosen and how efficient they are in matching up to their expectations. Finally, there is the question of overall governance, which, in the previous case of SWIFT, had followed a cooperative model (BIS Innovation Hub 2022: 18). What does this look like as countries get further ahead in their CBDC development? And how do we reconcile the issue of mismatched incentives and motivations that are a part of these experiments?

Despite such challenges, it is not in countries' interests to undermine these efforts since the resulting technological efficiencies will allow for much-needed improvement in the financial sector. This is especially true in the case of foreign remittance payments. There will be no movement towards realising the potential of these technologies if the appropriate legal, regulatory and governance burdens are not lifted. However, these challenges make leadership geared to reducing fragmentation an imperative.

4. THE DIGITAL DOLLAR AND US LEADERSHIP

So, where does the issuer of the world's reserve currency stand in its CBDC development? Discussions on the "digital dollar" have occurred since 2020, and the US Federal Reserve has been actively researching its creation. Efforts took on a new urgency in 2022, as the Fed released its long-awaited report on issuing a CBDC in January (Federal Reserve Board 2022) – which was followed by the joint report of the Federal Reserve of Boston's and the Massachusetts Institute of Technology (MIT)'s digital-currency initiative on a conceptual model for a CBDC: Project Hamilton (Federal Reserve of Boston and MIT 2022). In March 2022, President Joe Biden released an executive order on the responsible development of digital assets, which, amongst other things, asked for further research and development on CBDCs (Kumar 2022a). In September, various agencies released their reports on the digital dollar and the regulation of cryptocurrencies, many of which also encouraged further R&D on Central Bank Digital Currencies (Atlantic Council 2022).

Challenges remain in reaching a widespread and coherent US position on CBDCs. Firstly, there is still an ongoing debate on the Federal Reserve's authority to issue a digital version of the dollar. Secondly, many policymakers believe that a regulated, private digital currency could achieve the same goals as a CBDC. Finally, the project's detractors also tend to focus on the potential privacy costs of a digital dollar and its potential to disintermediate commercial banking systems and private-sector solutions.

Let us take these challenges at face value. Firstly, many central banks are facing the tricky question of legal authority of issuing currencies in virtual or digital format. This has led to a movement towards clarifying legal and regulatory authority, and including digital or virtual fiat currencies in central banks' remit. The shape and form of money is poised to change, and central banks need to think through their monetary sovereignty as it does so. In the US, this is most likely going to take the form of legislative clarification of the Fed's authority – something that policymakers must encourage in order to innovate from a position of strength rather than live in the past with regard to money.

Secondly, private forms of digital currencies, or cryptocurrencies and stablecoins, are in an early and speculative stage of their develop-

ment. Several times in 2022, private cryptocurrency markets have been subject to volatility and confusion – which has created a rush to push for regulation across the world.⁶ Even if most of this volatility could be “regulated out” of cryptocurrencies, it is difficult to replicate the fundamental aspect that makes a fiat currency desirable, not just domestically but also internationally, which is its trustworthiness. Why would central banks around the world prefer to hold and trade in regulated crypto instead of a trusted CBDC, which would provide the same technological benefits? In many ways, it will be advantageous for commercial banks and individuals to have many kinds of regulated digital assets to hold and trade, and for them to be transferable across each other and other kinds of financial assets. The development of CBDCs should therefore not be seen as a hindrance to innovation in the world of cryptocurrencies.

Privacy and surveillance are an important concern regarding public money. The previous section of this Chapter has clarified why cybersecurity and privacy should not be seen as compromises that a CBDC designer must make. In fact, resilient CBDC operations can be private. And finally, of the 110-plus CBDC models we examined, almost all of them are looking at a two-tiered, intermediated model that allows commercial banks (and in some cases, non-banks) as access points for individuals and entities to “onboard” on to CBDCs.

In the policymaking space in the US, there is a need to clarify that a US CBDC or a digital dollar could be legally issued by central banks with congressional action; that it could be private, resilient against cybersecurity attacks, provide for an additional, trusted asset for central banks around the world; and that it could be designed to be interoperable across the significant existing private-sector functions – which include commercial-banking infrastructure and money as well as private cryptocurrencies. Only then can the US take on leadership on the issue of digital currency, which is urgently needed.

Additionally, this Chapter has attempted to clarify that CBDCs do not just affect flows of money; as a digitally held and transferable prod-

⁶ Atlantic Council website: *Cryptocurrency Regulation Tracker*, <https://www.atlanticcouncil.org/?p=582657>.

uct, they also create and influence technical and regulatory standards when it comes to privacy, cybersecurity, interoperability, digital IDs, anti-money laundering (AML) efforts and know-your-customer (KYC) requirements. Increasingly, CBDC models that are already proliferating will set the standard for some of these issues – and, if left unchecked, models that do not align with high standards on privacy, cybersecurity, AML/KYC and ID will become the norm.

This will lead to greater fragmentation and instability in the financial ecosystem. This is the cost that the world’s largest central bank – the US Federal Reserve – is likely to pay if it waits much longer to experiment with and develop a Central Bank Digital Currency. Therefore, responsible CBDC development that can keep up with rapid changes in much of the world needs to be the emphasis for the United States, which can thereby provide a roadmap on important issues of international significance.

REFERENCES

- Aldaya, Francisco (2022), “Binance Unveils Pre-Paid Crypto Card for Latin America”, in *Bloomberg Línea*, 5 August, <https://www.bloomberglinea.com/english/binance-unveils-pre-paid-crypto-card-for-latin-america>
- Atlantic Council (2022), *Central Bank Digital Currency Tracker*, <https://www.atlanticcouncil.org/?p=416411>.
- BIS CPMI-Committee on Payments and Market Infrastructures et al. (2022), *Options for Access to and Interoperability of CBDCs for Cross-border Payments. Report to the G20*, July, <https://www.bis.org/publ/othp52.htm>
- BIS Innovation Hub (2022), *Using CBDCs across Borders: Lessons from Practical Experiments*, June, <https://www.bis.org/publ/othp51.htm>
- Central Bank of Nigeria (2021), *Design Paper for the eNaira*, October, <https://enaira.gov.ng/about/design>
- Chainalysis (2021), *The 2021 Geography of Cryptocurrency Report*, October, <https://go.chainalysis.com/rs/503-FAP-074/images/Geography-of-Cryptocurrency-2021.pdf>
- Clearing House (2021), *CHIPS Participants*, 25 January, <https://www.>

theclearinghouse.org/-/media/new/tch/documents/payment-systems/chips_participants_revised_01-25-2021.pdf

- Demirgüç-Kunt, Asli et al. (2022), *The Global Findex Database 2021. Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*, Washington, World Bank, <https://www.worldbank.org/en/publication/globalfindex/Report>
- Fanti, Giulia et al. (2022), *Missing Key. The Challenge of Cybersecurity and Central Bank Digital Currency*, Washington, Atlantic Council, June, <https://www.atlanticcouncil.org/?p=535275>
- Federal Reserve Board (2022), *Money and Payments: The U.S. Dollar in the Age of Digital Transformation*, January, <https://www.federalreserve.gov/publications/money-and-payments-discussion-paper.htm>
- Federal Reserve of Boston (2022), *Project Hamilton Phase 1 Executive Summary*, February, <https://www.bostonfed.org/publications/one-time-pubs/project-hamilton-phase-1-executive-summary.aspx>
- Gail, Elizabeth (2022), “Jamaica’s Central Bank Digital Currency and the Problems It Hopes to Solve”, in *Cointelegraph*, 25 March, <https://cointelegraph.com/news/jamaica-s-central-bank-digital-currency-and-the-problems-it-hopes-to-solve>
- Hong Kong Monetary Authority (2022), *Project Sela: Research with the Bank of Israel on Cybersecurity Issues in the Context of Retail CBDC*, 17 June, <https://www.hkma.gov.hk/eng/news-and-media/press-releases/2022/06/20220617-3>
- Kumar, Ananya (2022a), “Biden’s Executive Order on Digital Assets has been Released. Now What?”, in *EconoGraphics Blog*, 11 March, <https://www.atlanticcouncil.org/?p=498600>
- Kumar, Ananya (2022b), “A Report Card on China’s Central Bank Digital Currency: The e-CNY”, in *EconoGraphics Blog*, 1 March, <https://www.atlanticcouncil.org/?p=493374>
- Kumar, Ananya and Josh Lipsky (2022), “The Dollar Has Some Would-Be Rivals. Meet the Challengers”, in *New Atlanticist Blog*, 22 September, <https://www.atlanticcouncil.org/?p=569196>
- Lagarde, Christine and Fabio Panetta (2022), “Key Objectives of the Digital Euro”, in *The ECB Blog*, 13 July, <https://www.ecb.europa>

eu/press/blog/date/2022/html/ecb.blog220713~34e21c3240.en.html

Sarkar, Arijit (2022), “Binance to Drive Crypto and Blockchain Awareness among Indian Investors”, in *Cointelegraph*, 30 April, <https://cointelegraph.com/news/binance-to-drive-crypto-and-blockchain-awareness-among-indian-investors>

Shen, Timmy (2022), “BIS mBridge Cross-border CBDC Project Concludes Pilot, Advisor Says”, in *Forkast News*, 27 September, <https://forkast.news/headlines/bis-mbridge-cross-border-cbdc-project-concludes-pilot-advisor-says>

Soderberg, Gabriel et al. (2022), “Behind the Scenes of Central Bank Digital Currency: Emerging Trends, Insights, and Policy Lessons”, in *Fintech Notes*, No. 2022/004, February, <https://www.imf.org/en/Publications/fintech-notes/Issues/2022/02/07/Behind-the-Scenes-of-Central-Bank-Digital-Currency-512174>

3.

Going Global: The Political Ambition and Economic Reality of the (Digital) Euro

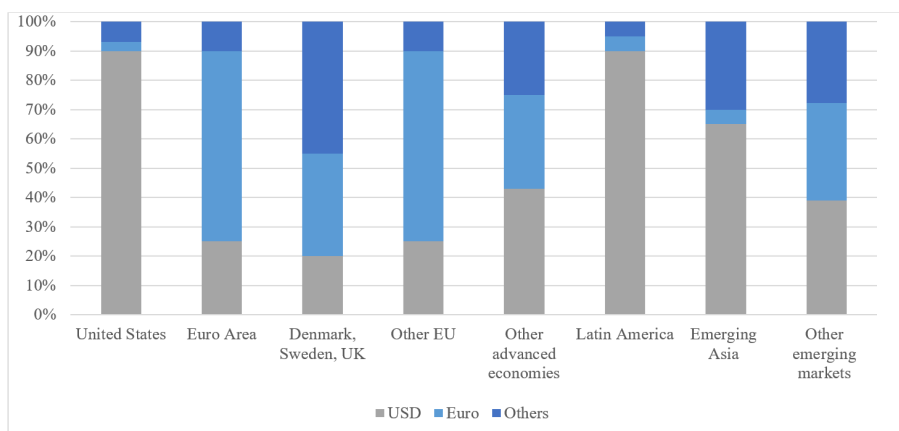
Nicola Bilotta and Erwin Voloder

States can use international monetary systems – and the leading role of their national currencies – as an instrument of power (Kirshner 1995). Since no global currency as yet exists, international trade, transnational investments and cross-border payments require the intermediation of national currencies. Therefore, an international currency fulfils the three main functions of money: as a medium of exchange, as a store of value and as a unit of account. As some national currencies are used disproportionately for these purposes, any international currency potentially holds global political and geostrategic value. In the early days of the Maastricht Treaty, the European Central Bank (ECB) made it clear that price stability was its main policy target. Since the internationalisation of the euro was not considered a policy objective, the ECB stressed that it would have neither fostered nor hindered the global use of the common currency (ECB 1999). For many years, then, the European Union has lacked the necessary political will to promote the internationalisation of the euro. However, the 2018 “Towards a stronger international role of the euro” communique of the European Commission (2018) identified increasing euro internationalisation as a key dimension of its political goal of strategic autonomy (Damen 2022).

The global appeal of a currency depends on fundamental economic forces – such determinants include, for instance, the size of the issuing economy in terms of global trade and finance, the soundness of its economic policies, financial-market depth and liquidity (Frankel 2008; Chen et al. 2009; Li and Liu 2008). An incomplete banking union, transnational

fiscal policies and the still-unfinished capital-markets union exacerbate, by virtue of their incompleteness, the way in which trade and current-account flows underscore an international currency. Furthermore, a burgeoning literature additionally stresses that the choice is also driven by underpinning institutional and geostrategic factors (Kindleberger 1970; Strange 1971, 1988; Kirshner 1995; Williamson 2012; Cohen 1998, 2015; Liao and McDowell 2016). The low degree of political and economic integration in fundamental dimensions – such as the lack of common safe assets or of a common foreign policy – is, then, currently undermining the global adoption of the euro. As a result, the EU is still extremely dependent on the US dollar. While the euro is the second most important international currency, it continues to lag behind the US dollar by a wide margin (Cohen 2009). For example, 48.1 per cent of extra-EU imports were invoiced in US dollars in 2020 with only 38.2 per cent in euro (Eurostat 2022). This gap is more remarkable in the context of the Union’s external energy bill. Despite being the largest energy importer in the world, 80–90 per cent of EU long-term import contracts are not referenced in euro (Wilkinson et al. 2022).

Figure 3.1 | Currency denomination of imports (in %)



Source: Beckmann et al. (2020: 15).

Moreover, the EU is highly dependent on foreign payment systems. With the rapid and widespread adoption of cashless payment solutions and with the rise of cryptoassets, the EU is concerned at its own increasing dependence on non-European private actors for a critical infrastruc-

ture of its economy, and fears becoming vulnerable to economic and political risks. Unsurprisingly, the Union considers the global adoption of national Central Bank Digital Currencies (CBDCs) to represent a unique window of opportunity. With the growing digitalisation of the economy, a digital euro is seen as a tool to mitigate risks related to old and new foreign-payment systems and to the emergence of foreign CBDCs (Panetta 2020, 2022). A key ambition of the digital-euro project is indeed to set up a full-pan European system with the ambition of global acceptance in the long run.¹ Whether a digital euro is the right instrument to improve the international profile of the euro and EU strategic autonomy is, however, still an open question.

During the recently held High Level Conference on a digital euro, central bankers, Commission officials and the German Finance Minister Christian Lindner fielded questions from an audience of private-sector stakeholders asking exactly what the digital euro aims to do in the short and long term. The discussion lacked any direct attempt to politically frame the EU's CBDC goals outside what can be loosely construed as completing the Retail Payments Strategy. The only tinge of extra-territorial application was when Finance Minister Lindner argued, off the cuff, that "there could be a downstream case for the digital euro in the area of development". This aspiration is not accidental but deliberate. Unlike individual countries less under the microscope on their domestic politics, the EU is an advanced economy populated with G7 and G20 member states – and, as such, is an exporter of standards as much as norms or democracy promotion. A digital euro is, from the outset, a political project and not simply one of financial inclusion or efficiency. It would in theory double as a standard bearer of EU strategic economy as the digital economy is borderless, transversal and instant. The irony is that as long as the Union investigates or pilots a CBDC solely within a domestically ring-fenced context, it conveniently ignores the overarch-

¹ As acknowledged by the former German Finance Minister (now Chancellor) Olaf Scholz, a digital euro 'would be good for the [European] financial center and its integration into the world financial system. [...] We should not leave the field to China, Russia, the U.S. or any private providers'.

ing cross-border dimension of what a CBDC-led future economy would ultimately need to be successful.

1. DIGITALISATION OF PAYMENTS: THE GEOSTRATEGIC IMPLICATIONS FOR THE EU DOMESTIC MARKET

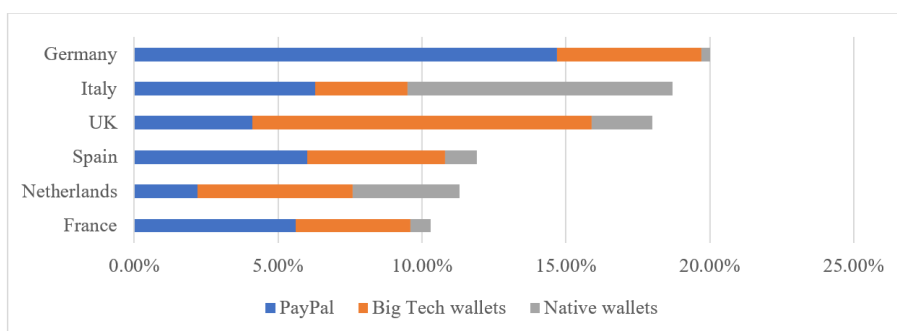
The digitalisation of payments (and generally of the whole economy) is transforming the way in which consumers access and use money. Within the EU payment industry, a high degree of heterogeneity exists. Cash is still the most popular retail-payment instrument in the EU. In 2019, according to the latest data from the ECB, 73 per cent of total retail transactions were made in cash. Malta recorded the highest percentage (88 per cent) of cash-based transactions, followed by Spain (83 per cent), Italy (82 per cent) and Cyprus (80 per cent). Other countries – such as Estonia (48 per cent), the Netherlands (34 per cent) and France (59 per cent) – registered much lower shares of cash-based retail payments. Despite the existing heterogeneity, the growth of cashless payments has been rapid and remarkable across all EU countries. Between 2015 and 2020, they payments increased both in terms of total number of transactions (+38.5 per cent) and of total volume (+13.3 per cent). A key driver of this mega-trend is the usage of credit/debit cards and of e-wallets. The last-named, despite being a very recent instrument, already represents around 5 per cent of the total retail payments in the eurozone. The Covid-19 pandemic appears to have incentivised consumers to shift from cash to electronic payments as the latter were perceived as more convenient, with fewer concerns about the risk of infection (Panetta 2021).

In the EU, cashless payments by card are largely enabled by foreign providers. In 2019, around 62 per cent of total transactions made with credit/debit cards were made through only two international card-payment schemes: Visa and Mastercard (Dinga 2021). Even though national card-payment schemes exist in some EU countries – like Girocard in Germany, Bancomat in Italy or Cartes Bancaires in France – these solutions do not have cross-border acceptance; for this, national card schemes are reliant on co-badging with international card schemes. Another set of concerns for the EU is that, as a general

trend, mobile payments and the most innovative digital-payment solutions – such as Google Pay, PayPal or Apple Pay – are mostly enabled by large, foreign technological companies. As these players benefit from network effects, they can reach scale and challenge incumbent providers very quickly. The risk is the establishment of a market concentration similar to what is experienced in China. Mobile payments account for 66 per cent of the total transactions (People’s Bank of China 2021) in that country, out of which 92 per cent were carried out through only two providers (Alipay and WeChat Pay, 53 per cent and 39 per cent respectively) (Liu and Wang 2018). So far, in Europe, Big Techs have launched e-wallets and mobile payment solutions that operate atop the traditional payment infrastructure.

However, the market consolidation of stablecoins, most of which are pegged to the US dollar (99 per cent of total stablecoin market capitalisation), could create new business opportunities for Big Techs. Even though euro-denominated stablecoins represent the second largest market segment, they only comprise 0.2 per cent of the stablecoin market. If pegged mainly to the US dollar, an eventual broad adoption of private stablecoins could support the dollar’s international profile (ECB 2022).

Figure 3.2 | Share of in-store digital wallet payments made using selected wallets



Source: PYMNTS and Stripe (2022).

In line with these concerns, in the 2020 “Retail Payments Strategy for the EU” (European Commission 2020), the European Commission clearly acknowledged the risks related to the rapid adoption of cashless pay-

ments and to the concentration of foreign global players in the domestic and cross-border payment market in the EU. Yet, all attempts to establish a pan-European card scheme have thus far been unsuccessful. The latest initiative with this ambition – the European Payments Initiative (EPI) – was promoted by a consortium of European banks. Launched in 2020, it aimed at developing a pan-European payment solution by 2022. Despite having been politically endorsed by both the ECB and the European Commission, the EPI seems to be failing. After several banks giving up on the project, as of December 2021 only French, Belgian and German member banks had confirmed a willingness to proceed with the project.

Table 3.1 | Characteristics of main US dollar and euro stablecoins premia since 2020

Stablecoins	Average premia (percentage)	Volatility (percentage)	Market capitalisation (USD billions, 01/01/2021)	Market capitalisation (USD billions, 31/12/2021)	Average trading volume (USD billions)
USD Tether	0.07	0.25	20.93	78.44	64.27
USD Coin	0.04	0.25	3.93	42.43	1.81
EUR Tether	0.31	0.50	-	0.05	0.01
Stasis euro	0.06	1.71	0.04	0.11	0.01

Source: ECB (2022: 37).

While the vision of a pan-European system appears to be great, its establishment is extremely challenging. Doubts on its potential scalability exist. While Mastercard and Visa enjoy network effects worldwide, a pan-European payment system could only be used within the Union. EU merchants could be reluctant to take on the additional costs of accepting a new type of payment if it covers only European transactions. Furthermore, inertia and frictions tend to consolidate existing payment systems as transaction costs related to switching to another system are high. Any new system should manage to attract users, merchants and intermediaries who profit from interchange fees – quite a difficult mission.

A digital euro could in principle help to pursue the EU’s long-term political goals of an independent, domestic, European payment system. However, very recently – on 16 September 2022 – the ECB announced the selected external companies for joint prototyping of user inter-

faces for a digital euro. The choice came from a pool of 54 firms that responded to a call for expressions of interest published in April 2022. The five selected firms will work with the ECB to develop a prototype of user interfaces for specific use-cases. The Spanish bank Caixa will focus on peer-to-peer online payments, the French payment and transactional-services firm Worldline on peer-to-peer offline payments, the European banking consortium EPI on point-of-sale payments initiated by the payer, the Italian Nexi on point-of-sale payments initiated by the payee and the US giant Amazon on e-commerce payments. Amazon is the only selected entity based outside the EU. The American giant is a global leader in the development of digital payment solutions, digital infrastructure and user-friendly interfaces, providing it with an edge in efficiently supporting the ECB. Some analysts have, however, raised concerns over whether Amazon's involvement in this preliminary stage could result in a comparative advantage in the near future. The European Commission has already been carrying out antitrust investigations into Amazon's business practices (European Commission 2019) and the fear is that, leveraging from the experimental scale of prototypes, Amazon could develop and improve its ecosystem to ease the access to a digital euro before its competitors do. However, to mitigate this risk, the ECB has already acknowledged that there is no plan to actually implement the prototypes once a digital euro is launched.

Moreover, the US maintains significant control over the Society for Worldwide Interbank Financial Telecommunication (SWIFT), the cross-border messaging system necessary for banks to make transactions. As stressed by the Treasury 2021 Sanctions Review published by the US Treasury, technology innovation could empower new payment-infrastructure alternatives to SWIFT or the US dollar, which could ultimately harm the efficiency of US sanctions (US Department of the Treasury 2021). Despite being a "neutral", cooperative company registered in Belgium, SWIFT has been accused of being vulnerable to US foreign policy. This is largely due to the fact that most cross-border payments are conducted through the US banking system of the Federal Reserve and private financial institutions (commercial, investment, and correspondent banks), explaining why US laws have far-reaching implications for transactions performed outside the country. This

was clear when in 2018 the US administration unilaterally re-imposed sanctions against Iran – SWIFT complied despite EU opposition (Peel 2018). Following this decision, the Union launched a (rather unsuccessful) EU–Iran payment vehicle, INSTEX, in 2019 to get around US sanctions – showing, once again, the efficiency of US secondary sanctions. Nevertheless, no alternative to SWIFT currently exists.² In theory, a global system of CBDCs could bypass by design the central node of SWIFT and ease the establishment of direct interoperability between central banks.³ Yet, SWIFT is extensively experimenting with the goal of becoming an integral and critical part of the future global CBDC infrastructure, and the reach of US secondary sanctions derives primarily from the country’s economic, geopolitical and financial centrality in the global economy rather than solely from the US dollar, SWIFT or its payment systems (He et al. 2022). The possible development of new, independent payment infrastructure is therefore not sufficient to empower the EU’s economic strategic autonomy. It could, however, establish a tool to mitigate its dependency on the US dollar.

Whether a digital euro will be able to foster further competition and mitigate the EU’s dependency on foreign providers is contentious. It will depend on the capacity of European providers to develop innovative and attractive payment solutions on the core infrastructure provided by the ECB. Otherwise, the risk is of replicating current market dynamics in which foreign, third-party mobile and digital payment solutions could dominate the ecosystem around a digital euro.

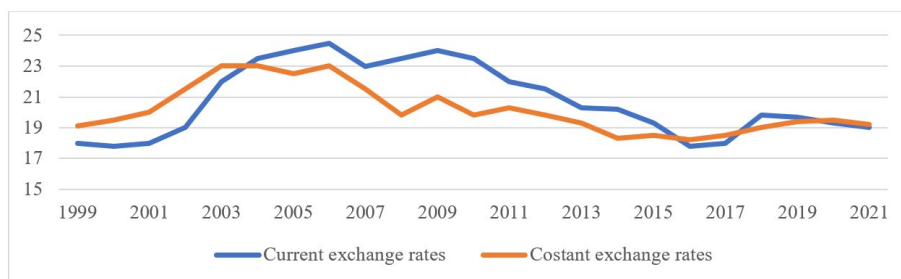
² While China has launched the Cross-Border Interbank Payments System (CIPS) in 2015 and Russia has developed the System for Transfer of Financial Messages (SPFS) in 2014, the two systems together process less than 1 per cent of SWIFT’s volume of transactions.

³ SWIFT does not process transactions; it enables the transmission of information related to a transaction. It is reported to carry around 140 trillion US dollars of transactions – of which 40 per cent is in US dollars, 37 per cent in euro and 6 per cent in UK pounds.

2. THE DIGITAL EURO: THE IMPLICATIONS OF ITS INTERNATIONALISATION

Since its launch, the euro has established itself as the second most important international currency. However, an analysis of past trends in the currency's internationalisation clearly shows that the global role of the euro has been stagnating. Until 2008, the euro was consistently reducing its gap with the US dollar. In 2007, 40 per cent of the financing debt issued worldwide was nominated in euro, declining to 20 per cent after the 2008–9 financial meltdown and subsequent sovereign-debt crisis. The composite index of the international role of the euro confirms this trend – showing a dramatic decrease after 2008 – and the setbacks of 2007–8 are yet to be recovered from. The euro seems to have partially regrouped as an international store of value: its share in global foreign reserves grew from 13 per cent in 2015 to 19 per cent in 2019. Nevertheless, this level is only slightly more than at its inception in 1999. Instead, its share of foreign-exchange turnover decreased by 6 per cent from 2001 to 2019 while its share as an invoicing or settlement currency for extra-euro transactions has been quite stable since 2012.

Figure 3.3 | Composite index of the international role of the euro, 1999–2021

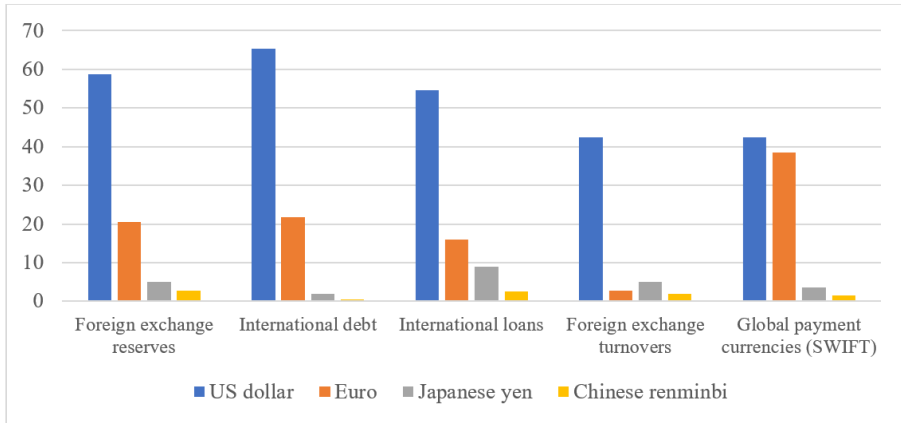


Source: ECB (2022: 3).

It is no coincidence that this sharp decline started after 2007–8. As the global appeal of a currency depends on macroeconomic and institutional determinants, the financial crisis challenged the core credibility of euro-area institutions as well as the stability and sustainability of EU financial markets. During 2007–8, the EU failed to elaborate and

implement coordinated actions to counterbalance the negative effects of the crisis, showing key gaps and limitations in its economic and political governance.

Figure 3.4 | Snapshot of the international monetary system, June 2022



Source: ECB (2022: 4).

Table 3.2 | Official holdings of foreign exchange, end of year (in %)

	2000–7	2008–13	2014–19
US dollar	66.94	62.21	63.60
Euro	23.23	25.37	20.14
Japanese yen	4.42	3.59	4.51
Pound sterling	3.48	4.04	4.39
Chinese renminbi			1.54
Canadian dollar		1.63	1.87
Australian dollar		1.64	1.69
Swiss franc	0.23	0.16	0.19

Source: Macchiarelli (2020: 31).

For this reason, some believe that the euro is not living up to its full potential internationally. This is mainly because of the fragmented nature of the EU’s Economic and Monetary Union (EMU). A key determinant is the lack of common safe assets that could be adopted by central banks and international investors as a store of value. Despite being denominated all in euro, national debts within the eurozone have

extremely different marketability and risk. As a result, the EU has an inadequate supply of high-quality euro-denominated assets. Since 2008, the number of AAA-rated euro-area sovereigns fell from eight to three (Zoppè and Lenzi 2015). In 2019, AAA-rated euro-area sovereign debt amounted to just 10 per cent of the area's GDP; in the US, this figure is more than 70 per cent (Coeuré 2019). The establishment of common safe assets could make the euro more liquid and attractive for foreign investors. Moreover, the EU still lacks a complete banking union as well as a capital-markets union, which undermines the integration and deepening of its financial market. Finally, financial stability is also perceived as a potential risk due to political frictions on the issue of "mutualisation" within the euro area and the asymmetry that decentralised fiscal policy and common monetary policy could produce. The incomplete nature of the EMU is therefore currently undermining the international status of the euro (Passacantando 2021).

As argued by a recent work of the ECB, the design choice of a digital euro would significantly affect its potential international profile (ECB 2021). At present, the ECB's design choice focuses on payment efficiency between consumers and businesses in line with the Retail Payments Strategy, and is not directly related to programmability *per se*. First, the ECB is likely to implement fixed caps on the maximum amount of digital euro that any foreign retail or corporate users will be allowed to hold. While this could make a digital euro less attractive for international payments, it could become appealing for remittances. If – and this is a big if – an international infrastructure for cross-border CBDCs existed, it could dramatically reduce the transactions costs associated with this type of payment. Second, the ECB seems likely to apply low – or even negative – interest rates on deposits in digital euro. The ECB is seeking to promote a digital euro only as a medium of payment and not as an instrument for investment.

Nevertheless, while a digital euro is unlikely to change the economic and institutional factors that affect the international use of currencies, it could benefit its global appeal through underpinning geostrategic drivers. The internationalisation of a currency does not need to follow a specific trajectory, however. While generally, an improved institutional arrangement together with credible economic and fiscal policies helps,

policymakers can also target determined functions of an international currency. A currency does not need to be equally important internationally as a medium of exchange or as a store of value. Policy could potentially foster the international adoption of a currency for specific functions and roles. Through ad hoc interventions, a country could tailor the use of a currency – for example, for emerging-economy debt markets or energy markets.

In line with this vision, digital networks and multi-CBDC arrangements could ease the internationalisation of a currency as a means of payment through trade links. Moreover, digital sovereignty and the forward deployment of normative values⁴ can be extended by the introduction of a malleable and composable form of money. The last decade of financial innovation has brought with it the ability to tailor the value chain of a transaction from start to settlement by leveraging programmability. It is this feature more than anything which may have the most far-reaching implications for a given currency’s “staying power”. Although as a concept it is not that new (standing orders), when coupled with the application of smart contracts via distributed-ledger systems, programmable money and programmable payments can support increasingly complicated business logic.

Here, one must first make a distinction between programmable money and programmable payments. Programmable money supports inherent logic functions while programmable payments can be automated through blockchain-based systems supporting smart contracts.⁵ In this vein, a programmable digital euro could take the form of a digital bearer instrument (token), a synthetic CBDC (sCBDC) with a trigger solution, or a tiered account-based model. The opportunity presented by

⁴Such as an adherence to free-market capitalism or liberal democracy.

⁵Kulk and Plompen (2021) argue that programmability can already be achieved at relative scale by implementing a trigger solution on existing Real Time Gross Settlement (RTGS) systems like TIPS (TARGET Instant Payment Settlement), combined with an API (Application Programming Interface) layer and a request-to-pay authorisation layer that makes use of the ISO 20022 messaging standard. It should be noted that the extent to which the ECB or other central banks use this option will have to be weighed against the efficiency gains that smart-contract functionality can offer.

programmability is manifold: it would allow for ring-fencing the euro area by pre-empting the advent of business logic that is already being actively discussed/piloted⁶ and creating a nominal anchor to act as a pass-through mechanism for the growing field of tokenisation. It could also simultaneously create demand for the programmable digital euro in faster, cheaper and more secure cross-border payments internationally. Programmability may give the EU a “leg up” in terms of calibrating its CBDC to anticipate the efficiency gains available once secure machine-to-machine (M2M) payments become a possibility.⁷

Finally, programmability can also automate processes which currently lead to cost frictions in the settlement of securities, and can facilitate the orderly settlement of intra-bank reserves both domestically and cross-border via “currency corridors” such as multi-CBDC arrangements. As acknowledged by a recent report produced by the Bank for International Settlements, the Committee on Payments and Market Infrastructures, the World Bank and the International Monetary Fund, multi-CBDC arrangements thus have the potential to enhance efficiency while lowering the transaction costs of cross-border payments. Economic theory suggest that frictions cause agents to use a specific national currency, as international mediums and economies of scale lead to the concentration of only a few national currencies for this purpose. This expected economic incentive could undermine the traditional inertia and frictions encountered in using a specific international currency, which are strengthened by network externalities and economies of scale.

As global value chains undergo a transformation, it will affect the

⁶ German-based CashOnLedger has partnered with Austrian commercial-vehicle manufacturer Lindner to tokenise the pay-per-use of commercial tractors – a process in which a programmable digital euro could play a vital role in invoicing both between EU member states and between them and external trading partners who require flexible leasing models for heavy machinery.

⁷ M2M payments are a growing field of research, which presumes that the legal hurdles of imbuing machines with identity and the right to autonomously operate a payment account have been solved. They involve self-attesting machine identities that can trigger payments automatically via ‘digital twins’ without intermediaries. Examples include autonomous vehicles paying for a toll route, or a 3D printer requesting a cartridge top-up from a liquid-materials supplier.

choice of invoicing currencies. In terms of cross-border retail payments, a direct model retail CBDC issued as a liability of the central bank could be used to bring down global remittance costs and improve the cost of invoicing vis-à-vis terms of trade. For a trading bloc with strong export-oriented economies such as Germany, this fact is a matter of geo-strategic importance – especially when considering the fact that small to medium-sized enterprises (SMEs) make up roughly 99.3 per cent of EU total company structure (IfM 2022). Currently, cross-border payments are lengthy and costly. Using distributed ledgers as opposed to the legacy system would remove the need for cumbersome intermediaries while eliminating the requirement for direct money transfers. According to the World Bank (2022), 6.3 per cent of the transaction volume of global cross-border remittance payments is consumed by fees. This amounts to billions in potential cost savings should a programmable invoicing currency become popular internationally.

As a digitally native form of money, a digital euro could also expand the number of online retail-trade transactions where programmability gives *de facto* on/off ramps to the already established world of e-commerce but also the growing Web3 ecosystem and decentralised finance (DeFi). The composability of DeFi, coupled with its inherently borderless nature and 24/7 markets, provides fertile ground for a safe and regulated payment rail like a programmable CBDC to bring with it improved consumer protection and better know-your-customer (KYC) onboarding via linking a programmable CBDC to decentralised identifiers (DIDs). This would also make the digital euro compatible at the level of code with attestation features of the eIDAS 2.0 Regulation – which, at its core, is a self-sovereign identity (SSI)-based system.

One can foresee a case in which a producer plans to ship a product priced in euro to a buyer in another jurisdiction where the transaction will be paid for in local currency. Instead of the producer needing to take out an FX (foreign-exchange) swap to hedge against the other currency, an FX conversion layer that is settled in programmable money can be automated into the transaction logic.⁸ Programmability therefore also

⁸ Currency swaps are usually an optional part of the transaction to hedge against

increases the efficiency gains extractable through increased automation. This is the case not only for cross-border retail payments but also for more complex business processes such as loans, interest payments, financing arrangements and leasing. In a world in which automation is leaning out the frictions of international supply networks, the ability to retain first-mover advantage (which the euro has by virtue of its percentage share of international reserves) is the difference between staying power and obsolescence.

A programmable digital euro could also be leveraged in other specific cases within broader capital markets, such as the automatic exchange of currency pairs in foreign-exchange trading. It could also improve the information inefficiencies of bi-directional clearing. In traditional payment systems, bi-directional clearing is possible but time lag and disruptions often create incomplete reference data within the clearing process and need to be manually corrected (Deutsche Bundesbank 2020). As CBDCs by design do not have the inherent volatility of cryptoasset tokens, they can be used as a stable settlement pass-through by virtue of their closed data cycles. A programmable digital euro would automate both message transmission and value transfer “under one roof”. Another potential field of utility lies in consolidating margins between parties in the settlement of derivatives contracts.

Invoicing, trade finance and clearing are potential use-cases which a programmable retail CBDC could aim to improve while amplifying the international role of the euro in the process. Wholesale CBDCs, on the other hand, would be closed-loop variants with restricted access to regulated financial institutions for use in the settlement of their reserves, reduction in default risk, improved cross-border payments between financial institutions, and the possibility of improving securities settlement with so-called delivery vs. payment (DvP) gains (World Economic Forum 2020: 6). Wholesale-CBDC research and pilots are already under way both in the euro area and internationally. Project Jura – conducted

exchange-rate risk – and in the case of an FX conversion layer, atomic settlement coupled with automation drives down exchange-rate risk by allowing for automatic delivery vs. payment of goods, and T+0 settlement of the currency swap.

between the BIS (Bank for International Settlements) Innovation Hub, Banque du France and Swiss National Bank – successfully tested the direct transfer of the wholesale-euro and Swiss-franc CBDC running on the same distributed ledger technology (DLT) platform, which was operated by a third party (BIS Innovation Hub et al. 2021). Project Stella, concluded between the ECB and Bank of Japan (2019), was another joint-research project that successfully tested synchronised cross-border payments.

Yet, multi-CBDC arrangements are no panacea, and a distinction needs to be drawn between retail-based mCBDC and wholesale-based mCBDC arrangements. Higher-volume, low-value transactions could be served by a retail-mCBDC arrangement whereby a programmable digital euro exists as an invoicing currency in a currency corridor between, for example, a digital dollar and a digital yuan. Wholesale-mCBDC arrangements, meanwhile, could facilitate real-time clearing for high-value transactions like securities or foreign-exchange trading between financial institutions.

Improving the global reserve status of a currency through a CBDC could instead be more challenging. But, as acknowledged by a recent work of the International Monetary Fund (IMF), the establishment of electronic trading platforms has reduced transaction costs, easing the implementation of a portfolio-diversification strategy driven by market forces (Arslanalp et al. 2022). Moreover, recent research stresses that a currency's role as an invoicing or payment unit acts as a complement to its role as a store of value, resulting in positive feedback loops (ECB 2021: 61; Gopinath and Stein 2021). In an economic bulletin published in 2021, the ECB applied a three-country model to assess the impact of a CBDC for international trade purposes (ECB 2021: 60; Eichenbaum et al. 2021). The Bank applied varying pricing strategies, cash-in-advance constraints and the introduction of a CBDC for invoicing.⁹ The findings show a decrease in cross-border frictions and cost reductions due to the

⁹ Agents use domestic cash for domestic goods in all three countries while internationally traded goods are settled with short-term debt securities, implying a saving function for securities to pay exporters.

immediately liquid nature of the CBDC. Although there is clear evidence of efficiency gains, because only international vehicle currencies were considered the assessment does not show the full picture of what smart contract functionality could do. Furthermore, it has been suggested that a CBDC could facilitate the digitalisation of information exchanges in payments through e-invoices, e-receipts, e-identity and e-signature – potentially connecting a CBDC system with higher-value services provided at a lower cost.

The potential establishment of new currency corridors may, however, give rise to “digital currency areas” (DCAs) (Brunnermeier et al. 2019). Fragmentation risks loom in the establishment of complex DCAs. This is true at the level of both regulatory standards and data interoperability, which may affect how such arrangements could function in practice. To avoid the creation of “digital islands”, it remains a task at the policy level to work towards a common blueprint for fungibility between different CBDC arrangements, their related back-end infrastructure and the composition of their front-end UI/X including wallets and offline use. Ultimately, the internationalisation of a CBDC is directly linked to the establishment of interoperable systems – systems that can “talk” to each other through shared protocols and standards. While still in the early stages of CBDC development, countries are already proposing and influencing widespread preparations for the introduction of a globally interoperable system for CBDCs.

In the battleground of global digital competition, countries seek first-mover advantage to set standards and foster a model of development. As suggested by a growing body of literature, this assumption could also be relevant in the event that a national CBDC is launched, helping to explain why countries seem to be racing over the launch of public digital currencies (Isaacson et al. 2022; Minesso Ferrari et al. 2020). There is then the need for some degree of cooperation to design interoperability between CBDC systems. While a bilateral solution between two countries could work, it is unlikely to be scalable or to be applied globally. What is instead needed is a multilateral or regional arrangement that enables payments to be made in a frictionless form. Being aware of this, Beijing is active in trying to build international cooperation around its CBDC project, seeking to exploit its first-mover advantage. The People’s

Bank of China (PBoC) has already proposed a set of global rules to enable basic interoperability between CBDCs issued by different jurisdictions. Moreover, it has joined the m-CBDC Bridge initiative – a CBDC cross-border payment project – together with the BIS Innovation Lab, the Bank of Thailand, the Hong Kong Monetary Authority and the Central Bank of the United Arab Emirates.

Following a similar objective and aiming to counterbalance China’s dynamism, the document “Public Policy Principles for Retail Central Bank Digital Currencies (CBDCs)” endorsed by G7 members under the UK Presidency in 2021 has been the first attempt by Western countries to globally influence the development of CBDCs. Moreover, the ECB and other European central banks have launched and taken part in some initiatives and joint studies with other countries’ central banks with the aim of influencing the global race for multi-arrangement CBDC systems (BIS 2020).

Table 3.3 | Existing CBDCs cross-border experiments involving EU central banks

Project	Members
Project Jura	BIS Innovation Hub, Swiss National Bank, Banque de France
Project Stella	Bank of France, Monetary Authority of Singapore, J.P. Morgan
Experiment “Liquidity Management in a Multi-Currency Corridor Network”	European Central Bank, Bank of Japan
Experiment “Connecting digital islands: CBDCs”	SWIFT, Capgemini, Banque de France, Deutsche Bundesbank, HSBC, Intesa Sanpaolo, NatWest, SMBC, Standard Chartered, UBS and Wells Fargo
Project Venus	European Investment Bank, Banque Centrale du Luxembourg, Goldman Sachs Bank Europe, Santander, Société Générale

Source: Authors’ elaboration.

3. DIGITAL-CURRENCY COMPETITION AND NORM ENTREPRENEURIALISM

The development of a digital euro is not just about the currency but also about technological leadership and standards that could, in turn, influence other countries’ national CBDC projects. Both the European Union and China are digital norm entrepreneurs, which extends to the domain of programmability and smart contracts. For example, this is evidenced most clearly in the differing approaches to enterprise-level blockchain solutions – including those for public-private partnerships

such as the European Blockchain Services Infrastructure (EBSI) and the Blockchain-based Service Network (BSN). Also, comparing Europe's digital-euro investigation phase with Beijing's market-ready e-CNY (CNY being the IOS code for the renminbi) reveals vastly different approaches. For example, the e-CNY is already a programmable CBDC with the ability to silo store-of-value functionality, as witnessed by the PBoC airdropping tokens to lockdown-stricken regions during the Covid-19 pandemic. The caveat here was that consumers had to spend the digital currency in shops and online retailers, and couldn't save it (Reuters 2022). Restricting the functionality of digital public money is currently not a policy tool the EU possesses, and it remains to be seen whether Brussels or Frankfurt would condone a similar move. The more immediate challenge to being an international kingmaker for the digital euro may be found in Africa. It may also be determined by the extent to which the European system agrees to making its CBDC available to foreign nationals and for what purpose. The following example is illustrative of the scope and scale of both DCA competition and the challenges as exacerbated by regulatory fragmentation.

The discrepancy between Africans who own a mobile phone and those with a bank account is telling. For example, in 2011 in Kenya, 87 per cent of the population had a mobile phone while only 21 per cent held a bank account (Meya 2015). In 2015, the continent boasted roughly 55 per cent of the global mobile-banking population (around 165 million users) (Meya 2015). By 2021, Huawei had roughly 15 per cent of the total mobile-phone market share in Africa (Statista 2022). And recently, Beijing pledged to waive 23 matured non-interest-bearing loans to 17 African nations (Abara Benson 2022). In line with recent conclusions drawn by the Hoover Institute,¹⁰ Africa remains fertile ground for the internationalisation of the renminbi by tying the e-CNY to both the largest mobile-banking market in the world and to a concentration of Belt and Road Initiative (BRI) trading partners via terms of trade. It is precisely this combination of mobile-focused users and *literal* bridge building that

¹⁰The argument that China will eventually use the digital yuan to promote the internationalisation of Chinese public money.

China is currently engaged in which could serve as a credible challenge to the future internationalisation of the euro should it go digital and be programmable. Europe will need to pair its digital ambitions with a currency that can compete at scale with digital money that is tied to regimes which do not exactly share its liberal, democratic values. One can therefore view the EU-led “Global Gateway” as a democracy-promoting alternative to the BRI. If the EU ever decided to implement the digital euro in a similar fashion, this could have profound consequences for its internationalisation.

Should the domestic population see the e-CNY as a successful settlement/invoicing currency, the demand for its use in lower-value retail payments may follow.¹¹ This is amplified by the fact that the African-led CBDC projects already under way have, to date, proven lacklustre. In 2021, the Central Bank of Nigeria released its CBDC, the eNaira, with great initial fanfare – following by, essentially, nothing. Citizens simply aren’t using it (Ogunjuyigbe 2022). This may be attributable to a lack of knowledge or perhaps a distrust in government (Why hold any form of naira when one can use existing mobile payments or US dollars?). But in the future, these citizens may very well find themselves opting for an e-CNY tied to various online promotions, rebates and other features which amplify China’s digital currency umbrella at the expense of other international reserve currencies. Yet, the EU could leverage its international standing to provide a more credible, safer and reliable alternative to Beijing’s e-CNY. The EU’s experience as “global regulator” in the digital domain could provide precious lessons on how to shape and influence the development of a CBDC globally. For example, privacy protection is perceived as a critical issue in a CBDC system. This concern is amplified in the case of cross-border transactions, as a foreign country might gather, access and accumulate personal transactional data. The reputation and credibility of the EU’s regulatory framework on data governance and protection might incentivise foreign economic players to use a digital euro – while this same concern might undermine the attractiveness of other country’s digital currencies.

¹¹ Provided they are in Beijing’s interest.

CONCLUSION

Robert Triffin argued that international reserve currencies face a dilemma between confidence and liquidity (Triffin 1960 and 1964; Schwartz 2014). In the aftermath of Bretton Woods, with Keynes' Bancor system relegated to the dustbin of history, the world faced a period of prosperity which was supported by confidence that the greenback-gold peg would maintain a sufficiently liquid global economy. The suspension of the standard and untethered exchange rates led to a period in which ultimately, once again, tensions between confidence and liquidity needed an urgent solution. The legacy of the Nixon shock (US President Richard Nixon's decision to abandon the gold-exchange standard in response to the economic pressures induced by the Vietnam War)¹² is that it essentially led to an induced, artificial demand for US Treasuries that continued to support the role of the dollar as a global risk-free asset and an indispensable reserve. As hyper-financialisation took hold, riding on the coat tails of an increasingly open and globalised economy, the dollar remained at the vanguard. Cracks in the armour began to appear in 2008, when monetary policy tested the upper limits of the balance of power among debtors and creditors – and, as such, distributions in the costs and benefits of growth (Schwartz 2014; Keynes 1933; Kindleberger 1981; Strange 1971). This period of instability shook the eurozone to its core and prompted the European Central Bank to flirt with monetary policy *à la* heavy artillery. The Covid-19 pandemic and, finally, the weaponisation of international reserves on the eve of Russia's Ukraine invasion in February 2022 represent a watershed moment not only for the dollar but also for the euro.

Broiling geopolitical tensions are taking place in lockstep with a period of unprecedented technological transformation that is reshaping what a “shared social purpose” around money should mean. Multipolarity coupled with innovation is likely to create a world in which currencies and payment systems could become tools of foreign policy, driving the fragmentation of the international monetary system. States not wishing to be under the economic thumb of Washing-

¹² See Chapter 1 in this volume.

ton have alternatives, perhaps for the first time in several generations. This is partly due to the capacity of innovation to nudge currency-regime change. In this situation, the EU is rightly concerned with pursuing strategic autonomy by boosting the international profile of the euro. The world of 2022 is not that of 1991, and where an appetite for internationalisation may not have existed before it is necessitated by the pace of innovation today.

Despite its being an extremely difficult exercise, the EU believes that the potential establishment of a digital euro could help in reducing the Union's dependency on foreign payment systems while also pushing the international use of the euro. However, long-term political goals must be supported in substance by underscoring that it is not merely confidence and liquidity that are the trade-offs at play in today's gambit. Instead, a new trilemma is materialising in real time – involving confidence, liquidity and innovation capacity. If properly designed, a digital euro could aspire to establish an attractive, alternative payment system which could help in fostering greater European sovereignty domestically. By contrast, its potential impact on the euro's internationalisation appears to be wishful thinking, if a digital euro applies negative interest rates and restrictions on deposits and transactions in digital euro. Ignoring the innovation capacity of programmability at the level of the money itself would also be a giant missed opportunity in the future use of a digital euro for the burgeoning machine economy. Capacity underutilisation is a headwind that should not be easily discounted.

Much will be also dependent on the EU's capacity to leverage its international standing in order to foster common standards and interoperability among CBDCs. Nevertheless, the Union should not consider a digital euro as a panacea to achieve its geostrategic goals. A digital euro should, instead, be considered as an additional piece in a broader puzzle of reforms – from a common foreign policy to a full banking union – which the EU will need to implement if it aims to ultimately strengthen its global role.

REFERENCES

Abara Benson, Emmanuel (2022), "China Pledges to Forgive 23 Matured Interest-free Loans for 17 African Countries", in *Business Insider Africa*, 23 August, <https://africa.businessinsider.com/532wy0g>

- Arslanalp Serkan, Barry J. Eichengreen and Chima Simpson-Bell (2022), “The Stealth Erosion of Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies”, in *IMF Working Papers*, No. 22/58, <https://www.imf.org/en/Publications/WP/Issues/2022/03/24/The-Stealth-Erosion-of-Dollar-Dominance-Active-Diversifiers-and-the-Rise-of-Nontraditional-515150>
- Beckmann, Joscha et al. (2020), “The International Role of the Euro: State of Play and Economic Significance”, in Joscha Beckmann et al., *International Role of the Euro: A Monetary Policy View*, Luxembourg, European Parliament, p. 5-24, [https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU\(2020\)652705](https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2020)652705)
- BIS-Bank for International Settlements (2020), *Central Bank Digital Currencies: Foundational Principles and Core Features*, <https://www.bis.org/publ/othp33.htm>
- BIS Innovation Hub, Bank of France and Swiss National Bank (2021), *Project Jura. Cross-border Settlement Using Wholesale CBDC*, December, <https://www.bis.org/publ/othp44.htm>
- Brunnermeier, Markus K., Harold James and Jean-Pierre Landau (2019), “The Digitalization of Money”, in *NBER Working Papers*, No. 26300, <https://www.nber.org/papers/w26300>
- Chen, Hongyi, Wensheng Peng and Chang Shu (2009), “The Potential of the Renminbi as an International Currency”, in *BIS Asian Office Research Papers*, February, <https://www.bis.org/repofficepubl/arpresearch200903.06.htm>
- Coeuré, Benoît (2019), “Should the ECB Care about the Euro’s Global Role?”, in *VoxEU*, 25 February, <https://cepr.org/node/361298>
- Cohen, Benjamin J. (1998), *The Geography of Money*, Ithaca/London, Cornell University Press
- Cohen, Benjamin J. (2009), “Dollar Dominance, Euro Aspirations: Recipe for Discord?”, in *Elcano Working Papers*, No. 29/2009, <https://www.realinstitutoelcano.org/en/work-document/dollar-dominance-euro-aspirations-recipe-for-discord-wp>
- Cohen, Benjamin J. (2015), *Currency Power. Understanding Monetary Rivalry*, Princeton, Princeton University Press
- Damen, Mario (2022), “EU Strategic Autonomy 2013-2023. From Con-

- cept to Capacity”, in *EPRS Briefings*, July, [https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI\(2022\)733589](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)733589)
- Deutsche Bundesbank (2020), *Money in Programmable Applications. Cross-sector Perspectives from the German Economy*, 21 December, <https://www.bundesbank.de/resource/blob/855148/ebaab-681009124d4331e8e327cfaf97c/mL/2020-12-21-programmierbare-zahlung-anlage-data.pdf>
- Dinga, Chris (2021), *European Payments Initiative Could Fail Due to Its Lack of a Clear Plan*, Electronic Payments International, <https://www.electronicpaymentsinternational.com/comments/european-payments-initiative-could-fail-due-lack-of-plan>
- ECB-European Central Bank (1999), *Monthly Bulletin, August 1999*, <http://www.ecb.europa.eu/pub/pdf/mobu/mb199908en.pdf>
- ECB (2021), *The International Role of the Euro*, June, <https://www.ecb.europa.eu/pub/ire/html/ecb.ire202106~a058f84c61.en.html>
- ECB (2022), *The International Role of the Euro*, June, <https://www.ecb.europa.eu/pub/ire/html/ecb.ire202206~6f3ddeab26.en.html>
- ECB and Bank of Japan (2019), *Synchronised Cross-Border Payments*, June, <https://www.ecb.europa.eu/paym/intro/publications/pdf/ecb.miptopical190604.en.pdf>
- Eichenbaum, Martin, Benjamin K. Johannsen and Sergio Rebelo (2021), “Monetary Policy and the Predictability of Nominal Exchange Rates”, in *Review of Economic Studies*, Vol. 88, No. 1, p. 192-228, DOI 10.1093/restud/rdaa024
- European Commission (2018), *Towards a Stronger International Role of the Euro*, COM/2018/796, 5 December, <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52018DC0796>
- European Commission (2019), *Antitrust: Commission Opens Investigation into Possible Anti-competitive Conduct of Amazon*, 17 July, https://ec.europa.eu/commission/presscorner/detail/en/ip_19_4291
- European Commission (2020), *A Retail Payments Strategy for the EU*, COM/2020/592, 24 September, <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52020DC0592>

- Eurostat (2022), *Extra-EU Trade by Invoicing Currency*,
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Extra-EU_trade_by_invoicing_currency
- Frankel, Jeffrey A. (2008), "The Effect of Monetary Policy on Real Commodity Prices", in John Y. Campbell, ed., *Asset Prices and Monetary Policy*, Chicago/London, University of Chicago Press, p. 291-333, <http://www.nber.org/chapters/c5374>
- Gopinath, Gita and Jeremy C. Stein (2021), "Banking, Trade, and the Making of a Dominant Currency", in *The Quarterly Journal of Economics*, Vol. 136, No. 2, p. 783-830, DOI 10.1093/qje/qjaa036
- He Chusu, Alistair Milne and Markos Zachariadis (2022), "Central Bank Digital Currencies and International Payments", in *SWIFT Institute Working Papers*, No. 2020-002, <https://swiftinstitute.org/?p=4142>
- IfM-Institut für Mittelstandsforschung (2022), "In the Pandemic Year 2020, SMEs Assert Their Economic Importance", in *IfM Press Releases*, 25 July, <https://www.ifm-bonn.org/en/news/meldung/in-the-pandemic-year-2020-smes-assert-their-economic-importance>
- Isaacson Ken, Jesse Leigh Maniff and Paul Wong (2022), "An Examination of First-Mover Advantage for a CBDC", in *FEDS Notes*, 25 November, <https://doi.org/10.17016/2380-7172.3230>
- Keynes, John Maynard (1933), "National Self-sufficiency", in *The Yale Review*, Vol. 22, No. 4, p. 755-769
- Kindleberger, Charles P. (1970), *Power and Money*, London/Basingstoke, Palgrave Macmillan
- Kindleberger, Charles P. (1981), *International Money. A Collection of Essays*, London, George Allen & Unwin
- Kirshner, Jonathan (1995), *Currency and Coercion. The Political Economy of International Monetary Power*, Princeton University Press
- Kulk, Erwin and Petra Plompen (2021), "Demystifying Programmable Money: How the Next Generation of Payment Solutions Can Be Built with Existing Infrastructure", in *Journal of Payments Strategy & Systems*, Vol. 15, No. 4, p. 445-454
- Li, Daokui and Liu Linling (2008), "RMB Internationalization: an Empirical and Policy Analysis", in *Journal of Financial Research*, Vol. 11, p. 1-16

- Liao, Steven and Daniel McDowell (2016), “No Reservations: International Order and Demand for the Renminbi as a Reserve Currency”, in *International Studies Quarterly*, Vol. 60, No. 2, p. 272-293, <https://doi.org/10.1093/isq/sqv020>
- Liu, Cecily and Wang Mingjie (2018), “New Ways to Pay Make Life Easier on the Road”, in *China Daily*, 19 October, <https://www.chinadaily.com.cn/a/201810/19/WS5bc93a59a310eff303283525.html>
- Macchiarelli, Corrado (2020), “The Euro and the Geopolitics of Post-COVID-19”, in Joscha Beckmann et al., *International Role of the Euro: A Monetary Policy View*, Luxembourg, European Parliament, p. 25-46, [https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU\(2020\)652705](https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2020)652705)
- Meya, Jordi (2015), “Africa, the Leader in Mobile Banking”, in *Nae*, 18 June, <https://nae.global/en/africa-the-leader-in-mobile-banking>
- Minesso Ferrari, Massimo, Arnaud Mehl and Livio Stracca (2020), “Central Bank Digital Currency in an Open Economy”, in *ECB Working Papers*, No. 2488, November, <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2488~fed33ca65.en.pdf>
- Ogunjuyigbe, Oluwatosin (2022), “Why Does the e-Naira Have So Little Adoption?”, in *Ventures Africa*, 30 March, <https://venturesafrica.com/?p=287304>
- Panetta, Fabio (2020), *A Digital Euro for the Digital Era*, Introductory statement at the ECON Committee of the European Parliament, Frankfurt am Main, 12 October, <https://www.bis.org/review/r201013a.htm>
- Panetta, Fabio (2021), *Cash Still King in Times of COVID-19*, Keynote speech at the Deutsche Bundesbank’s 5th International Cash Conference, Frankfurt am Main, 15 June, <https://www.bis.org/review/r210616a.htm>
- Panetta, Fabio (2022), *Public Money for the Digital Era: Towards a Digital Euro*, Keynote speech at the National College of Ireland, Dublin, 16 May, <https://www.bis.org/review/r220517a.htm>
- Passacantando, Franco (2021), “Could a Digital Currency Strengthen the Euro?”, in *SEP LUISS Policy Briefs*, No. 9/2021, 5 May, <https://sep.luiss.it/?p=1131>

- Peel, Michael (2018), "Swift to Comply with US Sanctions on Iran in Blow to EU", in *Financial Times*, 5 November, <https://www.ft.com/content/8f16f8aa-e104-11e8-8e70-5e22a430c1ad>
- People's Bank of China (2021), *Progress of Research & Development of E-CNY in China*, <http://www.pbc.gov.cn/en/3688110/3688172/4157443/4293696/2021071614584691871.pdf>
- PYMNTS and Stripe (2022), *Benchmarking the World's Digital Transformation*, https://go.stripe.global/rs/072-MDK-283/images/Benchmarking_The_World_Digital_Transformation.pdf?mkt_tok=MDcyLU1ESy0yODMAAAGEVnkOmL6V9mUGA1YeLCx-qKy-g2wHE9zgyAPW4vanWCGws8eaNDMbhY_f5UfSsPw4IMzXy-HDqHG6FHXcjknASphLKYptfOnYQ076d cgYDUOw459w
- Reuters (2022), "China Uses Digital Yuan to Stimulate Virus-hit Consumption", in *Reuters*, 30 May, <https://www.reuters.com/markets/currencies/china-uses-digital-yuan-stimulate-virus-hit-consumption-2022-05-30>
- Schwartz, Herman Mark (2014), "Global Imbalances and the International Monetary System", in Thomas Oatley and W. Kindred Winecoff, eds, *Handbook of the International Political Economy of Monetary Relations*, Cheltenham, Edward Elgar, p. 69-88
- Statista (2022), *Market Share of Mobile Device Vendors in Africa from September 2019 to September 2021*, 1 February, <https://www.statista.com/statistics/1167088>
- Strange, Susan (1971), "The Politics of International Currencies", in *World Politics*, Vol. 23, No. 2, p. 215-231, DOI 10.2307/2009676
- Strange, Susan (1988), *States and Markets. An Introduction to International Political Economy*, London, Pinter
- Triffin, Robert (1960), *Gold and the Dollar Crisis. The Future of Convertibility*, New Haven, Yale University Press
- Triffin, Robert (1964), *The Evolution of the International Monetary System. Historical Reappraisal and Future Perspectives*, Princeton, Princeton University Press
- US Department of the Treasury (2021), *The Treasury 2021 Sanctions Review*, October, <https://home.treasury.gov/system/files/136/Treasury-2021-sanctions-review.pdf>

- Wilkinson, Charu et al. (2022), *Study Supporting the ex-post Evaluation of the European Fund for Strategic Investments, following Regulation 2017/2396 (EFSI 2.0)*, Brussels, European Commission, October, https://commission.europa.eu/system/files/2022-12/Ex%20post%20evaluation_EFSI_EIAH_EIPP%20Final%20report.pdf
- Williamson, John (2012), *Currencies of Power and the Power of Currencies: The Geo-Politics of Currencies, Reserves and the Global Financial System*, Paper presented at the conference “Currencies of Power and the Power of Currencies”, Bahrain, 29 September-2 October, <https://www.piie.com/commentary/speeches-papers/dollar-and-us-power>
- World Bank (2022), *Remittance Prices Worldwide Quarterly*, No. 43, September, https://remittanceprices.worldbank.org/sites/default/files/rpw_main_report_and_annex_q322_final.pdf
- World Economic Forum (2020), *Central Bank Digital Currency Policy-Maker Toolkit*, January, <https://www.weforum.org/whitepapers/central-bank-digital-currency-policy-maker-toolkit>
- Zoppè, Alice and Saverio Lenzi (2020), “Credit Rating for Euro Area Member States and European Supranational Institutions”, in *European Parliament Briefings*, May, [https://www.europarl.europa.eu/thinktank/en/document/IPOL_BRI\(2020\)651351](https://www.europarl.europa.eu/thinktank/en/document/IPOL_BRI(2020)651351)

4.

Different Futures for a Digitalised Global Financial System: How Can Europe Deal with Politicisation and Weaponisation?

Maaïke Okano-Heijmans and Brigitte Dekker

In the last decade, the digital transformation of the global financial system has profoundly shaken the established banking order, especially in the European Union. Traditionally, the EU boasts one of the most advanced and tightly regulated financial systems wherein established banks have been the sole provider of most financial services. The depth, access and efficiency of the EU's financial institutions and markets made the bloc a global leader. This is evidenced by the fact that more than 92 per cent of EU citizens had access to a bank account in 2019 – the highest financial-inclusion rate worldwide (Baltrusaitis 2020; Demirgüç-Kunt et al. 2017; Statista 2021).

Traditional banks remain dominant in the EU's financial sector, but competition with financial-technology (fintech) companies is intensifying. This competition has emerged due to new technological possibilities that created momentum for technologically enhanced, user-friendly, efficient and affordable applications. Simultaneously, foreign Big Tech players such as Apple, Google and Alibaba are encapsulating numerous fintech applications in their traditional products, easily reaching their established extensive userbase (for example: Bradsharth 2022; Bohn 2022; Lu 2018). Moreover, decentralised-finance (DeFi) technology innovators are building a radically new, global and open-source infrastructure as an alternative to the existing financial system.¹

¹ Instead of a third party, DeFi makes use of a distributed ledger such as blockchain

The proliferation of new financial players – Big Tech, fintech and DeFi innovators – is triggering regulatory action of governments worldwide.² The offering of financial services by digital platforms is challenging for regulatory bodies as their oversight over these platforms is limited: new players do not always have to adhere to the strict norms of the financial sector that were designed for the traditional players – namely, banks.

These changes in the traditional financial system have vast consequences for the geopolitics of finance. Specifically, the question arises what the digital transformation means for the potential politicisation and weaponisation of (digital) finance by governments. Financial power and wealth have long been instruments of geopolitics and foreign-power projection – in particular, the United States has benefited greatly from the US dollar being the world’s reserve currency. Another example are the sanctions on Russia’s banks to freeze the country’s foreign-currency reserves, which can be considered a weaponisation of finance amid growing geopolitical tensions (Pop et al. 2022). As digitalisation progresses, new financial tools are (or may in the future be) included in governments’ toolkits of hybrid warfare – which may also include cyber-warfare, propaganda through digital means and economic coercion.

Set against this backdrop, how should European governments prepare for a more digitalised future of the financial system, in which the challenges (and with a certain willingness, opportunities) of politicisation and weaponisation are also evolving? While the EU and its member states have set out to reinforce their open strategic autonomy in the financial field as well as in the digital domain (European Commission 2021a, 2021b; Council of the EU 2022a), this challenge at the intersection of finance and geopolitics remains largely unaddressed.

This Chapter discusses the ways in which digitalisation reshapes the global financial system and analyses the consequences for the potential

is controlled by a distributed consensus protocol to retrieve, verify, settle and secure transactions and govern the network.

²Next to the proliferation of new players, (international) finance is undergoing profound change due to the introduction of new products or instruments such as cryptocurrencies and Central Bank Digital Currencies (CBDCs) that are discussed in this volume in the chapters 4 and 5.

politicisation and weaponisation of that system by governments. In doing so, it considers two key developments in digitalisation that constitute sources of uncertainty – namely, concentration versus diversification of players in the financial system, and regulatory harmonisation versus the fragmentation of digital finance. Aiming to contribute to improved policy-making in this field, the Chapter then considers the opportunities and challenges for the EU and its member states that accompany four hypothetical future scenarios deriving from these uncertainties – each of which comes with specific consequences for the potential weaponisation of finance.

1. UNCERTAINTIES AND DIFFERENT FUTURES

The digitalisation of the financial system has spurred two major trends: the proliferation of financial players and new initiatives to regulate the financial system. The directions in which these trends are evolving make for uncertainties that will define the future of the financial system in the coming decades. This section discusses the uncertainties that inform the four scenarios in our study.

1.1 Concentration versus diversification: The rise of new players in digital finance

The adoption of digital financial technologies (fintech) has accelerated enormously in recent years – in particular, during the Covid-19 pandemic. In the EU, competition between traditional banks and fintech companies has grown, while Big Techs are also increasingly developing financial products and services. Notable examples of such “Big Tech in fintech” developments are Apple Pay and Alipay. In response to this concentration, global efforts have taken off to build a radical new alternative and open-source infrastructure for decentralised financial services and products (DeFi).

The rise of, and competition between, this diversity of players in digital finance – namely, fintechs, Big Tech in fintech and DeFi players – comes with vast consequences. Consumers benefit from more personalised, simplified and faster digital experiences offered by fintechs. But data protection, privacy and financial stability may be compromised, as governance structures have not caught up with the new realities. Access

to financial data will be used by non-democratic governments in particular for the preventive monitoring of criminals or protests based on financial data. Furthermore, financial instruments can be easily used as a “power tool” – for example, by blocking someone’s bank accounts or preventing a company from making transactions in a foreign country.

1.2 Harmonisation versus fragmentation: Regulatory pathways

In response to the trend of newly emerging actors, regulators in the large power blocks – China, the US and the EU – are coming up with regulatory responses. Recent examples include the EU’s Digital Markets Act which entered into force in November 2022. With this, the EU seeks to reign in powerful digital gatekeepers including those in the financial sector. This regulation is an important step to implementing the EU’s so-called human-centred digital approach, which has a strong focus on the efficiency, speed, costs and global reach of regulation in order to create an optimal customer experience without compromising on privacy.

From the time of the introduction of the Single Digital Markets Strategy for Europe in 2015, the EU also started to act on rising concerns over the increased reliance of citizens and businesses on fintech and the growing complexity of the financial sector that accompanied the entry onto the market of many non-traditional financial players. This situation had raised potential risks for consumers, firms and the financial stability of economies – including, respectively, lack of consumer understanding, data handling and concentration. Seeking to mitigate these risks, the European Banking Authority worked with the European Commission to establish standards for fintech in Europe – resulting in the publication of the EU Digital Finance Package in September 2020 (European Commission 2020).

In the context of international finance, the Russian invasion in Ukraine and the subsequent financial sanctions on Moscow were a gentle reminder of the global economy’s dependence on the US dollar. In particular the international – harmonised – Society for Worldwide Interbank Financial Telecommunication (SWIFT) has been under close scrutiny concerning the politicisation and weaponisation of finance (Bilotta 2022) – especially as this globally operating organisation has to comply

with and implement (in this case, unilateral) US sanctions.

To date, nations' efforts to reduce their dependency on the dollar have had limited success. For example, China has attempted to globalise its national currency and is now working on the internationalisation of its central-bank digital currency, the digital yuan. The Chinese government is speeding up its efforts amid rising geopolitical tensions, and has successfully participated in the multiple CBDC (Central Bank Digital Currency) Bridge test developed by the Bank for International Settlements (Lee and Shen 2022). The digital yuan could in the future be used for international transactions, bypassing current traditional payment infrastructures such as SWIFT.

The EU has also been stepping up its efforts to internationalise the euro in the light of its broader aim for more strategic autonomy. The Union considers an international role for the euro as a tool to strengthen global European influence – in particular, referring to upholding and promoting EU values as well as a rule-based multilateral international system³ – and as a way of improving the resilience of the international financial system. Additionally, the EU in late 2021 initiated a study on how a digital euro may be designed and distributed, with concluding results expected in October 2023. In sum, both friends and foes of the United States have made efforts to decrease their dependency amid rising geopolitical tensions, leading potentially to a greater fragmentation of regulation in the currently dollar-centric financial system.

Finally, governments will also have to decide whether and how to regulate decentralised finance (DeFi), the technologically driven financial structure that aims to develop a devolved version of the financial sector with the help of radical new infrastructure. The borderless nature of DeFi is challenging for governments, as regulation is currently crafted on the idea of separate financial jurisdictions. Moreover, governments at present only have regulatory power over the centralised touchpoints of decentralised networks, such as fiat-backed stablecoins and exchanges.⁴

³ European Commission website: *The International Role of the Euro*, <https://europa.eu/!XXdNvj>.

⁴ See Dekker et al. (2022: 7). These challenges are particularly great when it comes

Summing up, it is clear that regulators and governments should now adopt a forward-looking stance and see through the current dynamics of a greater diversity of players to the future opportunities that are emerging from such a radically different infrastructure and the resultant decentralised applications and services.

2. MAPPING THE FUTURE OF THE DIGITAL FINANCIAL SYSTEM: FOUR SCENARIOS

These two elements of uncertainty – namely, the rise of new players and new regulation – lead us to consider four hypothetical future scenarios: (i) harmonisation accompanied by concentration; (ii) harmonisation and diversification; (iii) fragmentation paralleled by concentration; and (iv) fragmentation and diversification.

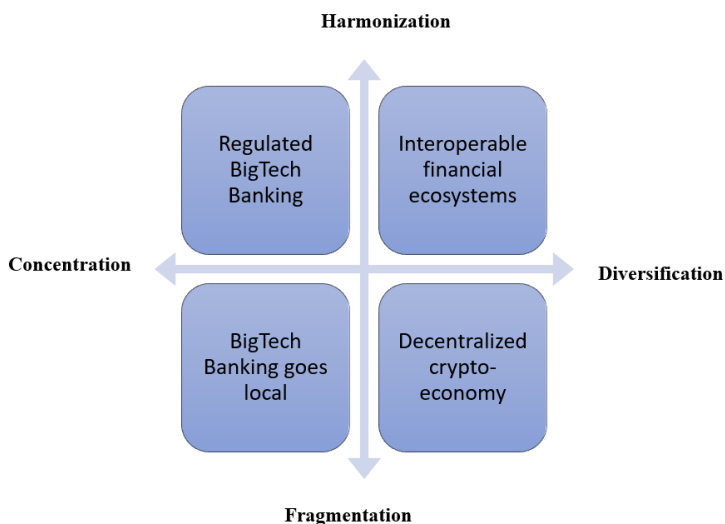
This is due to the clear interest of Big Tech in moving into the financial-services sector, its direct immense impact on its established user-base and the fact that it does not (yet) have to adhere to the strict financial regulation to which banks are subject (Chon 2022).

The respective scenarios are labelled: (1) regulated Big Tech banking; (2) interoperable financial ecosystems; (3) Big Tech banking goes local; and (4) the decentralised crypto-economy.⁵ Figure 3.1, below, illustrates this schematically.

to money laundering, illegal trade and tax evasion. Beyond the financial domain, challenges lie with tackling negative externalities that concern the energy consumption of various cryptocurrencies. Acting on these concerns, the US government recently introduced new reporting requirements for cryptocurrency brokers, while the Chinese government imposed a ban on cryptomining.

⁵These axes and scenarios build on a closed scenario exercise organised by the Clingendael Institute and Freedom Lab on 4 July 2022. In that expert session, the axes were the following: regulation vs. deregulation (focus on EU internal) and centralisation – decentralisation (De-Fi) (looking at developments in the technical sphere). Based on insights gained in that session, the scenarios discussed in this Chapter revolve around harmonisation vs. fragmentation (of the international system) and trends of concentration vs. diversification (focus on the number of players). The authors wish to thank all participants in the scenario exercise for their valuable contribution to the debate then and to the authors' thinking.

Figure 4.1 | The scenarios along the axes of uncertainty



Source: Authors' compilation.

In what follows, we describe each scenario as well as the indicators and tipping points that accompany it. What disruptive events, developments and policies (in the making) suggest that a particular scenario is taking root (indicators) or could trigger a shift from one end of an axis towards the other (tipping points)? An improved understanding of these questions allows us to better assess the geopolitical consequences of each scenario, which will be discussed in the following subsections.

2.1 Harmonisation x concentration | Regulated Big Tech banking

Scenario: In the opening decades of the 2000s, the rise of Big Techs as financial players occurred largely outside of the EU's borders. Countries in the Indo-Pacific and Africa that lacked a traditional financial infrastructure leapfrogged to new financial technologies, often provided by American and Chinese Big Tech such as Facebook, Amazon or Tencent (the parent company of WeChat and WeChat Pay) (Tanaka 2021). Against the backdrop of Sino-American competition, Washing-

ton and Beijing also supported and accelerated the emergence of Big Techs in the financial sector, considering it another frontier in the race for technological supremacy.

The opening of the EU's financial market for foreign Big Tech players came with heavy regulatory demands. Despite the presence of a plethora of smaller fintech players, Big Tech companies rapidly gained ground in this last frontier market. In the course of a few years, the financial infrastructure, services, standards and regulations became dominated by globally operating Big Tech companies and traditional banks. Fintech companies were either outcompeted or acquired by monopolistic financial players.

The world, however, did not sit by idly while Big Tech came to play a large role in the financial sector. While major platforms, such as Amazon and Alibaba, led the development of new financial services and dominated the financial-services market, governments worldwide started to regulate these platforms following the example of the EU. Multilateral and (inter)regional consultations and adequacy decisions ensure that there is a good degree of similarity and interconnection between national regulations, to create a harmonised international system for the concentration of dominant financial players.

Indicators: The regulated Big Tech banking scenario becomes likely if the European Central Bank introduces the digital euro and allows Big Tech to offer more services. Big Tech companies will offer to help EU member states' governments with services after the introduction of the digital currency. Governments will gladly accept this offer as they have neither the capacity nor the knowledge to manage the introduction of the digital euro, thereby perpetuating monopolies instead of promoting fragmentation.

The role of government is crucial in this scenario, as it determines the extent to which the concentration of power – in the hands of banks and Big Techs – may infringe on digital public rights. If governments adopt a human-centred approach to regulation that prioritises the interests of people, data will not be stored centrally and will also be used less frequently to direct, surveil and/or control behaviour. However, if governments decide to take a lenient, business-centred or a strict state-centred regulatory approach to promote international regulatory

harmonisation, the unfolding scenario could be more dystopian from the human-centred European perspective.

Trust in government (now and in the future) is therefore of great importance for this scenario. After all, governments that seek to have more insight into and a firmer grip on society are given more opportunities to do so under these conditions. Reasons for governments to seek after such power are diverse and include maintaining stability, promoting inclusiveness and the ability to impose sanctions. This is an undesirable scenario for citizens who advocate privacy and data sovereignty because government, banks and Big Techs can easily strengthen their access and control over citizens' data.

To avoid a scenario that runs counter to the European principle of putting people and their rights at the centre of the digital transformation (European Commission 2022), investing in European “champions” is of paramount importance. Doing so will ensure that European Big Tech, underpinned to a greater extent by European principles, can offer digital financial services. This will require dozens of tech champions that act from a European, people-oriented perspective to dilute the power of the (mainly American) Big Tech companies that now dominate the European market.

Triggers: Triggers for this scenario, in which Big Tech companies dominate digital financial services and financial regulation, are relatively more harmonised can be summed up as follows:

- Introduction of the digital euro;
- Crisis, which makes it politically possible to implement rapid, radical change;
- The absence of knowledge building among policymakers to allow them to respond to Big Tech's offering of assistance actively, adequately and in a tech-savvy manner.

2.2 Harmonisation x diversification / Interoperable financial ecosystems

Scenario: Despite several attempts by Big Tech companies to take a dominant position within the financial system, traditional banks, fintech companies and actors within the DeFi industry have stood their ground. The financial system is thus composed of a diversity of players, allowing customers to choose their preferred financial-services provider. Tradi-

tional banks are still hailed for their trustworthiness, credibility and stability within the financial system. Fintech companies are competing with the traditional banks based on their advanced and easy customer interfaces, as well as lower transaction costs and the speed of cross-border payments. Players within the DeFi industry are emphasising their unique characteristics – in particular, their independence from central trusted third parties. Lastly, Big Techs have also secured a portion of the market, offering its huge userbase the benefits of integrated payment systems within the existing and widely used social media networks such as WhatsApp.

Governments and regulatory regimes around the world have followed the trend towards the diversification of players closely, and steer towards consensus on a regulatory regime for the broad array of players operating in the financial system. A consortium of like-minded countries pushes a human-centred perspective.

Although the DeFi space is – by default – an unregulated one, it also shares many of the values and principles that are reflected in the human-centred approach – including data sovereignty, open innovation, interoperability and multilateralism. Active collaboration between policymakers and engineers and communities who are developing decentralised, “soft” infrastructure for digital finance creates dialogue on the operability between DeFi and traditional, regulated finance.

Indicators: The scenario wherein governments worldwide strive for the harmonised regulation of established and new financial players becomes more likely if awareness grows of the importance of interoperability and neutrality in the financial system. The ban on Russian banks by SWIFT in 2022 could create such momentum, as it highlights the fact that “neutral” financial systems can be used in geopolitical tensions – which are not exclusive to the Russian–Ukraine dispute. This may amplify concerns among governments worldwide that, one day, they too could be in the middle of a conflict that results in financial exclusion. Instead of developing alternative institutions to regulate domestic financial players, governments decide to act to depoliticise existing financial regulatory systems and push forward alternatives – including CBDCs – to reduce their dollar-dependency. The emergence of multi-stakeholder dialogues on how to effectively regulate new financial players consti-

tutes another indicator of this scenario. The importance attached to such dialogues is another result of the growing awareness of the need for interoperability and neutrality in the financial system.

Triggers: Triggers for this scenario, in which a broad array of financial players operate on a globally regulated market, are:

- Willingness of financial players, engineers and policymakers to actively engage in multi-stakeholder settings to develop a regulatory regime that fits a new financial era;
- Policymakers, supporting agencies and parliamentarians become more aware and tech-savvy.

2.3 Fragmentation x concentration / Big Tech banking goes local

Scenario: The digital transformation of the financial sector initially gave rise to numerous new financial players, including innovative fintechs. Although initially not interested in the financial sector, Big Tech companies entered the financial market as a product distributor using their existing platforms. Big Techs started to partner with local fintech companies and small banks in various regions, offering their platforms and extensive userbases to the new players. This created a win-win situation, allowing Big Techs to adapt to local regulatory and societal circumstances and offering fintech companies the opportunity to use the vast platforms and userbase of Big Tech to reach new customers.

Through these partnerships, users in many regions became more familiar with Big Tech financing. And, as the bigger partner, Big Techs eventually acquired most of the fintechs they had partnered with in an earlier stage. Eventually, the increased speed, usability and proven credibility of the financial services offered by Big Tech initiated a switch by consumers from traditional banks towards the Big Tech services. Traditional banks worldwide then faced a dilemma: to join the tech platforms as their customers were moving towards those companies for financial services, or to follow their own course (McWaters and Galaski 2017).

The geopolitical power blocs took diverging approaches to regulating the digital financial products and services offered by Big Tech companies. Interoperability between the systems is thereby limited, and Big Techs need to localise services in order to adhere to the jurisdictions

in which they operate. At the same time, certain Big Techs chose to not operate globally – focusing on one region instead – due to the difficulty of adhering to multiple, often contradictory, regulatory demands.

The EU's regulatory approach is strongly focused on the protection of the financial data of consumers, not allowing Big Techs to save personal EU data in jurisdictions that do not fall under a General Data Protection Regulation (GDPR) adequacy decision. Since the EU and US have yet to agree on a data-sharing agreement, US-headquartered Big Tech is having a hard time reaping the benefits of the EU market. The US government continues to prioritise business interests, which includes support for Big Tech in financial services. China, on the other hand, is strongly regulating Chinese Big Tech and utilising the financial data to create a more holistic image of its citizens. Moreover, US-headquartered Big Tech is banned from China, and vice versa – creating an even more fragmented yet regionally concentrated situation within the financial market.

Indicators: A key indicator of this scenario comprises the differences between applications of Big Tech companies in various regions. This would be a likely result of a patchwork of regulation, and will lead to decreasing interoperability and usability in a globalised world. Due to strict regulation, users are only able to use limited features of Big Tech applications. The EU is then likely to face a backlash from society, despite its intentions to create a human-centred digital financial sector.

A fall in the number of fintech innovations could be another indicator of this scenario. Hindered by strong regulation, fintechs remain unable to use large quantities of user data upon which to innovate (as Big Tech was able to in earlier years). This leads to an ever more concentrated market for Big Tech.

A third indicator of this scenario would be a complete block on DeFi by most governments, based on the understanding that DeFi would pose a threat to the existing financial system. This would result in the unfolding of a grimmer version of this scenario, wherein DeFi will then probably be used mostly in the criminal circuit.

Triggers: Triggers for this scenario – in which only a few players, primarily Big Techs, dominate the heavily regulatory-fragmented financial market – are:

- The emergence of parallel institutions to regulate domestic and international finance – for example, SWIFT and network initiatives to this same effect;
- Consumers becoming familiar with/trusting Big Tech with their financial data due to the user benefits that it is offering and the interoperability with their existing application usage.

2.4 Fragmentation x diversification / The decentralised crypto-economy

Scenario: With their innovative digital solutions, fintech companies have altered the base of competition in financial services – shifting it from bureaucratic, traditional banking institutions to digital and user-friendly applications. Fintechs are defining the space of innovation within the financial-services sector, but their ability to scale up is constrained by the high costs for consumers of switching between financial-service providers as well as by the ability of Big Tech companies to rapidly offer innovative services resembling those of fintechs (McWaters and Galaski 2017). Having entered financial services to maintain their established user base, these fintechs thus mirror the successes of many financial startups. DeFi has emerged as a decentralised alternative, creating and refining a new financial system run on distributed ledgers such as blockchain. Hence, the number of the players has expanded exponentially. Traditional banks have lost their dominant position, while independent fintech companies, DeFi innovators and Big Tech all now play a role in the financial system.

This proliferation of players within the financial system also gave rise to a proliferation of regulation globally. Instead of creating an interoperable system, geopolitical differences kept governments and regions from reaching a regulatory consensus – resulting in a fragmented scenario with low levels of interoperability between individual systems. Governments prioritise their own short-term geopolitical wins over the long-term efficiency, lower costs and higher speed of the financial system. Three geopolitical blocks differ strongly in focus and regulation. Traditionally a strong regulatory power, the EU seeks to balance openness and opportunities with a human-centred perspective. The US continues its “hands-off” approach, which enables innovation but also malicious

practices within the financial system in the absence of regulation. China adheres to a strict approach of supporting only those financial organisations that liaise with its own government – be they traditional banks, fintech companies or Big Tech financial-service providers.

This scenario foresees the collapse of the international payment messaging system SWIFT, causing a major blow to the financial system. Alternative financial infrastructure are created by Russia and China – respectively, the System for Transfer of Financial Messages (SPFS) and the Cross-Border Interbank Payment System (CIPS) – and have become successful independent systems designed to reduce both countries' dependency on the dominant SWIFT system. The success of these digital financial ecosystems inspired many other governments to build similar alternatives. Financial infrastructure has become a sphere of influence that various big powers can wield in other regions.

Indicators: An indicator for this scenario is a lack of trust in the existing financial regulatory regime that results in the proliferation of new players in digital finance and in regulation. The politicisation of SWIFT by the United States and Europe is readily understood by governments worldwide as proof that neutral, worldwide cooperation is no longer feasible. The lack of trust and countries' sceptical attitude towards joint action will lead to regulatory fragmentation. A further indicator of the unfolding of this scenario is the emergence of new alliances and competition on a global scale, either between Big Tech and governments or between like-minded governments. This is mostly due to the new spheres of influence that have been created by the tensions in the nexus between geopolitics, digitalisation and finance.

Triggers: Triggers of this scenario, wherein fragmentation and diversification are key, are:

- The rise of numerous financial players;
- Geopolitical tensions that reflect on the financial sphere.

3. TOWARDS POLITICISATION AND WEAPONISATION?

The four scenarios above, based on two elements of uncertainty – fragmentation vs harmonisation and concentration vs diversification – describe four distinct futures. All have their specific indicators and triggers, but

some overall conclusions regarding the politicisation and weaponisation of finance can be drawn from these scenarios that help to answer some of the key questions for analysts and policymakers today: What are the implications of the politicisation and weaponisation of the financial system? And: What are the geopolitical implications for Europe?

With regard to the proliferation of players within the financial sector, both concentration and diversification are challenging factors for policymakers. Concentration within the digital financial sector could halt innovation, as Big Tech players and traditional banks do not face competitive incentives from innovative fintech companies. Moreover, if Big Techs become key players in the financial sector, the geopolitical tensions and politics that are already evident in discussions on their presence in Europe today could spill over into the financial domain. After all, the monopolistic behaviour and (initial) refusal of Big Techs to submit to online-content moderation has led to highly politicised attempts by the EU to regulate their presence. Separately, if the trend were towards diversification, policymakers would be challenged to uphold human-centred standards for data management, data privacy and interoperability due to the conflicting interests of a diverse group of financial players.

When it comes to harmonisation and fragmentation of the traditional financial system, trust is the keyword for developing cooperation and alignment at the international level. If trust in the established financial infrastructure decreases, the rise of regulatory fragmentation can cause weaknesses in the short and medium term and be a reason to build parallel institutions in the long term. Such a breakdown of multilateral cooperation will result in a greater politicisation of the financial sector, with various blocs promoting their preferred systems in (smaller) countries – thereby creating bilateral dependencies that can be exploited more easily. This breakdown of multilateralism is already becoming evident from China’s national strategy over the past few decades. The Chinese government has been seeking to expand the global use of the yuan in foreign-trade settlements and simultaneously ramping up efforts to roll out the digital yuan to the broader population at home, thereby broadening its sphere of influence in various regions over the long term (Kharpal 2022).

CONCLUSION

Digitalisation has become a key driver of change in the financial sector in recent years. New digital players have entered the sector – in particular, fintech companies, Big Tech players and DeFi innovators. Together, they challenge the established banking order in Europe. In combination with geopolitical tensions arising from the Russian invasion of Ukraine, as well as broader geopolitical developments in the technology and trade domain between the US and China, calls for greater European strategic autonomy in the financial domain have been growing in the EU.

The four scenarios discussed in this chapter foretell different futures for the EU in the field of digital finance. Key uncertainties are the number and strengths of digital finance players, as well as fragmentation versus the harmonisation of regulation in this domain. Which scenario unfolds will have vast consequences for digital rights and principles that the EU has vowed to uphold. Specifically, the Union's human-centred approach is a key element of its push for financial strategic autonomy. The EU wants to ensure that digital technologies protect people's rights, promote democracy and guarantee that all digital players act responsibly and safely. Thus, the Union has an immediate interest in protecting its established financial sector and its citizens from the monopolistic and irresponsible behaviour of the Big Tech players. The EU is already taking steps in this direction with a study into the possibility of a digital euro, an agreement on European cryptoassets and a pilot regime for market infrastructures based on distributed ledger technology (DLT) such as blockchain (Council of the EU 2022b). With these steps, the Union aims to create a level playing field for European startups and citizens whereby users are fairly compensated for their data, and a more open data economy for corporations.

In order to shape a future for digital finance in which the EU's values and standards are adequately reflected, open dialogue with like-minded partners in multi-stakeholder settings is key. Governments, banks and institutions need to have a certain level of trust in the international financial regulatory framework to maintain and regain digital financial regulatory harmonisation. Without trust, a patchwork of regulatory actions could impede privacy and interoperability.

If human-centred principles and standards are indeed key objectives of EU action, policymakers would do well to carefully consider the consequences of each scenario for its citizens. Avoiding unregulated Big Tech in the financial sector while also allowing for innovation beyond traditional market players emerges as an important element in this strategy. This is a fine line that the EU needs to walk; however, it is necessary if the Union is to both reap the benefits of digital finance and protect consumers from the monopolistic power of Big Tech.

The above scenario experiment challenges and encourages policymakers to think through the new and fast-changing situation. The triggers and indicators discussed here, and the description of more human-centred versus more dystopian scenarios as well as of the potential for politicisation and even weaponisation of the financial system will hopefully guide analysts and policymakers to better understandings and more in-depth discussions of the financial future that is even now in the making.

REFERENCES

- Baltrusaitis, Justinas (2020), “Europe’s Banking Population Surpasses 400 Million as Germany, UK Lead”, in *LearnBonds*, 12 October, <https://learnbonds.com/?p=204104>
- Bilotta, Nicola (2022), “The Weaponisation of Finance and the Risk of Global Economic Fragmentation”, in *IAI Commentaries*, No. 22|19, April, <https://www.iai.it/en/node/15197>
- Bohn, Dieter (2022), “Google Pay’s Massive Relaunch Makes It an All-Encompassing Money App”, in *The Verge*, 18 November, <https://www.theverge.com/2020/11/18/21571806>
- Bradsharth, Tim et al. (2022), “Apple Sidelines Goldman Sachs and Goes In-House for Lending Service”, in *Financial Times*, 9 June, <https://www.ft.com/content/fc4eeb5c-479a-4daf-9f8b-808ee937530f>
- Chon, Gina (2022), “Big Tech in Finance? There’s a Regulator for That”, in *Reuters*, 1 August, <https://www.reuters.com/article/us-usa-tech-breakingviews-idDEKBN2P71WB>
- Council of the European Union (2022a), *Council Adopts Conclusions on Strategic Autonomy of the European Economic and Financial Sector*,

- 5 April, <https://europa.eu/!HKTKp3>
- Council of the European Union (2022b), *Digital Finance*, last updated 2 December, <https://europa.eu/!Kx33Fx>
- Dekker, Brigitte et al. (2022), "The Geopolitics of Digital Financial Technologies. A Chance for Europe?", in *Clingendael Reports*, January, p. 7, <https://www.clingendael.org/node/13556>
- Demirgüç-Kunt, Asli et al. (2017), *The Global Findex Database 2017. Measuring Financial Inclusion and the Fintech Revolution*, Washington, World Bank, <http://hdl.handle.net/10986/29510>
- European Commission (2020), *Digital Finance Package*, 24 September, <https://europa.eu/!F3pjkp>.
- European Commission (2021a), *2030 Digital Compass: The European Way for the Digital Decade*, COM/2021/118/2, 9 March, [https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52021DC0118\(01\)](https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52021DC0118(01))
- European Commission (2021b), *The European Economic and Financial System: Fostering Openness, Strength and Resilience*, COM/2021/32, 19 January, <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52021DC0032>
- European Commission (2022), *European Digital Rights and Principles*, last updated 15 December, <https://europa.eu/!CfQKMT>
- Kharpal, Arjun (2022), "China Is Pushing for Broader Use of Its Digital Currency", in *CNBC*, 11 January, <https://www.cnbc.com/2022/01/11/china-digital-yuan-pboc-to-expand-e-cny-use-but-challenges-remain.html>
- Lee, Georgina and Samuel Shen (2022), "China's Digital Yuan Stands Out in Cross-Border Pilot in a Show of Global Ambitions", in *Reuters*, 27 October, <https://www.reuters.com/markets/currencies/chinas-digital-yuan-stands-out-cross-border-pilot-show-global-ambition-2022-10-27>
- Lu, Lerong (2018), "How a Little Ant Challenges Giant Banks? The Rise of Ant Financial (Alipay)'s Fintech Empire and Relevant Regulatory Concerns", in *International Company and Commercial Law Review*, Vol. 28, No. 1, p. 12-30, <https://ssrn.com/abstract=3052318>
- McWaters, Jesse and Rob Galaski (2017), "Beyond Fintech: A Pragmatic Assessment of Disruptive Potential in Financial Services", in *World*

Economic Forum Reports, August 2017, <https://www.weforum.org/reports/beyond-fintech-a-pragmatic-assessment-of-disruptive-potential-in-financial-services>

Pop, Valentina, Sam Fleming and James Politi (2022), "Weaponisation of Finance: How the West Unleashed 'Shock and Awe' on Russia", in *Financial Times*, 6 April, <https://www.ft.com/content/5b397d6b-bde4-4a8c-b9a4-080485d6c64a>

Statista (2021), *Share of Unbanked Population Worldwide 2021 by Country*, <https://www.statista.com/statistics/1246963>

Tanaka, Akito (2021), "Fintechs and Traditional Lenders Do Battle across Southeast Asia", in *Nikkei Asia*, 15 October

5.

China's e-CNY as a Geopolitical Weapon: A New Era of Minilateralism in Asia's Digital Economy

Kai von Carnap

Weaponising finance – and the threat of doing so – is one of the tools of 21st-century geopolitical and economic confrontation. The capacity to leverage global financial networks has only increased through digitalisation, global capitalism and interconnected supply chains. However, as the length of the “levers” has increased, so has the willingness to utilise them – so far, mostly by the US and its allies.

As Central Bank Digital Currencies (CBDCs) are on the cusp of entering the stage of trade and global supply chains, a growing number of policymakers have voiced worries over a potential weaponisation of a Chinese Communist Party (CCP)-controlled CBDC. The common dominator of various concerns is the fear that a digital currency could provide the Chinese party-state with a new economic cyber weapon and could help expand digital authoritarianism. To some US senators the threat seems so imminent that they introduced a “Defending Americans from Authoritarian Digital Currencies Act” in May 2022 to outright ban any use of the e-CNY (electronic Chinese yuan) (US Senate 2022).

From the perspective of the People's Republic of China (PRC), a national digital currency is a key technology in “a new phase of accelerated digitised development and building a digital China” proclaimed in the country's 14th Five Year Plan from early 2022 (Central Cyberspace Affairs Commission 2021). Such a technology should also promote internationalisation of the renminbi (RMB), as 84 per cent of Chinese companies and 61 per cent of overseas companies believe a digital renminbi will promote the PRC's cur-

rency abroad (The Asian Banker and China Construction Bank 2021: 35).

This Chapter contributes to the debate on a e-CNY “weaponisation”, by responding to three underlying questions: (i) What are potential methods and strategies by which the e-CNY could be weaponised for geopolitical gain, and how does it compare to the traditional use of the renminbi (Section 1)? (ii) Is there a strategy for promoting the e-CNY’s use beyond its borders to generate geopolitical benefits (Section 2)? (iii) Are there any specific regions Beijing focuses on for the promotion and adoption of the e-CNY, and what factors drive the targeting strategy (Section 3)?

In toto, this Chapter argues that the e-CNY can only create leverage within the renminbi’s limited international role since the digital replica cannot overcome the most important offshore restrictions facing the renminbi. Foreign adoption hinges mostly on trust in the institutions and the political system of the PRC to uphold and maintain the value of the national currency. Within those limits, China could still gain leverage over its partners by deploying a “programmable” e-CNY in trade settlements. As such, the e-CNY would allow more secure and efficient transactions but also introduce new vulnerabilities through political conditions on the spending of units and the transfer of funds. However, it seems so far Beijing prefers the ability to formulate technical standards and norms over the long term to making use of any short- to mid-term leverage. Nonetheless, China is promoting the e-CNY for trade and e-commerce in Asia in asymmetric, targeted and dynamic arrangements rather than in regional partnerships or in bilateral negotiations – a new venue for Chinese “minilateralism”. While potential partners will have to balance improved trade facilitation with China against new forms of geopolitical and digital vulnerabilities, for the moment a lack of legal provision between China and its partners represents the main obstacle.

1. CONDITIONING TRADE

Prior to commencing the discussion, it is imperative to acknowledge that at present, the e-CNY¹ remains in the phase of domestic experimenta-

¹The currency-project has had various names in Chinese and international reports

tion, with very limited usage even within China. According to statistics of the central bank, the People's Bank of China (PBoC), the e-CNY represented 0.13 per cent of all yuan in circulation at the end of 2022 (PBoC 2023) and has not received the public demand officials had hoped for (Caixin 2022; Reuters 2022). Also crucial to recognise is that e-CNY will be constrained by the fact that a digital unit can only be minted after a fiat unit has been exchanged for it at the PBoC. This implies that China's digital currency is not a new currency, but a digital replica of China's national currency. I.e., only the PBoC accepts it as legal tender, the exchange rate mirrors the renminbi's and international e-CNY transactions depend on existing finance infrastructure, including SWIFT, a global messaging system for transactions and payments between banks. In short, any international trajectory of the e-CNY will be closely linked to the fate of China's underlying national currency, the renminbi.

This design choice renders the e-CNY less suitable for evading international sanctions. While Guan Tao from the Bank of China or Ming Ming from Citic Securities suggest as much (Guan 2022; Tang 2022), transactions through China's digital currency will still be traceable. Consequently, the United States could still employ secondary sanctions on the usage of the e-CNY, which will likely serve as a sufficient enough deterrent (Kroeber 2022). As case in point, in the otherwise "no-limit" Sino-Russian partnership, the e-CNY has not been mentioned from either side (Finneseth 2022). The evaluation of the potential weaponisation of the e-CNY should extend beyond its possible function as a sanction shield, and should consider to what degree it could afford the Chinese Communist Party (CCP) wider geopolitical or economic leverage in international relations within the limits of the renminbi.

and articles throughout the years, most notably "DC/EP" (Digital Currency/Electronic Payments), but also "digital RMB", "e-RMB" and others. Despite the many names, to date there is only one publicly known state-led effort to digitalise China's currency, which in this Chapter will be consistently referred to as "e-CNY", electronic Chinese yuan.

1.1 Facilitating regional trade and investment: The renminbi's future role

The global development of the renminbi has been ambiguous. On one hand, the currency has slowly strengthened its role – in some instances, at the expense of the dollar (USD). International reserves, for example, have shifted out of dollars over the last 20 years in two directions: “a quarter into the Chinese renminbi [or yuan], and three quarters into the currencies of smaller countries” (Arslanalp et al. 2022: 1). On the other hand, these relative gains have trailed behind the growing global importance of China’s economy, both in absolute and relative terms. In fact, while the PRC contributed 15.20 per cent of global gross domestic product (GDP) in 2020, compared with 12.84 per cent in 2016, the international proliferation of its currency has lagged behind on various accounts (Table 5.1).

Economists have long debated the dynamics surrounding the internationalisation of a currency. One notable argument states that the discrepancy between an economy of considerable size and the limited role of its currency is indicative of global mistrust in the country’s politics and institutions. This view has been articulated by many economists who have acknowledged the significance of trust in a nation’s institutions, including its central bank and government, for maintaining the value of a currency (Milton and Schwartz 1963; Rogoff 2017). China, the argument goes, lacks political stability, credible fiscal institutions and monetary regimes, and a (de facto) independent central bank as pre-conditions for a strong international currency (Volz 2014).

Such a lack of trust is also the result of decades-old policy decisions. Beijing’s monetary policy limits foreign use of the renminbi as it not only maintains strict controls on capital in- and outflows but also manipulates exchange rates through various opaque channels (Eichengreen and Kawai 2014; Randhawa 2020). In terms of storing value, despite significant improvement over the past decade, attractive renminbi-denominated assets are still hard to access for foreign buyers and they are not as deep as their US dollars-denominated equivalents – to which constraints may be added continual concerns over geopolitical, political and economic risks.

It is often overlooked that internationalising a national currency while making it easier to mobilise funds – lowering foreign-currency

risks and costs-of-capital, etc. – also comes with considerable economic costs and risks. A wider international use of the renminbi as a store of wealth would appreciate its value on foreign exchange markets. This appreciation, however, would also lower the prices of imports and acquisitions, which would be detrimental to China's exports and create pressure on its current-account surplus. An appreciation could even introduce the risk of a current-account deficit and the associated global financial dependencies.

Table 5.1 | China's economic growth has left the internationalisation of its currency behind

		2016	2017	2018	2019	2020	2021	2022
Share of global GDP (%)	US	21.38	20.94	20.73	21.39	21.61	-	-
	EU-27	17.96	18.19	18.44	18.00	17.96	-	-
	China	12.84	13.23	14.03	14.29	15.19	-	-
Share of global FX reserves (%) (COFER)	USD	65.36	62.73	61.76	60.75	58.92	58.86	58.88
	EUR	19.14	20.17	20.67	20.59	21.29	20.58	20.06
	RMB	1.08	1.23	1.89	1.94	2.29	2.80	2.88
Share of Forex Trading (%)* (BIS)	USD	87.58	-	-	88.30	-	-	88.45
	EUR	31.39	-	-	32.28	-	-	30.45
	RMB	3.99	-	-	4.32	-	-	7.01
Share of global payments (%) (SWIFT)	USD	41.92	39.85	39.21	39.77	40.33	40.51	41.19
	EUR	30.69	35.66	34.32	36.32	34.10	36.65	35.49
	RMB	1.82	1.61	1.66	1.95	1.76	2.70	2.20

Note: * from a total share of 200 per cent. As two currencies are involved in each transaction, the sum of shares in individual currencies will total 200 per cent.

Sources: Share of global GDP (World Bank Data); COFER (IMF Data); BIS (2019); SWIFT: *RMB Tracker*, <https://www.swift.com/node/11096>.

The one area in which the renminbi is starting to play a larger role is as a vehicle to facilitate cross-border trade. In such a capacity, the currency is less dependent on capital-account liberalisation and is relatively independent of exchange-rate regimes in the short term (Eichengreen et al. 2022). While many transactions related to China's trade are still denominated in dollars, the volume and total value of renminbi transactions surged by 52 and 76 per cent, respectively, in 2021 (Xinhua 2022a). What would be further needed are monetary and institutional tools such as clearing banks, swap lines and deeper offshore renminbi markets – but also an efficient

technological infrastructure to provide real-time settlement services for cross-border remittances and other offshore settlements, such as CIPS or a digital currency, as well as a deeper and more liquid derivative market for renminbi assets to cover for exchange-rate risks.

Settling trade and investment in renminbi has become more popular with neighbouring countries, the Belt and Road Initiative (BRI) partners and the Association of Southeast Asian Nations (ASEAN) member states (Cheung 2020). To that end, China has established Hong Kong as its first and biggest offshore renminbi clearing centre and has signed 29 of its 39 swap agreements with central banks from emerging markets.

The e-CNY, as a digital replica of the renminbi, may present certain advantages in terms of facilitating its international usage; however, it fails to address the underlying reasons that have historically limited the offshore utilisation of the renminbi. The e-CNY also offers no direct hedge against the risks for the PBoC that would come with a more globally used currency. The following sections are therefore based on the assumption that the e-CNY could only create geopolitical or economic leverage as a facilitator of trade and investment – most likely, in the context of existing trade and investment ties.

1.2 “Programmability” conditions and controls, spending and the use of e-CNY units

Technologically, Beijing sees the e-CNY as a success and plans to expand the scope of adoption and to add further functions to it (Xinhua 2022b; Li 2022b). The digital yuan should, on the back of strong public-private partnerships, primarily support the overall development of China’s digital economy with efficient and secure payments under direct management and monitoring by the central state (Zhang and Chen 2019). A newly established e-CNY Industry Alliance (ECIA), under the leadership of the Chinese People’s Political Consultative Conference, will support these efforts, bringing private information and communications technology (ICT) and tech companies together with CCP and state representatives (Zhang 2022c).

The technical design path indicates that the e-CNY is evolving into a more complex system that includes deeper financial functions and provides an efficient legal enforcement mechanism for policies. The e-CNY

“will leverage its technological capacity to identify suspicious transactions in a timely way pursuant to the relevant law and regulations”, as the PBoC puts it (BIS Innovation Hub et al. 2021: 13).

To that end, the central bank's Digital Currency Institute (数字货币研究所) has launched trials to make e-CNY units “programmable” through a key technological add-on known as smart contracts (智能合约) (Xinhua 2022b). By adopting such traceable and self-executing programs, the PBoC has taken inspiration from a leading decentralised cryptocurrency: Ethereum (Palmer 2021). Its founder, Vitalik Buterin, had introduced smart contracts in 2017 to widen the scope of cryptocurrencies to any kind of economic transaction. Transactions between two (or more) parties should be established through mutual verification processes, a high degree of transparency and escrowed collateral that guarantees the fulfilment of the original contract. As such, reliable smart contracts can quickly establish trustworthy connections, reduce transaction costs and eliminate intermediaries.

In late 2021, the first e-CNY-denominated smart contracts were trialled in combination with broader fintech (financial-technology) solutions, moving the purpose of the e-CNY beyond a mere cash substitute (also referred to as “M0”). As part of a pilot in Chengdu, for example, private tutoring lessons are only invoiced if certain criteria are met (Sohu 2022; Li 2022a). Similarly, in December 2021, the Agricultural Bank of China and Huawei Technologies Co. Ltd launched the first e-CNY-based apartment-rental-supervision platform, in Shenzhen. In May 2022, the China Construction Bank and the Futian District Government of Shenzhen jointly established the country's first e-CNY pre-paid platform for education and training companies (Liu et al. 2022).

Alongside more efficient and cheaper transactions, smart contracts that are combined with other e-CNY features also provide the PBoC with the capacity to condition the use of any given unit and expand its control over spending behaviour. The PBoC can get direct access to the personal information related to any e-CNY transaction through what it calls “controllable anonymity” (可控匿名), which, according to various think tank analyses, means that true anonymity does not exist (Hoffmann et al. 2020; Fanusie and Jin 2021). The central bank is also testing an “information isolation mechanism” (信息隔离机制) that could reveal otherwise

encrypted contract details and an internal firewall (内控制度) that could include political censorship (PBoC 2021a; Zhang and Liu 2022).

While the renminbi plays a larger role in regional trade, the design and function of China's e-CNY is still evolving. International trade partners will have to assess the benefits of the PRC's digital-currency system against the political and security risks to which they might become exposed with regard to the e-CNY's programmability.

2. THREE STRATEGIC THEMES FOR PROMOTING FOREIGN USE

Since the inception of China's national digital currency in 2014, the narrative of Beijing's top policymakers to support and expand the development of a CBDC has always to some extent been geopolitical. Initially, its focus was on defensive actions such as the protection of the PRC's monetary sovereignty against global cryptocurrencies and the need to shake off China's dependency on the post-Bretton Woods global financial system. But e-CNY trials will further expand to encompass cross-border trade, retail marketing and pre-paid fund management, as recently reiterated during the 19th China International Finance Forum 2022 in Beijing.² As cross-border trials begin, the geopolitical direction of inquiry is changing and the Chinese leadership has started formulating different elements of a strategy to promote the e-CNY beyond its borders. Analysis of reports, speeches and policies from the central bank, party-state officials and Chinese think tanks reveals that three themes of foreign promotion have emerged:

1. *Short term*: Sparse political promotion which highlights efficiency gains through media outlets.
2. *Medium term*: The PBoC wants to ensure that the e-CNY can enforce the broader political interests of the CCP.
3. *Long term*: The e-CNY should ensure China's ability to formulate and benefit from norms and standards in e-commerce and digital trade.

² 2022中国国际金融年度论坛 [2022 China International Finance Annual Forum] (video), <http://m.gxfin.com/finance/zhibo/HY202208257664.html>

These three elements correspond to three distinct time-horizons, and could create geopolitical or economic leverage over partnering countries only in the medium to long term.

2.1 Three themes for promoting the e-CNY abroad

The immediate promotion strategy focuses on highlighting efficiency gains and cost reductions for transactions (Economic Daily 2021). To gather trust amongst potential partners, China's central bank has aligned its e-CNY internationalisation principles with the three principles of how any CBDC should operate abroad. They were first suggested by the Bank for International Settlements (BIS) and are currently not signed into legally binding agreements:

1. *No disruption* (无损要求) of “other central banks’ currency sovereignty and their ability to fulfil their mandate for monetary and financial stability”.
2. *Compliance* (合规要) “with the regulations and laws of the jurisdictions concerned”.
3. *Interoperability* (互通要求) “between CBDC systems of different jurisdictions as well as between CBDC systems and incumbent payment systems [...] and guard[ing] against market fragmentation”.³

These principles aim to foster stable and unassertive political relations, and will provide a benchmark against which e-CNY internationalisation can be measured. However, they might also compete with or even contradict other strategic interests of the CCP.

In fact, PBoC officials have already proclaimed that, through the e-CNY's programmability, the central bank will ensure the right to enforce the broader national-security interests of the CCP. At the 2022 China International Finance Forum (2022中国国际金融年度论坛), the director of the Digital Currency Institute, Mu Changchun, reminded the Shanghai audience in his speech on smart contracts that China's digital

³The PBoC outlines them in the “Progress of Research & Development of E-CNY in China” (PBoC 2021b). See Carstens (2021).

currency will comply with relevant laws and regulations, and specifically pointed to the “Three Antis”-campaign (“三反”) (Mu 2022). As such, the e-CNY will assist a campaign – led by the PRC’s Ministry of Public Security and supported by other security organs – against the funding of terrorist organisations and personnel “in some key provinces”.⁴ While it is not unusual to coordinate domestically on anti-terrorism financing in general, the UN and most Western allies reject the CCP’s definition of terrorism and condemn its interventions in Xinjiang as acts of genocide. Four months earlier a new credit line had been announced for Xinjiang’s rural population based exclusively on programmable e-CNY loans.⁵ Going forward, international cooperation partners need to acknowledge that China might be willing to translate into the technical layout of the e-CNY broader political goals and strategies that are of a highly inflammable political nature.

In the long term, the e-CNY represents an important means not only for manifesting China’s ambition to transform itself from a standard-taker into a standard-maker but also in learning how to translate the formulation of technological norms into economic and political purchase. Since the 18th Party Congress, President Xi Jinping and the State Council have ramped up efforts to improve the informatisation of trade. Most importantly, as per 14th Five Year Plan for the Digital Economy, China’s strategy foresees the shaping of international standards through “Mutually Beneficial and Win-Win International Cooperation Systems in the Digital Area”.⁶ This includes vigorous participation at the World Trade Organ-

⁴The reform was introduced in 2017 by the State Council to counter money laundering (反洗钱), terrorist financing (反恐怖融资) and tax evasion(反逃税), and should not be confused with Mao Zedong’s “Three Antis”- campaign of the 1950s. See China’s State Council (2017).

⁵Guangzhou Radio and Television Express Financial Electronics Co. Ltd (广电运通金融电子股份有限公司) as per Zhongtai Securities (2022a). See also 新疆农村信用社数字人民币系统招标项目公告 [*Xinjiang Rural Credit Cooperative Digital RMB System Bidding Project Announcement*], 28 March 2022, <https://archive.ph/djEhs> [<https://m.mpaypass.com.cn/news/202203/28181933.html>].

⁶Released in December 2021 by the State Council in order to set objectives for industrial policy for the period from 2021 to 2035, such as increasing the adoption of IPv6 (Internet Protocol version 6) from 460 million users in 2020 to 800 million users

isation (WTO) and an active role within multilateral mechanisms such as the G20, the Asia-Pacific Economic Cooperation (APEC) forum and the BRICS (Brazil, Russia, India, China and South Africa) grouping. The e-CNY is one technology that will help shape global norms and standards in digital trade and generate capabilities to participate in international norm formulation in the digital realm related to e-commerce, data security, digital currencies and digital taxation (Li and Zhang 2022).

2.2 Domestic issues remain key drivers of the e-CNY's development

First, Bitcoin and other decentralised cryptocurrencies continue to pose various challenges to China's financial system despite wide-ranging regulations, "rectifications" and bans.⁷ In 2019, two years after the PBoC's main bans on crypto-related trading, up to 50 billion US dollars of private capital were still being sent abroad and escaped the PRC's capital controls (Chainalysis 2020). New money-laundering and Ponzi and pyramid schemes are still being revealed every few months (Shen 2022; Huang 2022) – even now, six years after the National Committee of Experts on Internet Financial Security Technology (国家互联网金融安全技术专家委员会) was set up to counter them (IFCERT 2018; Huillet 2018; Shanghai Securities News 2018; Hin 2018).

Second, there is a lack of national payment systems compatible with Web 3.0 or Metaverse applications in which US dollars-denominated solutions such as stablecoins lead global developments. At the 2022 World Artificial Intelligence Conference in Shanghai, Professor Zhang Ping of the Chinese Academy of Engineering lamented China's underdevelopment in that regard (Christopher 2022). He also echoed worries Beijing policymakers had voiced three years earlier after the Facebook-led

or expanding GDP contribution to 10 per cent by 2025. See Central Cyberspace Affairs Commission (2021).

⁷The rise of Bitcoin was a direct consequence of the US financial crisis and a dramatically over-leveraged housing market. When it entered China around 2013, a combination of regulatory laxity, favourable geographical characteristics and a lack of investment alternatives led to a period of immense popularity. See Carnap (2021).

initiative Libra, now known as Diem, was announced.⁸ At the time, Mu Changchun was appointed head of the PBoC's digital-currency research institute, in which capacity he announced that the e-CNY was "to protect our monetary sovereignty and legal currency status", adding, "we need to plan for a rainy day" (Tam 2020).

Third, the e-CNY still must be established as a viable and attractive public alternative to a longstanding payment-provider duopoly, Alibaba and Tencent, whose future roles remain ambiguous.⁹ On one hand, representatives from the Cyberspace Administration of China recently sought a more "affectionate" relationship with the country's tech giants (Pollard and Baptista 2022). On the other, the central bank increasingly presents the e-CNY as a competitor to their products when it writes that the digital currency will be a "safer, more interoperable and more inclusive retail payment infrastructure [compared with Alipay/TencentPay] which meets diversified payment needs [and] is an important public good for higher quality growth". Domestic e-CNY use is also being aggressively pushed across 15 provinces and 23 top-tier cities, including as part of subsidised cost structures, obligatory official salaries or free lotteries (so-called "Red Envelopes") (Zhang 2022b; Huld 2022a).

However, establishing the e-CNY as a successful alternative or even a substitute might be at least 2–4 years away, as the payment solutions offered by Alipay and WeChat Pay are considerably further advanced in

⁸ A private digital currency, that was backed by a basket of financial assets and controlled by a consortium of mostly US companies. It offered to replace the payment functions of conventional currencies issued by central banks. Ironically, just as Chinese policymakers came round to supporting a national currency project to protect against the Libra, Mark Zuckerberg presented Libra as project to ward against authoritarian regimes like China's. See Bell (2019).

⁹ Up until 2019, the booming business models of Ant Financial (Alibaba's fintech arm) and Tencent had exceeded the control of the party-state and posed various risks to its monetary policy. Their payment services provided exclusive access to consumer data and their fintech solutions, such as peer-to-peer lending platforms and private money markets, offered unregulated credit, while the default risk was passed on to the private lender until 2018. Up until this point, Big Tech payment services did not need to take risks to facilitate lending and borrowing themselves but could leave the participants solely to bear them. See Knight (2020); Zhang and Chen (2019); Carnap and Tan (2021).

terms of technical measures and adoption (Campbell 2021). In terms of throughput, Alipay facilitates five times as many transactions on one single day as all the e-CNY-transactions that have taken place since initial trials started in 2019.¹⁰ Similarly, there are 18 times more merchants accepting Alipay transactions than e-CNY transactions,¹¹ and the 260 e-CNY wallets are dwarfed by the 1 billion and 1.2 billion users on Alipay and WeChat Pay, respectively.

Overall, creating immediate economic and political leverage over partners is not a primary motive of e-CNY development, and the goal of establishing China's digital currency as a solution to various domestic issues prevails. Considering the three themes for promoting the offshore use of the e-CNY – whereby long-term technological standards are of the greatest value – it seems unlikely that Beijing would arbitrarily or negligently introduce political conditions to offshore e-CNY transactions.

3. PROMOTING THE E-CNY THROUGH REGIONAL MINILATERALISM

Any geopolitical power accruing to the e-CNY could come from political conditions that Beijing might introduce (or threaten to introduce) on trade-related transactions. With that in mind, this section of the Chapter will examine which regions or countries might be targeted by or vulnerable to such dynamics. Chinese state analysts and Western media see in the settlement of cross-border trade – in particular within Asia – the ideal mode for the promotion of the e-CNY's international use. They do so not only because China has strengthened its regional trade integration through multilateral partnerships such as BRICS; ASEAN+3 (the 10 ASEAN member states plus China, Japan and South Korea); the Belt and Road Initiative; and, most recently, by joining the world's largest free-

¹⁰ Approx. 12 billion euro (83 billion renminbi) as of May 2022 and 74 billion euro (965 billion renminbi) on the shopping festival Singles Day (双十一) 2021. See Zhongtai Securities (2022b). Zhongtai Securities is a securities-holding group supervised by the State-owned Assets Supervision and Administration Commission (SASAC).

¹¹ 4.57 million business accepted the e-CNY vs. 80 million merchants on Alipay, supra note.

trade agreement, the Regional Comprehensive Economic Partnership (RCEP)¹² but also because the renminbi now plays a larger role than hitherto in settling trade with China's partners in Asia.

3.1 The main obstacle: Legal provisions for cross-border use of the e-CNY

However, China has notably held back on directly promoting its digital currency within the fruitful regional trade and investment partnerships it entertains. When it comes to ASEAN, both sides have stressed their cooperation on e-commerce and digital economy¹³ – but in 74 meetings on economic affairs that took place between July and December 2021, Chinese representatives have been silent on the e-CNY. The language used includes only wishes to “enhance cooperation on e-commerce and [the] digital economy; [improve] financial infrastructure development in the region, and explore cooperation areas such as financial technology, green financing and regional payments connectivity”.¹⁴ The issue of digital-currency conversations was similarly absent during President Xi's visit to the Shanghai Cooperation Organisation (SCO) summit in September 2022 – a forum in which he could have addressed a range of important BRI countries. Even policy documents that would be ideally suited to this approach, such as the “Guidelines for Outbound Investment and Cooperation on Digital Economy (2021)”, while stressing regional digital trade and economic cooperation with BRI countries, do not once mention the use of the e-CNY or payment cooperation (China's Ministry of Commerce et al. 2021).

A main obstacle to offshore e-CNY use is the underdevelopment of legal provisions that would allow the cross-border use of the electronic

¹² A free-trade agreement among the Asia-Pacific nations of Australia, Brunei, Cambodia, China, Indonesia, Japan, South Korea, Laos, Malaysia, Myanmar, New Zealand, the Philippines, Singapore, Thailand and Vietnam.

¹³ Including the Initiative on Building ASEAN-China Partnership on Digital Economy (2021–5), the China-ASEAN Partnership on Digital Economy Cooperation (2021–5), and the ASEAN-China Joint Statement on Synergising the Master Plan on ASEAN Connectivity (MPAC) 2025 and the Belt and Road Initiative (BRI).

¹⁴ As part of implementing the “Work Plan on the Implementation of the ASEAN Agreement on Electronic Commerce 2021-2025”. See ASEAN-China (2021: point 20).

Chinese yuan or related smart contracts, which was acknowledged during the 2021 China International Fair for Trade in Services (中国国际服务贸易交易会) (Wang 2022). Even on a rudimentary level, obstacles remain. For example, for users without Chinese ID only a trial version of a digital wallet is available – and even these require a Chinese bank account and phone number, which bring with them cumbersome verification processes.¹⁵

The bigger issue – in the absence of bilateral data transfer agreements, such as the General Data Protection Regulation (GDPR) adequacy provisions that the EU entertains with certain partners – are various legal restrictions regarding data transfer on both sides of the border. In China, data laws have been expanded considerably in recent years but uncertainties – in particular, over financial and payment data – remain. The “PBoC Measures on the Protection of Financial Consumers’ Rights and Interests” from 2016 require personal financial information that, once collected within the territory of the PRC, will be stored, processed and analysed principally in China. In 2021, China’s “Financial Data Security Data Lifecycle Security Specification” determined that important data (which is mainly used in large financial institutions for critical business such as financial transactions that can affect national security) generated in the PRC must only be stored in mainland China and cannot be transferred or accessed outside of mainland China (Tang 2021). Lastly, the “Measures for Data Export Security Assessment” that came into effect in September 2022 foresee that, according to China’s Personal Information Protection Law (PIPL), sensitive personal information that includes financial-account information needs to go through a review process before leaving the PRC (Huld 2022b).

Even if legal provisions in China were to improve, laws and regulations amongst potential Asian trade partners related to data localisation and cross-border transfers are similarly complex and reminiscent of the “Spaghetti Bowl” of trade negotiations from the 1990s and 2000s. Over-

¹⁵ “Currently, only the lowest level wallet is available for sign-up without a Chinese identity card, which has an RMB 5,000 daily and RMB 50,000 yearly spending limit.” See Huld (2022a).

all, there are vast discrepancies and varying degrees of overlaps that the PRC and its trade partners will need to address before expanding cooperation on the e-CNY – including contractual safeguards, data-transfer mechanisms and certificates (ABLI 2020).

Between China and the ASEAN nations, a willingness to advance digital cooperation has been articulated many times. In a joint statement from October 2021, both sides agreed to “enhance cooperation on e-commerce and digital economy” as well as “improve financial infrastructure”. Both sides have also vowed to connect far-reaching economic initiatives – namely, the ASEAN Digital Masterplan and the Digital Silk Road. During a joint forum held in Wuhan in July 2021, ASEAN and the PRC expressed their wish to deepen cooperation in the realm of the digital economy, particularly around cross-border e-commerce and digital trade (ASEAN-China Centre 2021), and shortly thereafter announced their intention to explore “cooperation [in] areas such as financial technology, green financing and regional payments connectivity” (ASEAN and China 2021: point 20). Particularly noteworthy as part of that cooperation is an Asia Digital Common Currency (ADCC) proposal, which is being discussed in an “ASEAN+3” format according to the Organisation for Economic Co-operation and Development (OECD).¹⁶

Success with ASEAN partners is especially important for Beijing as negotiations on digital cooperation with Western liberal democracies are stalling. For example, China’s pending application to the Digital Economy Partnership Agreement (DEPA) may founder over data-security concerns (Huld 2021). In theory, DEPA constitutes an attractive opportunity to offer the e-CNY as a payment vehicle to its members New Zealand, Chile and Singapore, as it includes provisions for cooperating on “interoperable electronic payment systems”. However, given that New Zealand and applicant Canada are also partners in the US-led secu-

¹⁶ “ASEAN+3” includes ASEAN, China, Japan and South Korea. The ADCC would be based on government bonds or currencies provided by the monetary authorities of ASEAN+3 and be managed by one of its international organisations. See OECD (2021: 92-93).

rity alliance 5-Eyes, a granting of DEPA membership to the PRC seems unlikely.¹⁷

Either further policy normalisation and alignment in the region on cross-border finance and payment data or bilateral data agreements will be a precondition to the short-, medium- and long-term success of a more international e-CNY. Additionally, offshore adoption of China's CBDC will also be a litmus test for the compatibility of data regimes and will indicate to what extent digital spaces in general are integrating or heading towards digital fragmentation or bifurcation.

3.2 Cross-border e-CNY pilots have been targeting different asymmetric minilateral arrangements

First, notwithstanding its lack of data laws, China has started cross-border CBDC experiments for digital trade in some of its 132 Pilot Free Trade Zones (the 27 latest zones focus on e-commerce, digital trade and cross-border payments) (CGTN 2022). These pilots indicate that while the PRC defers open promotion of the e-CNY in regional partnerships, it directly offers participation in CBDC trials to selected groups of partner countries. Notably, a different group of countries is addressed in each pilot and each of these minilateral relationships are asymmetric in terms of trade balances.

One important conduit for introducing the e-CNY to selected ASEAN partners and RCEP member states is the Guangxi Pilot Free Trade Zone. According to an extensive multi-ministerial programme published in December 2021, the provincial government wants to triple Guangxi's already rapidly rising cross-border trade volume to 15 billion renminbi (2.2 billion euro) by 2025.¹⁸ The programme stresses new innovative

¹⁷ Article 15.4(3): "A Party may prevent or limit transfers [...] relating to maintenance of the safety, soundness, integrity, or financial responsibility of financial institutions or cross-border financial service suppliers."

¹⁸ Implementation Plan for Accelerating the Development of New Business Models and New Models of Foreign Trade (加快发展外贸新业态新模式实施方案) of 2021. In the first half of 2021, the Guangxi Pilot Free Trade Zone reported a total of 3.4 billion renminbi in cross-border e-commerce import and export transactions – a year-on-year increase of more than 500 per cent. Text in Chinese: <https://archive.ph/nfbUK> [<http://>

technologies for further digitalising trade; improving cross-border renminbi settlements; and introducing a blockchain trade-and-finance platform with partner countries Vietnam, Thailand and Malaysia. This trio of countries are China's three biggest partners among ASEAN members, accounting for 62 per cent of its trade in that forum.¹⁹ These efforts add to the provisions of the 13th Five Year Plan, which foresaw the Guangxi pilot zone becoming the focal point in integrating Western and Southern countries into the Digital Silk Road (Zhou and Yao 2021). In 2019, the PBoC and 12 other ministries followed up in order to promote the use of the renminbi amongst ASEAN neighbours and enhance digital cross-border trade and investment from Guangxi (Han 2021).

Second, and in a similar vein, starting in 2022, the Wuhan-based trade platform "Silk Road Connect" (通丝路) will explore digital-currency settlements and international-trade scenarios with respect to the e-CNY. The platform was set up in 2018 to support Chinese exporting small to medium-sized enterprises (SMEs) in the Shaanxi Pilot Free Trade Zone, offering a one-stop shop for contract matching, payment settlements, customs clearance and other services needed for cross-border e-commerce (Zhang 2022a).

China has also joined the "mBridge" project, a cooperation with three other regional central banks to pilot digital-trade settlement with different CBDCs – the others being the Hong Kong Monetary Authority, and the central banks of Thailand and the United Arab Emirates (UAE). The mBridge creates a network of "corridors" to allow the exchange of different CBDCs, including the e-CNY. In September 2022, a first trial period concluded in which 160 transactions were conducted between 20 commercial banks from the four jurisdictions.

This third, and perhaps most advanced, minilateral pilot showcases the trade-off countries might face between efficiency gains and the threat of politically conditioned trade (outlined in Section 1). With the help of the BIS Innovation Hub, the mBridge promises to reduce transaction fees from around 7 per cent of transaction volume to about 1 per cent, and to reduce transaction speed from 3–5 days to 3–5 seconds. But through this

swt.gxzf.gov.cn/zfxgk/fdzdgknr/zcyjd/gxzc/t10997358.shtml].

¹⁹Ibid.

project, China could also test politically conditioned trade. According to a report from September 2021, the mBridge has introduced smart contracts with the help of the Ethereum Foundation and based on Ethereum standards (BIS Innovation Hub et al. 2021). However, its algorithmic governance structure could provide the PBoC with unique and powerful privileges within the project:²⁰ exercising control over at least a third of the network nodes provides the capacity to deny verification of transactions or to introduce any alteration to the basic mBridge protocol or individual smart contracts. If the PBoC were to convince the Hong Kong Monetary Authority to play along, China's central bank would effectively hold monopoly control over the mBridge network.

Overall, these unilateral e-CNY pilots are at an early stage: the transaction volume of trade settled on "Silk Road Connect" amounted to less than 6 million US dollars (40 million renminbi) in the first half of 2022 and the volume of payments settled on the mBridge (22 million US dollars) still represents only a fraction of the trade China conducts with Hong Kong, the UAE and Thailand (a total of 730 billion US dollars in 2019).

While still at an early stage, regional success for the e-CNY will depend perhaps first and foremost on improving cross-border data regulation between China and its partners. So far, political acknowledgement that these issues are being successfully addressed has been lacking on all sides. Progress could be better gauged if discussions at other important unilateral and regional bodies – such as the Mekong-Lancang Cooperation, the Chiang Mai Agreement or the Shanghai Cooperation Organisation – included information on cross-border digital payments, e-commerce and digital currencies.

4. OUTLOOK

In summary, the e-CNY could provide geopolitical-leverage capacity from both a monetary and technological perspective, revolving around conditioning regional trade through politically conditioned programma-

²⁰ Istanbul Byzantine Fault Tolerant 2 implementation (BFT 2.0), a Proof of Authority consensus algorithm.

ble transactions (smart contracts). However, Beijing's strategy for promoting the e-CNY abroad does not provide evidence that the immediate exploitation of such a tool is a primary goal. First, e-CNY offshore use is practically non-existent. Second, further regional adoption of the electronic Chinese yuan depends on improved cross-border data legislation for cross-border finance and digital payments. Third, under the current CCP leadership, the long-term establishment of technological standards and norms in e-commerce and digital trade is a higher-valued target.

4.1 Fragmentation of payment networks

Different geopolitical dynamics could, of course, change Beijing's considerations. For example, placing China under financial sanctions would considerably increase pressure and might even necessitate a further expansion of e-CNY-based trade. However, in the (unlikely) event of stable geopolitical factors, three scenarios – akin to the three themes of e-CNY promotion mentioned above – are worth considering:

Short term: Regional adoption of the e-CNY stalls over lack of progress on legal provision between China and its partners – in particular, regarding cross-border data transfer – and perhaps prolonged competition with Alipay and WeChat Pay.

Medium term: The fragmentation of digital spheres, as a result of successful data-regime alignment with some partner countries and subsequent e-CNY adoption. A simultaneous US ban on e-CNY-denominated transactions would force countries to settle trade exclusively in one of two currency regimes.

Long term: The successful regional adoption of the e-CNY as a trade vehicle leads to network effects and new business models based on CBDC smart contracts, but also creates a lock-in effect for partner countries – due not just to conventional technological path dependencies but also to political spending-and-use conditions.

REFERENCES

ABLI-Asian Business Law Institute (2020), *Transferring Personal Data in Asia: A Path to Legal Certainty and Regional Convergence*, May, <https://fpf.org/wp-content/uploads/2021/01/Transferring-Per->

sonal-Data-in-Asia-A-Path-To-Legal-Certainty-And-Regional-Convergence-1.pdf

- Arslanalp, Serkan, Barry J. Eichengreen and Chima Simpson-Bell (2022), "The Stealth Erosion of Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies", in *IMF Working Papers*, No. 22/58 (March), <https://www.imf.org/en/Publications/WP/Issues/2022/03/24/The-Stealth-Erosion-of-Dollar-Dominance-Active-Diversifiers-and-the-Rise-of-Nontraditional-515150>
- ASEAN and China (2021), *ASEAN-China Joint Statement on Cooperation in Support of the ASEAN Comprehensive Recovery Framework*, 26 October, <https://asean.org/?p=87601>
- ASEAN-China Centre (2021), *ACC Secretary-General Chen Dehai Attended the ASEAN-China Digital Economy Development Cooperation Forum 2021*, 16 July, <https://archive.ph/eHUPc> [<http://www.asean-china-center.org/english/2021-07/8072.html>]
- The Asian Banker and China Construction Bank (2021), *Renminbi Internationalisation Report 2021*, October, http://www2.ccb.com/cn/ccbtoday/news/upload/20211022_1634866375/20211022092955802527.pdf
- Bell, Karissa (2019), "Mark Zuckerberg's Defense of Libra: It's All about China", in *Mashable*, 22 October, <https://mashable.com/article/mark-zuckerberg-libra-testimony-china>
- BIS-Bank for International Settlements (2019), *Triennial Central Bank Survey 2019*, 16 September, https://www.bis.org/statistics/rpfx19_fx.htm
- BIS Innovation Hub et al. (2021), *Inthanon-LionRock to mBridge. Building a Multi CBCD Platform for International Payments*, September, <https://www.bis.org/publ/othp40.htm>
- Caixin (2022), "谢平: 数字人民币定位为M0和零售支付 推广存挑战" [Xie Ping: The Digital Yuan Is Positioned as M0], in *Caixin*, 28 December, <https://finance.caixin.com/2022-12-28/101982996.html>
- Campbell, Charlie (2021), "How China's Digital Currency Could Challenge the Almighty Dollar", in *Time*, 11 August, <https://time.com/6084146/china-digital-rmb-currency>
- Carnap, Kai von (2021), *Unchaining Blockchain in China. From*

- Wild West Cryptocurrencies to Strategic Technology*, in *MERICCS Primer*, March, <https://merics.org/en/short-analysis/china-sets-hopes-blockchain-close-cyber-security-gaps>
- Carnap, Kai von and Valarie Tan (2021), “Tech Regulation in China Brings in Sweeping Changes”, in *MERICCS Short Analysis*, 3 November, <https://merics.org/en/short-analysis/tech-regulation-china-brings-sweeping-changes>
- Carstens, Agustín (2021), *Central Bank Digital Currencies: Putting a Big Idea into Practice*, Remarks at the Peterson Institute for International Economics (PIIE) discussion on Central Bank Digital Currencies, Basel, 31 March, <https://www.bis.org/speeches/sp210331.htm>
- Central Cyberspace Affairs Commission (2021), *14th Five-Year Plan for National Informatization*, 28 December, DigiChina translation: <https://digichina.stanford.edu/?p=1931>
- CGTN (2022), “China Approves 27 More Cross-Border e-Commerce Pilot Zones”, in *CGTN*, 9 February, <https://news.cgtn.com/news/2022-02-09/China-approves-27-more-cross-border-e-commerce-pilot-zones-17vtf8f8r6M/index.html>
- Chainalysis (2020), “East Asia: Pro Traders and Stablecoins Drive World’s Biggest Cryptocurrency Market”, in *Chainalysis*, 20 August, <https://blog.chainalysis.com/reports/east-asia-cryptocurrency-market-2020>
- Cheung, Yin-Wong (2020), “A Decade of RMB Internationalisation”, in *Economic and Political Studies*, 13 October, DOI 10.1080/20954816.2021.1996938
- Chile, New Zealand and Singapore (2020), *Digital Economy Partnership Agreement*, 11 June, <https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/digital-economy-partnership-agreement-depa/depa-text-and-resources>
- China’s Ministry of Commerce et al. (2021), *Guidelines for Outbound Investment and Cooperation on Digital Economy*, 20 July, <https://www.chinajusticeobserver.com/law/x/guidelines-for-outbound-investment-and-cooperation-on-digital-economy-20210720/chn>

- China's State Council (2017), *Opinions of the General Office of the State Council on Improving the Regulatory Systems and Mechanisms of Combating Money Laundering, Financing of Terrorism, and Tax Evasion*, 29 August, <https://www.lawinfochina.com/display.aspx?id=26394&lib=law>
- Christopher, Jerry (2022), "Zhan Ping Suggested that Chinese Central Banks Should Issue RMB Stablecoins for the Metaverse", in *NFT News*, 2 September, <https://www.todaynftnews.com/?p=8386>
- Economic Daily (2021), "数字人民币推广全面提速 个人钱包达1.4亿个" [Promotion of Digital Renminbi Has Been Fully Accelerated, with 140 Million Personal Wallets], in *163.com*, 16 November, <https://archive.is/k4A4l> [<https://www.163.com/news/article/GOTUIF-HU000189FH.html>]
- Eichengreen, Barry et al. (2022), "Is Capital Account Convertibility Required for the Renminbi to Acquire Reserve Currency Status?", in *Banque de France Working Papers*, No. 892 (November), <https://publications.banque-france.fr/en/node/478182>
- Eichengreen, Barry and Masahiro Kawai (2014), "Issues for Renminbi Internationalization: An Overview", in *ADB Working Papers*, No. 454 (January), <https://hdl.handle.net/11540/1216>
- Fanusie, Yaya J. and Emily Jin (2021), "China's Digital Currency. Adding Financial Data to Digital Authoritarianism", in *CNAS Reports*, 26 January, <https://www.cnas.org/publications/reports/chinas-digital-currency>
- Finneseth, Jordan (2022), "Russia to Allow Crypto for Cross-Border Payments while China Expands Smart Contracts on Its e-CNY", in *Kitco News*, 5 September, <https://www.kitco.com/news/2022-09-05/Russia-to-allow-crypto-for-cross-border-payments-while-China-expands-smart-contracts-on-its-e-CNY.html>
- Friedman, Milton and Anna Jacobson Schwartz (1963), *A Monetary History of the United States, 1867-1960*, Princeton, Princeton University Press
- Guan, Tao (2022), "管涛：人民币国际化需要灵活的汇率政策" [RMB Internationalisation Requires a Flexible Exchange Rate Policy], in *SINA Finance*, 28 April, <https://archive.ph/PnpA0> [<https://finance.sina>]

- com.cn/zl/china/2022-04-28/zl-imcwiwst4481051.shtml]
- Han, Pei (2021), 2025年广西跨境电商进出口额超150亿元 [In 2025, Guangxi's Cross-border e-Commerce Import and Export Volume Will Exceed 15 Billion Yuan], in *People's Daily*, 23 December, <https://archive.ph/Bf2zj> [http://gx.people.com.cn/n2/2021/1223/c179430-35064306.html]
- Hin, Pak (2018), "China's Pan Gongsheng Issues Statement Against Fighting ICO Regulation", in *Coinsnetwork*, 23 August, <https://www.coinsnetwork.com/?p=1599>
- Hoffmann, Samantha et al. (2020), "The Flipside of China's Central Bank Digital Currency", in *ASPI Policy Briefs*, No. 40/2020 (October), <https://www.aspi.org.au/report/flipside-chinas-central-bank-digital-currency>
- Huang, Zhousheng (2022), "百日行动 | 涉案金额高达400亿元! 衡阳县公安破获特大洗钱犯罪集团案, 抓获犯罪嫌疑人93人!" [100-Day Action | The Amount Involved Is as High as 40 Billion Yuan! The Hengyang County Public Security Cracked the Large-scale Money Laundering Criminal Group Case and Arrested 93 Suspects!], in *WeChat*, 25 September, <https://archive.ph/wip/w8D9h> [https://mp.weixin.qq.com/s/1EHyqkKRd5HxPYXSaj19rg]
- Huillet, Marie (2018), "Chinese Gov't Study Detects 421 Fake Cryptos, Outlines Key Features of Fraud", in *Cointelegraph*, 18 May, <https://cointelegraph.com/news/chinese-govt-study-detects-421-fake-cryptos-outlines-key-features-of-fraud>
- Huld, Arendse (2021), "Can China Join the Digital Economy Partnership Agreement?", in *China Briefing*, 19 November, <https://www.china-briefing.com/news/can-china-join-the-digital-economy-partnership-agreement>
- Huld, Arendse (2022a), "China Launches Digital Yuan App – All You Need to Know", in *China Briefing*, 22 September, <https://www.china-briefing.com/news/china-launches-digital-yuan-app-what-you-need-to-know>
- Huld, Arendse (2022b), "Cross-Border Data Transfer – New Measures Clarify Security Review Requirements", in *China Briefing*, 11 July, <https://www.china-briefing.com/news/cross-border-data-transfer-new-measures-offer-clarification-on-security-review>
- IFCERT-China's National Committee of Experts on Internet Financial

- Security Technology (2018), 警惕假虚拟货币平台诈骗陷阱 [Be Wary of Scams and Traps on Fake Virtual Currency Platforms], 18 May, <https://web.archive.org/web/20180524052648/https://www.ifcert.org.cn/industry/208/IndustryDetail>
- Knight, Will (2020), "As Trump Squeezes China, Alipay's Star Rises", in *Wired*, 28 September, <https://www.wired.com/story/trump-squeezes-china-alipay-star-rises>
- Kroeber, Arthur (2022), "Digital Renminbi Will Not Help Russia Evade Sanctions", in *Financial Times*, 16 March, <https://www.ft.com/content/cb13c87c-90d5-4266-8d62-e7e50be14f01>
- Li, Annie (2022a), "Bank of China Launches e-CNY Smart Contract Product for Off-campus School Education", in *Blockchain News*, 16 August, <https://blockchain.news/news/bank-of-china-launches-e-cny-smart-contract-product-for-off-campus-school-education>
- Li, Annie (2022b), "China Expands Digital Yuan Pilot Sites to 23 Regions across 15 Provinces", in *Blockchain News*, 13 July, <https://blockchain.news/news/china-expands-digital-yuan-pilot-sites-to-23-regions-across-15-provinces>
- Li, Boning and Su Zhang (2022), "Research on the Development Path of China's Digital Trade under the Background of the Digital Economy", in *Journal of Internet and Digital Economics*, Vol. 2, No. 1, p. 1-14, <https://doi.org/10.1108/JIDE-10-2021-0010>
- Liu, Ran, Wu Xiaomeng and Denise Jia (2022), "Cover Story: The Challenges Ahead for China's Digital Yuan", in *Caixin*, 15 August, <https://www.caixinglobal.com/2022-08-15/cover-story-the-challenges-ahead-for-chinas-digital-yuan-101926118.html>
- Mu, Changchun (2022), *Smart Contract and E-CNY*, Speech at the China International Finance Annual Forum 2022, 2 September, http://www.cf40.com/en/news_detail/12852.html
- OECD-Organisation for Economic Co-operation and Development (2021), *Digitalisation and Finance in Asia*, Paris, OECD, <https://www.oecd.org/finance/digitalisation-and-finance-in-Asia.htm>
- Palmer, Daniel (2021), "Ex-Head of China's Digital Yuan Effort Says CBDCs Could Operate on Ethereum", in *CoinDesk*, 31 May, <https://www.coindesk.com/tech/2021/05/31/ex-head-of-chinas-digital->

yuan-effort-says-cbdcs-could-operate-on-ethereum

- PBoC-People's Bank of China (2021a), “央行: 数字人民币将和传统电子支付工具长期并存” [Central Bank: Digital RMB Will Coexist with Traditional Electronic Payment Tools for a Long Time], in *163.com*, 16 July, <https://archive.ph/6Dul> [<https://www.163.com/tech/article/GF2H66IR00097U7R.html>]
- PBoC (2021b), *Progress of Research & Development of E-CNY in China*, July, <http://www.pbc.gov.cn/en/3688110/3688172/4157443/4293696/2021071614584691871.pdf>
- PBoC (2023), *Financial Statistics Report (2022)*, last update 10 January, <https://archive.ph/YgjFj> [<http://www.pbc.gov.cn/en/3688247/3688978/3709137/4765043/index.html>]
- Pollard, Martin Quin and Eduardo Baptista (2022), “China’s Cyber Watchdog Tries to Assuage Concerns of Internet Firms”, in *Reuters*, 19 August, <https://www.reuters.com/world/china/chinas-cyber-watchdog-wants-affectionate-ties-with-domestic-internet-firms-2022-08-19>
- Randhawa, Dipinder S. (2020), “China’s Central Bank Digital Currency: Implications for ASEAN”, in *RSIS Policy Reports*, December, p. 6-9, <http://hdl.handle.net/11540/13024>
- Reuters (2022), “Former PBOC Official Says China’s Digital Yuan Is Little Used – Caixin”, in *Reuters*, 29 December, <https://www.reuters.com/technology/former-pboc-official-says-chinas-digital-yuan-is-little-used-caixin-2022-12-29>
- Rogoff, Kenneth S. (2017), *The Curse of Cash. How Large-Denomination Bills Aid Crime and Tax Evasion and Constrain Monetary Policy*, Princeton, Princeton University Press
- Shanghai Securities News (2018), “潘功胜: 坚决打击遏制虚拟货币交易、ICO融资” [Pan Gongsheng: Resolutely Crack Down on Virtual Currency Transactions and ICO Financing], in *Shanghai Securities News*, 23 August, <https://archive.ph/V3CvQ> [<https://news.cnstock.com/news,yw-201808-4262742.htm>]
- Shen, Timmy (2022), “China Says It Busted US\$5.6B Crypto Money Laundering Ring”, in *Forkast*, 26 September, <https://forkast.news/headlines/china-cracks-us5-6b-cryptocurrency-money-laundering-case>

- Sohu (2022), “中国银行率先推出数字人民币智能合约 预付资金管理产品” [Bank of China Takes the Lead in Launching Digital RMB Smart Contracts, Prepaid Fund Management Products], in *Sohu.com*, 16 August, <https://archive.ph/V68Xv> [https://www.sohu.com/a/577193156_120952561]
- Tam, Mia (2020), “China’s Digital Yuan (DCEP)/(CBDC) Guide”, in *Asia Crypto Today*, 28 May, <https://www.asiacryptotoday.com/?p=1107>
- Tang, Andrea (2021), “Cross-Border Data Transfer and Data Localization Requirements in China”, in *ISACA Industry News*, 6 July, <https://www.isaca.org/resources/news-and-trends/industry-news/2021/cross-border-data-transfer-and-data-localization-requirements-in-china>
- Tang, Frank (2022), “China Digital Currency: Will Western Sanctions against Russia over Ukraine Boost e-Yuan?”, in *South China Morning Post*, 3 March
- US Senate (2022), S.4313: *Defending Americans from Authoritarian Digital Currencies Act*, 25 May, <https://www.congress.gov/bill/117th-congress/senate-bill/4313>
- Volz, Ulrich (2014), “RMB Internationalisation and Currency Cooperation in East Asia”, in Frank Rövekamp and Hanns Günther Hilpert (eds), *Currency Cooperation in East Asia*, Cham, Springer, p. 57-81
- Wang, Orange (2022), “China Digital Currency: e-CNY Offers Chance to ‘Reshape’ Global Payments, Boost Use of Yuan, Experts Say”, in *South China Morning Post*, 5 September
- Xinhua (2022a), “China’s RMB Cross-Border Payments Soar in 2021: Report”, in *Xinhuanet*, 3 April, <http://english.news.cn/20220403/de68cb3aeca04efe8357162a1bd13747/c.html>
- Xinhua (2022b), “数字人民币试点范围稳步扩大 配套制度法规提上日程” [The Scope of the Digital Renminbi Pilot Has Steadily Expanded, and Supporting Systems and Regulations Have Been Put on the Agenda], in *China Daily*, 4 August, <https://archive.ph/bqgKx> [http://www.gov.cn/xinwen/2022-08/04/content_5704279.htm];
- Xinhua (2022b), “数字人民币试点范围稳步扩大 配套制度法规提上日程” [The Scope of the Digital Renminbi Pilot Has Steadily Expanded, and Supporting Systems and Regulations Have Been Put on the Agenda],

- in *Tianshannet*, 5 August, <https://archive.ph/BV49d> [https://www.ts.cn/xwzx/gnxw/202208/t20220805_8287847.shtml]
- Zhang, Duan (2022a) ““通丝路”创建外贸新平台 搭建“人民币网上丝绸之路”” [Silk Road Creates a New Platform for Foreign Trade and Builds the Digital RMB Silk Road], in *Xinhuanet*, 16 July, <https://archive.ph/7xogi> [http://sn.news.cn/2022-07/16/c_1128837083.htm]
- Zhang, Mo (2022b), “数字人民币顶层制度设计将持续完善 确保“可控匿名”有效落实” [The Top-Level System Design of the Digital Renminbi Will Continue to Improve to Ensure the Effective Implementation of Controllable Anonymity], in *Shanghai News*, 27 July, <https://archive.ph/mSC4h> [https://news.online.sh.cn/news/gb/content/2022-07/27/content_9944748.htm]
- Zhang, Rui (2022c), “Industry Alliance Launched to Support Digital RMB”, in *China.org*, 26 July, <https://archive.ph/2ejUx> [http://www.china.org.cn/business/2022-07/26/content_78342008.htm]
- Zhang, Longmei and Sally Chen (2019), “China’s Digital Economy: Opportunities and Risks”, in *IMF Working Papers*, No. 19/16 (January), <https://doi.org/10.5089/9781484389706.001>
- Zhang, Yukun and Liu Ran (2022), “Central Bank to Beef Up Digital Yuan Rules to Address Privacy Issues”, in *Caixin*, 26 July, <https://www.caixinglobal.com/2022-07-26/central-bank-to-beef-up-digital-yuan-rules-to-address-privacy-issues-101918194.html>
- Zhongtai Securities (2022a), 数字人民币双周报 [Digital RMB Biweekly Report], No. 2/2022, https://pdf.dcfw.com/pdf/H3_AP202205301568876840_1.pdf
- Zhongtai Securities (2022b), 数字人民币双周报 [Digital RMB Biweekly Report], No. 4/2022, https://pdf.dcfw.com/pdf/H3_AP202206281575334515_1.pdf
- Zhou, Nian-li and Yao Ting-ting (2021), “中国自由贸易试验区推进数据跨境流动的现状、难点及对策分析” [Analysis of the Current Situation, Difficulties and Countermeasures of Promoting Data Cross-Border Flow in China’s Pilot Free Trade Zones], in *International Business Research*, No. 3/2021, DOI 10.13680/j.cnki.ibr.20210202.001, <http://ciwto.uibe.edu.cn/docs/2022-04/03771da5594440bea2519f2e145028dd.pdf>

6.

Golden Parachute: Financial Sanctions and Russia's Gold Reserves

Daniel McDowell

As a financial asset, it can be traded outside of regulated financial systems, rendering it nearly untraceable. It is inherently decentralised, not backed by a state. It cannot be easily “frozen” by authorities. Recently, targets of Western financial sanctions – Russia chief among them – have emerged as major investors in this space. The asset in question is not Bitcoin or any other cryptocurrency that relies on digitised, distributed ledger technology known as a blockchain. In fact, this increasingly popular store of value among would-be sanctions evaders could hardly be more analogue, or more antiquated. Gold, that ancient store of value, is having a contemporary golden moment as a hedge against the weaponisation of state-backed currencies. Gold’s pre-modern qualities are a feature for the metal, not a bug. While gold has some distinct disadvantages as a monetary asset compared to more liquid major currency reserves, its appeal today does not stem from its practicality in “normal times”. Gold’s value as a sanctions hedge is realised when a state finds its central bank targeted by Western governments that issue the world’s dominant reserve currencies. While the most popular central bank assets, like US Treasuries, are vulnerable to being “frozen” by reserve currency issuers, gold is different. Like top rated government securities, gold is universally accepted as a store of value, yet it is *stateless* and *physical*. Thus, unlike foreign government securities, gold can be held within a state’s own territory, outside of the reach of Washington, Brussels, or London. Over the last decade, bullion has emerged as a fundamental component of certain governments’ sanctions prepping toolkit.

While the growing interest in gold as a reserve asset is fairly widespread, no country leaned into the yellow metal more in recent years than Russia. As this study will argue, Moscow's rekindled love for gold is a direct result of the accumulation of US financial sanctions programmes targeting the Russian economy between 2014 and 2021. Direct experience with sanctions as well as observing and coordinating with other targeted regimes led the Central Bank of Russia (CBR) to vastly increase its bullion holdings. Monetary gold was sourced from domestic mines and from as far away as Africa. Alongside its gold buying binge, CBR made large cuts to its US Treasury holdings. These moves were made in anticipation of the West's eventual decision to sanction CBR in 2022, freezing 300 billion US dollars in financial assets following Russia's full-scale invasion of Ukraine. Russia's gold holdings were no panacea for the Kremlin in the face of these severe sanctions, but unlike CBR's dollar and euro holdings, its bullion remained under Moscow's control. I argue that gold reserves helped Russia in two distinct ways during the early days of the conflict. First, evidence suggests that Russia sold some of its bullion early in the conflict as a means of acquiring foreign exchange – something feasible, despite sanctions, because the physical nature of gold makes it possible to hide its origins. Second, as the ruble's value crashed in March 2022, the Russian government implemented policies to encourage citizens worried about their savings to buy gold. Many Russians heeded this advice. In this way, Russian gold reserves operated as a de facto anchor for the ruble. This may have made severe capital outflow restrictions, which blocked off investments into foreign currency assets, more palatable to Russian savers.

1. SANCTIONS AND THE GROWTH OF RUSSIAN GOLD RESERVES

By the time that the United States and its allies coordinated on a massive, multilateral sanctions programme to impose harsh economic costs on Russia following the 2022 Ukraine invasion, the Kremlin was already very experienced as a sanctions target. Moscow's first taste of US financial sanctions came in 2014 when the Obama administration issued a series of four executive orders that year to punish Russia for the forced annex-

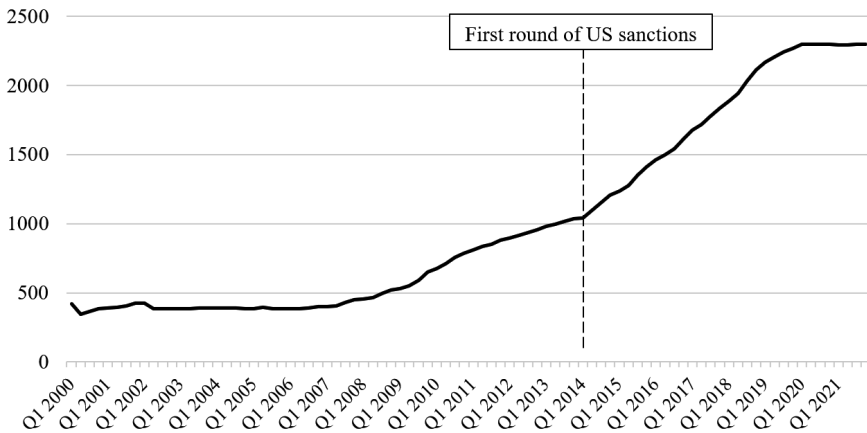
ation of Crimea. Russia continued to rack up an impressive sanctions record, targeted with additional sanctions-related executive orders in every year between 2015 and 2019. The Obama and Trump administrations added additional sanctions programmes in response to a variety of Russian transgressions: cyberattacks, election meddling, human rights violations, and continued involvement in the conflict in eastern Ukraine. Washington's targets in Russia included government officials, oligarchs, and firms in the energy and defence sectors. These targets were cut off from the dollar-based financial system, denying their ability to raise debt in dollars, to conduct cross-border transactions in dollars, and in some cases having their dollar-denominated assets frozen. Notably, key institutions of the Russian state, in particular the central bank and the Russian National Wealth Fund, were not targeted in any case. Still, Russia's response was to implement a major rebalancing of the currency and asset composition of its foreign exchange reserves. The rebalancing took place in stages. Moscow's first move, and the focus of this study, was a significant and sustained increase in the pace of CBR's gold purchases immediately following Washington's initial round of sanctions in 2014.¹

Figure 6.1 reports CBR's gold holdings in metric tons from 2000 to 2021. For much of the 2000s, there was virtually no change in the bank's bullion holdings. Following the 2008 financial crisis, gold purchases begin to pick up. This shift is consistent with many other emerging markets which began to invest more heavily in gold around that time. The move was partly driven by falling confidence in the dollar's value as the greenback's trade-weighted exchange rate was nearing its all-time low (Cooper 2011). However, by 2013, gold purchases began to flatten out. This changed dramatically the following year when the United States initiated wave after wave of sanctions targeting Russian interests. There is a notable upward shift in the slope of bullion holdings before 2014, indicating an increase in the pace of purchases. Russia maintained its

¹ In 2018, following an especially severe round of US sanctions, Moscow implemented a second stage of its reserve diversification strategy. At that time, CBR cut its US dollar holdings by roughly 25 per cent and invested more in euro and renminbi-denominated assets while continuing to increase the share of gold in its reserves (McDowell 2023).

unprecedented bullion buildup until 2020. By then, the CBR had more than doubled its gold reserves from 2014 levels, increasing its stock by nearly 1,300 metric tons.²

Figure 6.1 | Russian gold holdings (metric tons), 2000–2021



Note: A clear break in Russian gold purchases can be seen following the first quarter of 2014, after the US Treasury targeted Russia with sanctions following the invasion of Crimea. Data reported are from the World Gold Council.

2. EXPLAINING RUSSIA'S THIRST FOR GOLD

Why did Russia invest so heavily in gold following the onset of US financial sanctions? CBR's gold purchases were part of a deliberate sanctions prepping strategy on the part of the Kremlin. As the United States levied

²CBR built up its gold reserves from domestic and international sources. First, Russia is a major gold producer in its own right, typically ranking third in total production behind China and Australia. CBR became a major buyer of domestically mined gold following the onset of US sanctions (Nardelli 2014). In addition, Russia used a paramilitary organisation known as Wagner Group to craft ties with regimes in several destabilised, conflict-prone African countries. By providing security services to embattled military leaders, Wagner accepted payment in gold which was then transported by air to Russia (Elbagir et al. 2022; Peltier et al. 2022).

one round of punishment after another, Russia's perception of the dollar shifted. Given the risk associated with holding dollars, assets in US currency grew less attractive relative to non-dollar-denominated assets. The logic here is straightforward. Like all central banks, CBR does not hold its foreign currency reserves in cash on Russian soil; rather its foreign exchange assets are held at foreign institutions. Most US dollar reserves are in the form of US government securities ("Treasuries") held in accounts at the Federal Reserve Bank of New York (Schularick 2011). Such assets are subject to US legal jurisdiction meaning they are vulnerable to being "frozen" at the stroke of the US President's pen. While Washington does not sanction foreign central banks frequently, it is not unprecedented. For example, the United States froze the dollar-assets of central banks in Libya, Iran, and Venezuela in 2011, 2012, and 2019 respectively. These moves were not lost on Russian authorities. Indeed, a former head of the CBR, discussing Russia's reserve diversification plan, publicly acknowledged that Russia had learned from the US confiscation of the Iranian central bank's assets (Andrianova et al. 2018).

Gold is quite a different monetary asset when compared to government securities like US Treasuries. While some central banks park their monetary gold in custody with foreign monetary authorities³, many governments (including Putin's regime) choose to store their gold in their own vaults within their own territory.⁴ Unlike US treasury holdings which can quickly be turned into cash and used for foreign exchange intervention or other purposes, gold held within national vaults is quite illiquid. Thus, the usefulness of gold in national vaults during "normal times" is limited. However, the appeal of gold for a country like Russia is derived not from its functionality in normal times; rather, it stems from the fact that gold can be kept, quite literally, out of reach of adversaries. While dollar reserves can be frozen under a US sanctions programme, gold reserves held in a country's own

³The Federal Reserve and Bank of England offer such services, for example.

⁴The precise location of Russian gold reserves is not known; however Russian Deputy Finance Minister Alexi Moiseev has publicly stated that the bullion is stored in two "securely guarded" locations on Russian soil (Vedomosti 2022).

vaults cannot be seized by a foreign government (short of a military invasion).⁵

The tradeoff, then, between government securities and gold as reserve assets is *liquidity* versus *security*. For CBR, following the initial waves of US sanctions, the decision was made to reallocate reserves in such a way that the security of its assets would be weighted more heavily than their liquidity.⁶ Yet if physical gold in Russian vaults is so illiquid, what value is there in the metal? The illustrative case here is Venezuela. The regime of Nicolas Maduro has faced its own harsh US sanctions regime beginning in 2015 and intensifying in subsequent years. In 2019, Washington moved to further ratchet up the pain targeting Maduro and did so by blacklisting the state-run oil company and the central bank. The loss of hard currency earnings from oil exports and the loss of access to its (dwindling) foreign exchange reserves left Maduro in a bind.

What the sanctions could not touch, however, was the regime's stockpile of physical gold. The precious metal functioned as a lifeline for the embattled regime.⁷ Following the intensification of US sanctions in 2019, Venezuelan authorities, with Moscow's help, loaded tons of gold onto Russian aircraft. The gold was transported to various destinations including Turkey, United Arab Emirates and Uganda where it was sold (Pons and Armas 2019; Steinhauser and Bariyo 2019).⁸ In exchange, cash in hard currencies was reportedly returned to Venezuela which could enter the banking system and be used to pay for imports. Other

⁵ Russian media frequently make this point when discussing the appeal of gold reserves (Khachaturov 2019; Polunin 2019).

⁶ As one Russian financial services company reported on its website following the invasion, CBR had been preparing for "two types of crises" since 2014: a "traditional financial crisis" where foreign exchange reserves are needed to stabilise the economy, and a "geopolitical" crisis, where gold and other non-traditional reserve assets have more value given that they cannot easily be sanctioned by adversaries (Dubinin 2022; Abalakin 2022).

⁷ For these reserves, Maduro had his predecessor, Hugo Chavez, to thank. Chavez had repatriated 160 tons of bullion from Europe in 2011 (Banco Central de Venezuela 2011).

⁸ It is nearly impossible to stop the sale of gold in such grey markets. Even if sanctions are placed on a country's gold sales, gold bars can be melted and reformed to hide its origins. In this respect, it is an ideal asset for money laundering.

reports indicate that Maduro used physical gold as a form of payment to Iran for its assistance repairing offline Venezuelan oil refineries (Laya and Bartenstein 2020). Venezuela's experience demonstrates how gold reserves can play a unique role as a form of insurance against the costs externally imposed financial isolation.

3. RUSSIAN GOLD AFTER THE 2022 INVASION OF UKRAINE

What role, if any, did Russia's gold reserves play in helping the country weather Western financial sanctions? While the full picture will not be known for some time, at this early stage there appear to be two main ways that the precious metal helped cushion the blow of the West's coercive economic measures. First, there is evidence to suggest that Putin sold gold outside of traditional markets as a means of acquiring foreign exchange, potentially to support the ruble while it was under pressure. Second, during the ruble's crash in March 2022, gold served as a *de facto* anchor for the currency in domestic financial markets. This may have helped ease the Russian public's fears about the value of their savings and made the strict capital controls regime more palatable, limiting political blowback against Putin's regime.

3.1 Gold sales in non-traditional markets

Western powers did everything they could to diminish the value of the Russia's 140 billion US dollars cache of bullion. Almost immediately following the invasion, Russia was cut off from traditional gold markets. First, CBR's gold was also not welcome at traditional Western auction houses because of the sanctions blocking transactions with the monetary authority. In addition, the London Bullion Market Association (the organisation that oversees the global Over The Counter bullion market accounting for 70 per cent of worldwide gold trading volume) suspended the membership of major Russian refineries in early-March 2022.⁹ Then, in June 2022, the Group of Seven countries reached a

⁹This was a significant blow since London was the destination for the majority of Russian gold exports prior to February 2022.

deal to collectively ban Russian gold imports, formally ending Russia's access to Western markets.

Despite the barriers blocking Russia from major gold exchanges, US officials publicly fretted about the potential for Russia to sell some of its 140 billion US dollars in unfrozen gold reserves, using the proceeds to support the ruble or help pay for its war effort (Polyakova 2022). After all, Moscow had helped a financially isolated Nicolas Maduro sell Venezuelan gold in Africa and the Middle East, outside Western auction houses, to evade similar measures. Gold sales in such grey markets are notoriously difficult to track or block. There is some circumstantial evidence that suggests Russia may have used developing ties with the United Arab Emirates to facilitate a similar scheme.¹⁰ In March and April 2022, Switzerland – home to four of the seven largest gold refineries in the world – recorded a surge in gold imports from UAE.¹¹ This led a Swiss non-governmental organisation to warn that refineries may have inadvertently purchased Russian gold being routed through Dubai as a means of hiding its origins (Swissaid 2022).¹²

Such assertions are highly plausible. Dubai has a history of operating as a hub for illicit gold sales, including playing a key role in facilitating Maduro's sales of his country's gold reserves to weather sanctions (Cole 2019; Reuters 2021; Smith 2021). Any proceeds Russia may have obtained through these exchanges could have been used to help stabilise the cratering ruble in March 2022. Indeed, some financial analysts openly speculated that illicit gold sales played a role in the surprising resiliency of the currency at that time (Ramkumar and Ostroff 2022). As the war dragged on, China emerged as another buyer of unrefined Russian gold.¹³ Russia has commercial banks that are members of the Shang-

¹⁰ UAE emerged as a haven for wealthy Russians seeking cover from the threat of Western sanctions following the invasion of Ukraine (Auge 2022).

¹¹ Sales topped 3 billion US dollars over that two-month span; levels not seen in at least six years.

¹² Unfortunately, it is difficult to confirm such sales because there are no official figures on Russian gold exports to UAE.

¹³ This would indicate that its origins are in Russia's gold mines, not central bank vaults.

hai Gold Exchange where the metal is priced, and sold, in renminbi. In June and July 2022, Chinese imports of the precious metal from Russia jump to 1.5 tons per month, up from just 30–40 kilograms per month before the conflict (Tkachev and Degotkova 2022).

The extent to which Russia utilised its massive gold stockpile to weather the initial impact of sanctions is difficult to confirm. CBR stopped updating its reserves data following the start of the war when the government moved to classify the information about the country's gold and foreign exchange reserves as a state secret (Degotkova 2022; Reuters 2022). However, it is clear that despite the West's efforts to block Russian bullion sales, markets for the Kremlin's gold remain open in "neutral" countries. Furthermore, the financial incentives at play here help to propel this sort of market behaviour. Because Russia is cut off from the dominant gold market in London where mainstream prices for the commodity are set, it has diminished leverage vis-à-vis available buyers. Some metals experts estimate that Russia has sold gold at 20–30 per cent discounts since the war began (Tkachev and Degotkova 2022). Buyers in third-party countries like UAE or China can then hide the gold's source of origin through physically changing the appearance of the bars, ingots, or raw metal. This means the gold can be resold in traditional markets at the London price, leaving the intermediary with a substantial profit.

3.2 The crashing ruble, capital controls, and gold

Russian gold reserves helped the Kremlin in another way following the invasion of Ukraine. CBR's bullion functioned as a de facto anchor for the ruble when confidence in the currency hit a crisis low. In that way, the gold reserves likely blunted political blowback from the austere macroeconomic policies that were implemented following the onslaught of sanctions. Those austere measures were rapidly put in place by CBR's adept governor, Elvira Nabiullina. The policy moves were designed to reverse the ruble's plunge following the onset of Western sanctions. CBR recognised that those measures would spook foreign investors and wealthy Russians who would respond by exchanging their rubles for dollars and euros to preserve the value of their savings. Of course, were such a dynamic to be allowed to unfold, the pressure on the ruble would have

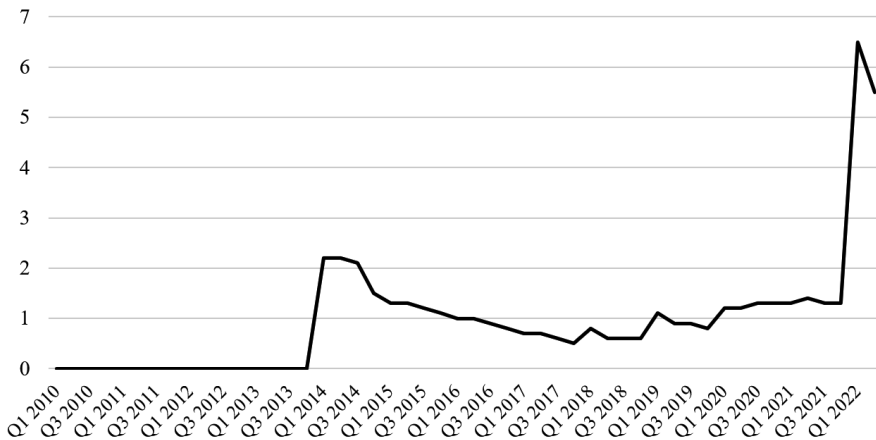
become extreme and a full-fledged currency crisis would have beset the economy. In order to forestall such events, Nabiullina swiftly made two critical moves: she raised interest rates to a staggering 20 per cent, and she imposed a strict regime of capital controls. Both steps were designed to lock capital within Russia, preventing a stampede out of the ruble. More quickly than most analysts had expected, the ruble's exchange rate against the dollar began to rise again and hold steady. Observers noted that this was not the true exchange rate since, without capital controls, the ruble's value would have continued to fall. But the fact remained that the austere measures had effectively staved off a repeat of Russia's 1998 currency collapse.

And yet these policy moves were not without their own risks. High interest rates reward savers, but they penalise borrowers and crush aggregate demand, often inducing a recession. The costs of capital controls are distributed a bit differently. In this case, it is Russians with savings that are most penalised. Measures that restrict Russian residents' ability to exchange depreciating rubles for hard currencies results in significant wealth loss, in real terms, for anyone with substantial savings in the currency. This can be politically costly for governments. Survey evidence from Argentina reveals that voters are knowledgeable about capital controls, that savers do not like them, and that use of the policy tool can impact vote choice (Steinberg and Nelson 2019). A separate survey-based study focused on Turkey found that rapidly depreciating currencies significantly lowers approval for incumbent governments (Steinberg 2022). Taken together, Nabiullina's capital controls denied wealthy and middle-class Russians the capacity to sell their crashing rubles for currencies that would hold their value – a move that could have been politically costly for Putin. This is where gold re-enters the picture.

Within days of the ruble's crash following the unveiling of the first tranche of Western sanctions, Russian officials were publicly touting their country's gold as an alternative to foreign currencies like the dollar. Russian Finance Minister Anton Siluanov tried to sell the public on the yellow metal in a press release, arguing that given the "unstable geopolitical situation, investments in gold will be an ideal alternative to buying dollars. The US currency is more volatile, subject to various kinds of risks" (Bodryashkin 2022; Astrasheuskaya 2022). Prime Minis-

ter Mikhail Mishustin joined in saying that investments in gold “can be a good alternative to buying foreign currency” (Buylov 2022; Russian Government 2022). Not only did Russian policymakers loudly tout gold as an appealing store of value for panicked Russian savers, but the government also swiftly repealed tax laws governing the domestic gold market. Prior to the invasion, Russian law required that anyone who purchased gold bars from a bank pay a 20 per cent value added tax (VAT) at the time of purchase. The tax effectively made it unprofitable to engage in the bullion trade. In a deliberate effort to encourage citizens to purchase gold, the Russian Duma moved to eliminate the VAT on gold purchases and sales on 2 March 2022. The move was anticipated by authorities to pave the way for as much as 50 tons of gold to be purchased by the public over the course of the next year (Moscow Times 2022).

Figure 6.2 | Russian retail investments in gold (bar and coin), 2010–2022



Note: Russian purchases of physical gold increased dramatically following the imposition of Western sanctions in February 2022. Data reported are from the World Gold Council.

Individual Russians did, in fact, follow the government’s advice. Cut off from foreign exchange markets due to the new capital controls regime, they had little other choice. The banking system oversees the retail gold market in Russia. Major financial institutions in the country reported significant increases in gold sales following the sanctions and the abo-

lition of the VAT. In March 2022, Sberbank reported a 30-fold increase in gold demand, a surge which depleted the available reserves of bullion held in its vaults (Moscow Times 2022). By mid-April, Sberbank reported it had sold nearly 11 tons of gold bars. VTB and PSB, two other major Russian banks, had sold at least 3 tons of bullion between them. Other lenders did not disclose their sales, but indicated that demand for the commodity was abnormally high (Sherunkova 2022). Figure 6.2 reports quarterly gold bar and coin investment demand in Russia from 2010–2020 in tons. Though these data undercount total gold sales when compared to self-reported sales by Russian banks cited above, the figure is illustrative of the same pattern in the market. Western sanctions, the crashing ruble, and Governor Nabiullina’s capital controls provoked an historic spike in retail demand for gold among Russian.

It is not clear whether any commercial banks exchanged rubles for additional gold reserves from CBR (again, the Russian government moved to keep its gold reserves classified following the invasion). However, given the surge in demand and gold shortages at major Russian financial institutions, such exchanges are quite possible if not likely. Indeed, one purpose of holding such enormous gold reserves would be to have the capacity to backstop a surge in public demand for the precious metal during a geopolitically-induced financial crisis like this. Notably, during the initial weeks of the invasion, reports and rumours circulated in Russia that CBR’s bullion was not, in fact, on Russian territory, but had instead been transported to the United Kingdom.¹⁴ Such rumours undermined the government’s efforts to cultivate confidence in gold as an alternative store of value to the dollar during the ruble’s crash. In an effort to head off any public alarm, Deputy Finance Minister Alexei Moiseev made a strong public statement on the matter: “I responsibly declare that no gold from the state fund of Russia went to any England [...] gold has never been exported from the Gokhran, on the contrary, we only buy it and have been increasing the stock all these years” (Vedomosti 2022; Zlobin 2022).

¹⁴ Such gossip was not isolated to internet and social media platforms, indeed, government officials like Senator Nikolai Ryzhov were publicly engaged in hand wringing over the issue.

CONCLUSIONS

Gold has been used by humans as a store of value for over 7000 years. Though it had fallen out of favour among central bankers around the turn of the last century, its popularity has been on the rise since 2008. This is in part due to rising concerns about US sanctions. Russia has led the way in increasing the gold share of its reserve assets. Having experienced US sanctions first-hand starting in 2014 and having observed US actions to freeze Iran and Libyan reserves, CBR moved to increase the security of Russian state assets by hoarding bullion. While coordinated Western sanctions cut Moscow off from 300 billion US dollars in state assets, 140 billion US dollars in gold remained secure in Russian vaults. Evidence suggests that the bullion proved useful as a means of acquiring foreign exchange through gold sales in non-Western markets and by functioning as an anchor for the ruble amid its post-invasion plunge.

Because Western sanctions spared the Russian energy sector by allowing continued gas and oil sales to Europe, Russia was not forced to lean on its gold reserves in the way that Venezuela was years earlier. Energy exports allowed hard currency inflows into the Russian financial system to continue, meaning foreign exchange remained available to cover imports or service debts (at least for those firms and individuals not blacklisted by Western financial agencies). In time, however, as Europe transitions away from Russian energy, Putin may turn to gold reserves more seriously as a means of acquiring increasingly scarce hard currencies. This may result in additional gold sales in non-traditional markets or to foreign sovereigns like China. Or Putin could use gold as a form of collateral to secure foreign currency loans from friendly countries. Western sanctions may also fuel the faster development of precious metals markets like the Shanghai Gold Exchange, leading to the mainstreaming of the renminbi price of gold as an alternative to the London market for states sceptical of the West.

There is also the potential for technological innovation in gold markets which could help states like Russia minimise the trade-off between liquidity and security. For example, the World Gold Council is developing a system that would improve the liquidity in the gold market by introducing a database based on the blockchain to track gold bars in London. From there, a gold-backed digital token could be introduced (Spence and

Pakiam 2022). While pariah states like Russia could still be blocked from trading in mainstream markets, rival tokens in more friendly states may emerge, offering a safe haven. Indeed, a separate group in UAE has already launched a token backed by the precious metal (Hoffman 2022). Were such markets to develop and gain acceptance, Russia and other sanctioned states could better harness the wealth stored in their gold. They might even move to settle cross-border transactions using “digitised” gold, avoiding the risks and transaction costs associated with the physical transfer of bars. However, if international gold markets develop in the coming decade, Russia’s experience suggests that in a world where dollars and euros are increasingly used as economic weapons, the future of money may be in the past.

REFERENCES

- Abalakin, Timofey (2022), “The Central Bank Explained the Storage of Reserves Abroad” (in Russian), in *Frank RG*, 25 March, <https://frankrg.com/63838>
- Andrianova, Anna, Evgenia Pismennaya and Olga Tanas (2018), “Putin Hedges Trump Bet by Dumping Treasuries to Safeguard Assets”, in *Bloomberg*, 20 July, <https://www.bloomberg.com/news/articles/2018-07-20/putin-hedges-trump-bet-by-dumping-treasuries-to-safeguard-assets>
- Astrasheuskaya, Nastassia (2022), “Russia to Make Gold Purchases Tax Free in Bid to Halt Switch to Foreign Currencies”, in *Financial Times*, 2 March, <https://www.ft.com/content/cde1a3c5-9143-457c-9e9f-a09edfec8148>
- Auge, Louis (2022), “United Arab Emirates Has Emerged as a Haven for Russians Fleeing the Impact of Western Sanctions - But How Long Will It Last?”, in *EU Reporter*, 14 June, <https://www.eureporter.co/world/ukraine/2022/06/14/united-arab-emirates-has-emerged-as-a-haven-for-russians-fleeing-the-impact-of-western-sanctions-but-how-long-will-it-last>
- Banco Central de Venezuela (2011), *BCV inició la repatriación del oro monetario de la República*, 25 November, <https://www.bcv.org.ve/node/8115>

- Bodryashkin, Yaroslav (2022), "Siluanov Proposed to Invest in Gold Instead of Dollars" (in Russian), in *Gazeta*, 2 March, <https://www.gazeta.ru/business/news/2022/03/02/17367727.shtml>
- Buylov, Maxim (2022), "Золоту скинут 20%" [Gold Will Be Dropped 20%], in *Kommersant*, No. 37 (3 March), <https://www.kommersant.ru/doc/5239494>
- Cole, Brendan (2019), "Venezuela Is Selling Off Its Gold Reserves to United Arab Emirates for Cash: Report", in *Newsweek*, 1 February, <https://www.newsweek.com/1314454>
- Cooper, Amanda (2011), "Emerging World Buys \$10 Billion in Gold as West Wobbles", in *Reuters*, 3 August, <https://www.reuters.com/article/idUSTRE7722IK20110803>
- Degotkova, Inna (2022), "The Ministry of Finance Proposed to Determine the Reserves of Gold and Platinum for the Needs of Mobilisation" (in Russian), in *RBC Group News*, 20 June, <https://www.rbc.ru/economics/20/06/2022/62b083d39a794751b5e3d0db>
- Dubinina, Sergey K. (2022), "Russia's Financial System under Sanctions: Logic of Confrontation", in *Russia in Global Affairs*, Vol. 20, No. 4, p. 82-102, <https://eng.globalaffairs.ru/?p=54202>
- Elbagir, Nima et al. (2022), "Russia Is Plundering Gold in Sudan to Boost Putin's War Effort in Ukraine", in *CNN*, 29 July, <https://www.cnn.com/2022/07/29/africa/sudan-russia-gold-investigation-cmd-intl/index.html>
- Hoffman, Ernest (2022), "DMCC Launches Tokenized Gold Bullion", in *Kitco News*, 22 November, <https://www.kitco.com/news/2022-11-22/-DMCC-launches-tokenized-gold-bullion.html>
- Laya, Patricia and Ben Bartenstein (2020), "Iran Is Hauling Gold Bars Out of Venezuela's Almost-Empty Vaults", in *Bloomberg*, 30 April, <https://www.bloomberg.com/news/articles/2020-04-30/iran-is-hauling-gold-bars-out-of-venezuela-s-almost-empty-vaults>
- McDowell, Daniel (2023), *Bucking the Buck. US Financial Sanctions and the International Backlash against the Dollar*, Oxford, Oxford University Press
- Moscow Times (2022), "Россияне тоннами скупают золото" [Russians Buy Tons of Gold], in *The Moscow Times*, 29 July, <https://www.moscow->

- times.eu/2022/07/29/rossiyane-tonnami-skupayut-zoloto-a22738
- Nardelli, Alberto (2014), "Russia Goes on Decade's Biggest Gold Buying Spree", in *The Guardian*, 14 November, <https://www.theguardian.com/p/43am9>
- Peltier, Elian, Mady Camara and Christiaan Triebert (2022), "'The Killings Didn't Stop.' In Mali, a Massacre with a Russian Footprint", in *The New York Times*, 31 May, <https://www.nytimes.com/2022/05/31/world/africa/mali-massacre-investigation.html>
- Polyakova, Victoria (2022), "ЦБ ответил на критику из-за заморозки части золотовалютных резервов" [The Central Bank Responded to Criticism Due to the Freezing of Part of the Gold and Foreign Exchange Reserves], in *RBC Group*, 25 March, <https://www.rbc.ru/economics/25/03/2022/623d702c9a7947447f211106>
- Pons, Corina and Mayela Armas (2019), "Exclusive: Venezuela Plans to Fly Central Bank Gold Reserves to UAE – Source", in *Reuters*, <https://reut.rs/2UxRlp1>
- Ramkumar, Amrith and Caitlin Ostroff (2022), "What Sanctions Mean for Russia's \$140 Billion in Gold", in *The Wall Street Journal*, 25 March, <https://www.wsj.com/articles/what-sanctions-mean-for-russias-140-billion-in-gold-11648168459>
- Reuters (2021), "Mali, Emirates Facilitated Venezuelan Gold Trade in 2020, Opposition Says", in *Reuters*, 5 March, <https://reut.rs/3sUVt3B>
- Reuters (2022), "Russian Lawmakers Give First Nod to Bill Keeping State FX, Gold Reserves Secret", in *Reuters*, 22 June, <https://www.reuters.com/article/ukraine-crisis-russia-sanctions-idUKL8N2Y941M>
- Russian Government (2022), *Government Meeting: Mikhail Mishustin's Opening Remarks*, 2 March, <http://government.ru/en/news/44692>
- Schularick, Moritz (2011), "Managing the World's Dollar Dependency", in *Policy Innovation Memoranda*, No. 1 (22 February), <https://www.cfr.org/report/managing-worlds-dollar-dependency>
- Sherunkova, Olga (2022), "Золото берут килограммами" [Gold Is Taken by Kilograms], in *Kommersant*, No. 140 (4 August), <https://www.kommersant.ru/doc/5492863>
- Smith, Patrick (2021), "Why Much of Africa's Illicit Gold Trade Transits

- through Dubai”, in *The Africa Report*, 15 January, <https://www.theafricareport.com/58295>
- Spence, Eddie and Ranjeetha Pakiam (2022), “A Digital Drive to Reform the \$11 Trillion Global Gold Market”, in *Bloomberg*, 16 October, <https://www.bloomberg.com/news/articles/2022-10-16/a-proposal-to-track-gold-bars-with-blockchain-technology>
- Steinberg, David A. (2022), “How Voters Respond to Currency Crises: Evidence from Turkey”, in *Comparative Political Studies*, Vol. 55, No. 8 (July), p. 1332-1365, DOI 10.1177/00104140211060268
- Steinberg, David A. and Stephen C. Nelson (2019), “The Mass Political Economy of Capital Controls”, in *Comparative Political Studies*, Vol. 52, No. 11 (September), p. 1575-1609, DOI 10.1177/0010414019830746
- Steinhauser, Gabriele and Nicholas Bariyo (2019), “How 7.4 Tons of Venezuela’s Gold Landed in Africa—and Vanished”, in *The Wall Street Journal*, 18 June, <https://www.wsj.com/articles/how-7-4-tons-of-venezuelas-gold-landed-in-africaand-vanished-11560867792>
- Swissaid (2022), *Alarming Rise in Gold Imports from Dubai*, 17 May, <https://www.swissaid.ch/en/media/grosses-risiko-von-russischem-goldimport>
- Tkachev, Ivan and Inna Degotkova (2022), “Китай нарастил ввоз золота из России более чем в 8 раз” [China Has Increased the Import of Gold from Russia More than 8 Times], in *RBC Group*, <https://www.rbc.ru/economics/26/08/2022/63077c579a794790b222c6c8>
- Vedomosti (2022), “Минфин опроверг слухи о выводе золотых запасов из России” [The Ministry of Finance Denied Rumors about the Withdrawal of Gold Reserves from Russia], in *Vedomosti*, 22 June, <https://www.vedomosti.ru/finance/news/2022/06/22/927904-minfin-oproverg-sluhi-o-vivode-zapasov>
- Zlobin, Andrey (2022), “ЦБ рассказал об ответе Западу на заморозку своих золотовалютных резервов” [The Central Bank Spoke about the Response to the West to Freeze Its Gold and Foreign Exchange Reserves], in *Forbes*, 25 March, <https://www.forbes.ru/finansy/460291-cb-rasskazal-ob-otvete-zapadu-na-zamorozku-svoih-zolotovalutnyh-rezervov>

Conclusion

Nicola Bilotta

Since February 1945, the United States' global influence has been cemented by, among other factors, the international role of the US dollar. The US is uniquely well positioned to use financial “warfare” in the service of its foreign policy. Since the global economy relies on the US dollar as the primary medium for cross-border transactions, unit of account and foreign reserves, the United States derives significant economic and national-security benefits from its central role in the global financial system. Since 2000, US sanctions have increased by 933 per cent (US Department of the Treasury 2021). Yet, the recent “weaponisation” of finance against Russia in response to its invasion of Ukraine might have accelerated actions and ambitions to rethink financial globalisation in order to reduce global dependence on Western-led currencies and payment infrastructure (Pozsar 2022). Saudi Arabia and other Gulf Arab nations have pegged their currencies to the US dollar over the last few decades, grounding the US security strategy in the Middle East on petrodollars. However, in December 2022, China invited Saudi Arabia and other Gulf countries to settle bilateral oil-trade transactions in yuan, a shift that could have a radical impact on the existing balance of power in the region. As noticed by Zoltan Pozsar, the de-dollarisation of the oil industry is gradually, slowly – and yet apparently unavoidably – happening. Forty per cent of proven oil reserves are located in Russia, Iran and Venezuela, which have strategic incentives in switching to oil denominated in yuan, while another 40 per cent is owned by the countries of the Gulf Cooperation Council. Lately, Saudi Arabia and the United Arab Emirates (UAE) have been increasingly deepening their ties with

China (Foroohar 2023). This is just one example of a broader megatrend. India and Russia are renegotiating in order to establish rupee-ruble arrangements to settle their oil-trade transactions in the light of Western sanctions (Cornish 2022). Brazil and Argentina have launched the idea of developing a common currency (Stott and Elliott 2023). The People's Bank of China recently announced its signature of a memorandum of understanding (MOU) on establishing Chinese yuan clearing arrangements with the Banco Central do Brasil (Giovannini 2023).

De-dollarisation is not a new theme, though. Over the past 20 years, several countries have tried to make their currency an attractive alternative to the US dollar or to establish new payment infrastructure. China has undertaken significant efforts to globalise its national currency as, compared with its economic power, the yuan significantly underperforms as an international currency, making Beijing highly dependent on and vulnerable to the US dollar. Also, the European Union, one of the United States' closest allies, has set the goal of increasing the internationalisation of the euro as a key dimension of its ambitions for strategic autonomy (Panetta 2020). Yet, attempts to significantly erode the US dollar's dominance have failed so far. While the war in Ukraine might incentivise countries to seek new ways of reducing their vulnerability to the US-led global financial system, the US dollar is likely to maintain its primary role in the global monetary system. Nevertheless, the true battleground will materialise in the long run, when digitalisation could empower decentralisation while undermining the unipolarity of the current system. The key question is whether recent geopolitical tensions and economic dislocations could be a catalyst for transformation in the current international monetary system.

Inertia and friction are key forces that tend to consolidate the hegemony of the US dollar, but, in the current context of a growing politicisation of money, the process of financial digitalisation can be a crucial force for change in pushing currency and payment-system diversification. In the former arena, with the advent of automated and electronic trading platforms that significantly lower transaction costs, central banks have gained much easier and cheaper access to foreign currencies – thereby incentivising reserve diversification. Furthermore, the possible introduction of Central Bank Digital Currencies (CBDCs)

around the world has the potential to lower the costs of cross-border transactions and to establish a new international payment infrastructure (Auer et al. 2021). A recent survey of 50 central banks in the first quarter of 2021 explored initial thinking on the cross-border use of CBDCs (BIS CPMI et al. 2021).

In a future scenario in which several national CBDCs are developed, bilateral and multilateral CBDC arrangements could promote the establishment of a new payment-system network based on multi-CBDC arrangements. In such circumstances, exchange risks and costs could be drastically reduced and nodes made more independent from the US dollar as they would not require the multi-layered clearance and settlement infrastructure that lies behind credit-card transactions. Moreover, a well-designed CBDC could facilitate the digitalisation of information exchanges in alternative data, potentially connecting a CBDC system with higher-value services provided at a lower cost. For example, digital networks and multi-CBDC arrangements could ease the empowerment of more efficient trade links with the application of smart contracts via distributed-ledger systems, programmable money and programmable payments, which could support increasingly complicated business logics.

However, to enable this potential, there is a need for some degree of cooperation on the shared standards and protocols which design and guarantee interoperability between CBDC systems. CBDCs would then require countries to accept each other's currencies as the currency of trade. As China is the frontrunner in the global race for CBDC issuance, Beijing is leveraging its first-mover advantage in order to globally influence the development of CBDCs. The People's Bank of China has already proposed a set of global rules to empower basic interoperability between CBDCs issued by different jurisdictions, and has been promoting experiments in cross-border transactions between CBDC systems. The world is not passively watching, though. The European Central Bank (ECB) has launched an ambitious roadmap to reflect upon the design and possible introduction of a digital euro; likewise, in the US, there is a dynamic discussion on the opportunity to launch a digital dollar. Around the globe, the number of cross-border CBDC experiments is ratcheting up.

In this scenario of growing competition, the US risks losing its leadership in the international monetary system if it fails to embrace and shape a new vision for a digitalised (and increasingly politicised) global monetary system. While it is true that no other contender could challenge the existing US-dominated dollar system in the short to medium term, the United States and its allies should strategically reflect upon the long-term implications should their leadership in the global monetary system be eroded. If the aforementioned issues are ignored and/or improperly counterbalanced in the long run, the US risks losing not only this unique form of financial leverage but also its ability to shape and influence the global financial order. It cannot, however, pursue solely its own strategic interests when shaping the new system. Washington should coordinate and cooperate with other Western nations on equal ground. Otherwise, the risk is of fostering and establishing further fragmentation. While still in the early stages of CBDC development,¹ the document “Public Policy Principles for Retail Central Bank Digital Currencies (CBDCs)”, endorsed by G7 members under the UK Presidency in 2021, seems to be a first – and yet preliminary – step in the right direction (G7 2021).

The future shape of the international monetary system remains to be seen. Transformations seem to be inevitable, though, as geopolitics and decentralisation empowered by digitalisation will affect economic trends to a greater extent than they did in the past. On the pessimistic side of the spectrum, the world economy risks geoeconomic fragmentation with macro areas of influence being totally or partially disconnected from each other. In a more optimistic scenario, different new systems could instead coexist and compete. As noted by Harold James (2019), this is the ultimate paradox of digitalisation: even though digitalisation by its nature is cross border and intangible, because of the growing geopolitisation of currencies it may ultimately facilitate an increased fragmentation of the international monetary system.

¹ The EU has recently launched the investigation phase of a digital-euro project while the Biden administration released in March 2022 an executive order to investigate the issuance of a digital dollar.

REFERENCES

- Auer, Raphael et al. (2021), "CBDCs beyond Borders: Results from a Survey of Central Banks", in *BIS Papers*, No. 116 (June), <https://www.bis.org/publ/bppdf/bispap116.htm>
- BIS CPMI-Committee on Payments and Market Infrastructures et al. (2021), *Central Bank Digital Currencies for Cross-Border Payments. Report to the G20*, July, <https://www.bis.org/publ/othp38.htm>
- Cornish, Chloe (2022), "India Explores 'Rupee-Rouble' Exchange Scheme to Beat Russia Sanctions", in *Financial Times*, 17 March, <https://www.ft.com/content/a5ee2d6b-693f-475d-80c6-0036c2657ef1>
- Foroohar, Rana (2023), "A New World Energy Order Is Taking Shape", in *Financial Times*, 3 January, <https://www.ft.com/content/d34dfd79-113c-4ac7-814b-a41086c922fa>
- G7 (2021), *Public Policy Principles for Retail Central Bank Digital Currencies (CBDCs)*, 13 October, <http://www.g8.utoronto.ca/finance/211014-documents.html>
- Giovannini, Matteo (2023), "Yuan Clearing Deal Boosts China's Financial Footprint in Latin America", in *CGTN*, 13 February, <https://news.cgtn.com/news/2023-02-13/Yuan-clearing-deal-boosts-China-s-financial-footprint-in-Latin-America-1hnRS5nt2gM/index.html>
- James, Harold, Jean-Pierre Landau and Markus Brunnermeier (2019), "Digital Currencies Areas", in *VoxEU*, 3 July, <https://cepr.org/node/360616>
- Panetta, Fabio (2020), *A Digital Euro for the Digital Era*, Introductory statement at the ECON Committee of the European Parliament, Frankfurt am Main, 12 October, <https://www.bis.org/review/r201013a.pdf>
- Pozsar, Zoltan (2022), "War and Currency Statecraft", in *Credit Suisse Economics*, 29 December, <https://plus2.credit-suisse.com/shorturlpdf.html?v=5h3r-YP34-V&t=-3f2t7fyeg6tz2ndtomzsde0j0>
- Stott, Michael and Lucinda Elliott (2023), "Brazil and Argentina Start Preparations for a Common Currency", in *Financial Times*, 22 January, <https://www.ft.com/content/5347d263-7f24-4966-8da4-79485d1287b4>

US Department of the Treasury (2021), *The Treasury 2021 Sanctions Review*, October, <https://home.treasury.gov/system/files/136/Treasury-2021-sanctions-review.pdf>

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The recent “weaponisation” of finance against Russia might accelerate actions and ambitions to rethink financial globalisation to reduce the global dependence on Western-led currencies and payment infrastructure. Transformations in the international monetary system have historically been slow to materialise, though. Inertia and frictions are key forces that tend to consolidate the unipolarity of the system but, in the context of growing politicisation of money, the process of financial digitalisation can be a crucial force of change in pushing for diversification. Even though no other contender can challenge the existing US-dominated dollar system in the short-to-medium term, it is key to strategically reflect upon the long-term implications of a possible erosion of the Western leadership in the global monetary system. This volume focuses on the key question of whether recent geopolitical tensions and economic dislocations could be a catalyst for transformation in the current international monetary system.

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