



ASIA GLOBAL INSTITUTE  
THE UNIVERSITY OF HONG KONG

Asian Perspectives Global Issues

ASIAGLOBAL PAPERS

NO. 7 | JANUARY 2023

# **Ukraine, Sanctions and Central Bank Digital Currencies: The Weaponization of Digital Finance and the End of Global Monetary Hegemony?**

Douglas W Arner

Kerry Holdings Professor in Law, Senior Fellow, Asia Global Institute, and Associate Director, HKU-Standard Chartered Foundation FinTech Academy, The University of Hong Kong

Ross P Buckley

KPMG Law – King & Wood Mallesons Professor of Disruptive Innovation, Australian Research Council Laureate Fellow, and Scientia Professor, University of New South Wales, Sydney

Anton N Didenko

Senior Lecturer, Faculty of Law and Justice, University of New South Wales, Sydney

Dirk A Zetsche

Professor of Law, ADA Chair in Financial Law (Inclusive Finance), Faculty of Law, Economics and Finance, University of Luxembourg, and Director, Centre for Business and Corporate Law, Heinrich-Heine University, Düsseldorf, Germany

## ABSTRACT

This paper analyzes the geopolitical and strategic dimensions of how technology is reshaping the international monetary and payments systems. Freezing some US\$300 billion of Russia's central bank reserves in response to the invasion of Ukraine in 2022 highlighted the power of the existing Western-led digital monetary and payments architecture and the potential risks of dependence on that system. We analyze the new technologies which could underpin a new international monetary system, not dominated by a monetary hegemon. The geopolitics of a multipolar world coupled to the evolution of enabling technologies may well result in a small number of major economy central bank digital currencies and currency areas, eliminating the historical pattern of monetary hegemony. There is a clear need to redesign systems to reduce this likelihood and support international monetary and payment arrangements as a public good and we explore how this might be achieved.

### Keywords

Sovereign digital currencies, central bank digital currencies, Libra, Diem, digital yuan, e-CNY, Covid-19, payments, blockchain, distributed ledger technology, SWIFT, CHIPS, IMF, SDR, Bank for International Settlements.

## CONTENTS

<b>1. Introduction</b>	<b>4</b>
<b>2. Evolution of International Monetary and Payments Systems</b>	<b>8</b>
2.1 International monetary arrangements	9
2.2 The international monetary and payments system	13
Bank for International Settlements	14
International Monetary Fund	15
Major currency electronic payment systems	16
2.3 Hegemony and politicization of the us dollar	17
<b>3. New Technologies and the Challenge to the International Monetary System</b>	<b>19</b>
3.1 Libra’s impact on the future of monetary and payment systems	20
3.2 Libra: The first global stablecoin?	21
3.3 Global stablecoins constrained	22
<b>4. The Digital Yuan and the Emergence of Central Bank Digital Currencies</b>	<b>24</b>
4.1 Design choices	24
4.2 Technology and the design of monetary and payments systems	26
Sovereign digital currency taxonomy	26
Benefits, opportunities and challenges	28
Departure from digital ledger technologies	29
Central bank access: Efficiency vs financial inclusion	30
Towards public-private partnerships	31
4.3 Money versus payment?	31
<b>5. The Geopolitics of Central Bank Digital Currencies</b>	<b>33</b>
The digital euro	36
<b>6. Technology, Geopolitics, and the Future International Monetary System</b>	<b>43</b>
The weaponization of global digital finance	43
The end of dollar hegemony	46
Development of a new international monetary system	48
Evolution of the international monetary system	49
A new multipolar monetary system	49
<b>7. Conclusion</b>	<b>53</b>
<b>About the Authors</b>	<b>54</b>
<b>About the Asia Global Institute</b>	<b>54</b>
<b>Acknowledgement</b>	<b>54</b>

## 1. INTRODUCTION

On February 24, 2022, Russia invaded Ukraine.<sup>1</sup> Following condemnation at the United Nations, the United States, European Union, North Atlantic Treaty Organization (NATO) and their global allies responded with a range of financial sanctions against Russia, Russian government officials, their families, many large businesses and related individuals and their assets across the world.<sup>2</sup>

These sanctions contained restrictions on making payments in US dollars and euros including by major international payment systems, and on doing business with those sanctioned, with penalties for failures to comply.<sup>3</sup> The EU, US and others also restricted transactions with the Bank of Russia and froze some US\$300 billion of Russia's foreign exchange reserves with the aim of crippling the Russian financial system and economy.<sup>4</sup>

These highly unusual moves against the Russian central bank and Russian monetary, financial and payments activities amount to the “weaponization of finance” via the international digital monetary, payments and financial systems.<sup>5</sup> This raises questions central to the future of global finance and geopolitics, including whether this strategy will work and what impact it will have on the international monetary system going forward.

Monetary and payments systems lie at the heart of the global economy and the global financial system, as well as at the heart of domestic economies and financial systems. If anything, monetary and payment systems are even more important to cross-border transactions than to domestic transactions. Digital payments and financial infrastructures are at the center of economic and financial globalization.

In this paper, we consider the impact of new technologies and geopolitics on international monetary and payment systems in the wake of Russia's invasion of Ukraine in February 2022. Will the weaponization of digital finance fatally fracture existing international monetary and payment systems and, in particular, the role of the US dollar?

In Section 2, we consider the evolution of international monetary and payment systems and their use in the context of Russia's invasion of Ukraine. In this analysis, we focus on the role of technology — a new addition to the existing literature — and its relationship to the core attributes of money at the international level, namely its function as a medium of exchange, means of payment and store of value. We highlight how technology combined with geopolitics, geo-economics, and legal and

---

<sup>1</sup> President of Russia, *Address by the President of the Russian Federation* (February 24, 2022), at <http://en.kremlin.ru/events/president/news/67843>.

<sup>2</sup> *What Sanctions Are Being Imposed on Russia over Ukraine Invasion?*, BBC NEWS (May 4, 2022), at <https://www.bbc.com/news/world-europe-60125659>; *NATO Pledges Humanitarian Aid, Sanctions but Falls Short of Ukraine President Zelenskyy's Pleas for Weapons*, ABC NEWS (March 25, 2022), at <https://www.abc.net.au/news/2022-03-25/nato-to-add-more-troops-along-eastern-flank-further-sanctions/100938042>.

<sup>3</sup> BBC NEWS, *supra* note 2.

<sup>4</sup> *Sanctions Have Frozen around \$300 bln of Russian Reserves, FinMin Says*, REUTERS (March 13, 2022), at <https://www.reuters.com/article/ukraine-crisis-russia-reserves-idU5L5N2VG0BU>.

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

institutional design to build the US dollar into the post-World War II international monetary hegemon.

While there have been many calls for the end of dollar hegemony, the weaponization of the digital monetary and payments system in the context of the international response to Russia's invasion has provided both a clear illustration of the mechanics of global finance and a motivation for economies to build systems that would reduce their risk of dependence on the international digital payments framework.

In Section 3, we discuss the potential of new technologies to create alternatives to both domestic and international monetary and payments systems, focusing on the examples of Bitcoin and Libra. Two broad policy objectives dominate money and payment system design: safety and efficiency.<sup>6</sup> Safety encompasses financial stability, integrity,<sup>7</sup> and customer and data protection. Efficiency encompasses cost, efficiency,<sup>8</sup> competition and innovation.<sup>9</sup> These elements of technology, design, and institutional and legal structure, in turn, directly relate to success or failure in the context of the key monetary attributes.

Technological developments, including distributed ledger technologies (DLT) and blockchain, promise new ways to achieve these policy objectives and monetary attributes. Yet, while these technologies have attracted the attention of regulators, they have not so far substantially disrupted the money and payments landscape. Notwithstanding the hype around cryptocurrencies, they have not become real competitors or sources of fundamental disruption to existing systems at the domestic or international level, with the exception of developing countries characterized by unstable monetary arrangements, inefficient payment systems and problematic cross-border systems.

Many inherent structural limitations of crypto stand in the way, including fragmentation artificially maintained to keep self-interested validators sufficiently motivated to record transactions honestly (rather than seek greater gains from cheating), exposed vulnerabilities of “cross-chain bridges” developed to facilitate transfers of crypto across blockchains, or the risks generated by the continuous centralization of the DeFi ecosystem.<sup>10</sup>

All of these weaken the effectiveness of cryptocurrencies in their functions as media of exchange, means of payment and stores of value at the international level. Likewise, private forms of money have not been successful competitors since the 19th century.

---

<sup>6</sup> Of the 131 countries that were reforming their national payment systems, according to a World Bank survey in 2012, 113 (86 percent) cited the need to increase overall efficiency as the factor that triggered reform. See The World Bank, *Global Payment Systems Survey (GPSS) 2012; Section VIII: Reforming the National Payments System* (December 4, 2018), at <https://www.worldbank.org/en/topic/financialinclusion/brief/gpss>.

<sup>7</sup> Being the domain of integrity-related regulation, such as the FATF's AML/CTF standards, we do not consider in detail integrity as a separate objective in this paper but understand integrity as inherent to the safety objective.

<sup>8</sup> For a discussion about the interrelation between transaction costs and economic growth more generally, see D. Bywaters and P. Mlodkowski, *The Role of Transaction Costs in Economic Growth*, 7 INTERNATIONAL JOURNAL OF ECONOMIC POLICY STUDIES 53 (2012).

<sup>9</sup> Bank for International Settlements & International Organization of Securities Commissions, *Principles for Financial Market Infrastructures* (April 2012), at <https://www.bis.org/cpmi/publ/d101a.pdf>.

<sup>10</sup> See Bank for International Settlements, *BIS Annual Economic Report* 83–5 (June 2022), at <https://www.bis.org/publ/arpdf/ar2022e.pdf> (Ch. 3: 'The future monetary system').

However, Facebook’s announcement of its intention to launch its own cryptocurrency, Libra, in 2019 highlighted the potentially transformative impact of non-state monetary and payment arrangements, directly challenging domestic and international monetary sovereignty in economies at all stages of development. Libra offered the potential to be an effective medium of exchange, means of payment and store of value for billions of people across the world, with the potential to challenge the existing monetary paradigm domestically and internationally.

In Section 4, we discuss the emergence of central bank digital currencies (CBDC), led by China’s eCNY or “digital yuan”. These currencies can be seen as a direct response to the emergence of new technological challengers, in particular Facebook’s Libra proposal. The combination of Libra and the eCNY has driven an explosion in projects for the application of new technologies by governments and central banks to build better monetary and payment systems. This trend has been dramatically reinforced by the digitization of payments as a result of Covid-19, with dozens of CBDC projects across the world.<sup>11</sup>

These projects largely focus on domestic arrangements but — in the same way that Libra presented a credible risk of currency substitution — major currency CBDCs also have the same potential, increasing the incentive for countries to develop their own systems. These new technologies have the potential to underpin new international monetary and payments arrangements. This was demonstrated by how Libra catalyzed the focus of the Group of 20 in its Payments Roadmap initiative launched in 2020.<sup>12</sup>

However, it is the international response to Russia’s invasion of Ukraine that will likely trigger a new stage in the evolution of international monetary and payment arrangements. This is the subject of Section 5, which offers a number of scenarios for the international monetary and payment system. We argue that the most likely outcome is increased multipolarity as a result of efforts — particularly of major economies — to build domestic payment systems for their own CBDCs to enhance monetary, financial and economic sovereignty.

Competing major currency CBDCs usable via competing payments systems would present a major risk of currency substitution. Such a pattern would reduce the role of the US dollar, reinforcing an existing trend, but new networked frameworks for cross-currency payments between major monetary systems could make it convenient to use a small number of currencies, rather than the traditional outcome of international monetary hegemony.<sup>13</sup>

We assert that countries need to consider future arrangements carefully, and strongly argue for the development of formal limitations to the future weaponization of finance, for instance in the context of a sort of Geneva Protocol for finance or —

---

<sup>11</sup> See, e.g., CBDC Tracker, *Today’s Central Bank Digital Currencies Status*, at <https://cbdctracker.org/>.

<sup>12</sup> Ussal Sahbaz, *It Is G20’s Imperative to Act as a Leader in Regulating Crypto-assets*, OBSERVER RESEARCH FOUNDATION (October 30, 2021), at <https://www.orfonline.org/expert-speak/it-is-g20s-imperative-to-act-as-a-leader-in-regulating-crypto-assets/>; see also Financial Stability Board, *Enhancing Cross-border Payments: Stage 3 Roadmap* (October 13, 2020), at <https://www.fsb.org/wp-content/uploads/P131020-1.pdf>.

<sup>13</sup> Ross Buckley, D. Arner, A. Didenko and D. Zetsche, *Ukraine, Sanctions and Central Bank Digital Currencies: The Weaponization of Digital Finance and the End of Global Monetary Hegemony?*, UNIVERSITY OF OXFORD FACULTY OF LAW BLOGS, at [Ukraine, Sanctions and Central Bank Digital Currencies: The Weaponization of Digital Finance and the End of Global Monetary Hegemony?](https://www.oxfordlawblogs.com/2022/02/24/ukraine-sanctions-and-central-bank-digital-currencies-the-weaponization-of-digital-finance-and-the-end-of-global-monetary-hegemony/) | Oxford Law Blogs

more optimally — to restructure international monetary and payments arrangements as multilateral public goods, centered on a new international payments organization or via activation of existing arrangements through the Bank for International Settlements (BIS) and/or the International Monetary Fund (IMF), ideally on a new international monetary instrument, a sort of global Libra.

## 2. EVOLUTION OF INTERNATIONAL MONETARY AND PAYMENTS SYSTEMS

Trade, money, payment systems, finance, technology, institutional and legal structures, and human civilization are co-developmental.<sup>14</sup> Money and payment systems — because of their utility in simplifying transactions — have evolved to support economic and social activities across human history.<sup>15</sup>

Forms of money and payment have evolved from cowrie shells and stone disks to metallic coins and bills and notes and, more recently, from real-time gross settlement (RTGS) systems and mobile money, to cryptocurrencies, stablecoins, fast payment systems and central bank digital currencies.<sup>16</sup> Money, payment, technology, and institutional and legal systems have continually developed over thousands of years of settled human history as part of the evolution of societies, economies and governance structures.<sup>17</sup>

In considering the question of what defines money, analysis focuses on three factors: means of payment, store of value, and medium of exchange.<sup>18</sup> These features interrelate with governance systems, economic and financial frameworks, technology, and institutional and legal structures. Monetary sovereignty has been a focus for states and governments throughout history, with much of the law relating to money emanating from state pronouncements about what is necessary or acceptable in the context of payments in a given place.<sup>19</sup> This is the idea of “legal tender”.

Niall Ferguson frames this wider picture well in the context of what he calls the “square of power”: a combination of a representative government, national debt, central bank and effective taxation system, which he argues was essential to the success of both the United Kingdom and the United States.<sup>20</sup>

Across history, there are clear relationships between monetary stability and appropriate levels of supply and the rise and fall of governments, states and empires. Inflation in particular has been a constant challenge over the past several thousand years, as sovereigns of whatever form have sought to maximize their ability to spend (on military adventures, domestic projects etc.) while maintaining sufficient political and societal support to remain in power.<sup>21</sup>

Claus Zimmermann views contemporary monetary sovereignty as an “essentially contested concept” underpinned by three key normative values: monetary stability (the central target of interest rate policies), financial stability (prevention of major,

---

<sup>14</sup> See, e.g., Jame DiBiasio, *COWRIES TO CRYPTO: THE HISTORY OF MONEY, CURRENCY AND WEALTH* (2020).

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> *Id.* See also Niall Ferguson, *THE ASCENT OF MONEY: A FINANCIAL HISTORY OF THE WORLD 17–64* (2008).

<sup>18</sup> See Anton N. Didenko and Ross P. Buckley, *The Evolution of Currency: Cash to Cryptos to Sovereign Digital Currencies*, 42(4) *FORDHAM INTERNATIONAL LAW JOURNAL* 1041, 1056 (2019); FERGUSON, *supra* note 16, at 23.

<sup>19</sup> FERGUSON, *supra* note 16, at 17–31; DIBIASIO, *supra* note 13. See also European Commission, *Report of the Euro Legal Tender Expert Group (ELTEG) on the Definition, Scope and Effects of Legal Tender of Euro Banknotes and Coins* (December 16, 2010), at [https://ec.europa.eu/economy\\_finance/articles/euro/documents/elteg\\_en.pdf](https://ec.europa.eu/economy_finance/articles/euro/documents/elteg_en.pdf) and the corresponding European Commission Recommendation of March 22, 2010 on the Scope and Effects of Legal Tender of Euro Banknotes and Coins (2010/191/EU), 2010 O.J. (L 83) at 70.

<sup>20</sup> Niall Ferguson, *THE CASH NEXUS: MONEY AND POWER IN THE MODERN WORLD, 1700–2000* 284–305 (2002).

<sup>21</sup> See, e.g., DIBIASIO, *supra* note 13.

particularly systemic, disruptions) and financial integrity (absence of unlawful practices such as money laundering and insider trading).<sup>22</sup> As part of this analysis, Zimmermann recognizes that these normative goals can have different significance across nations, but argues that “most states probably agree that the exercise of sovereign powers in monetary and financial matters should be such as *not to put global monetary and financial stability at risk*.”<sup>23</sup>

Each combination of technology and institutional framework forming a given monetary, payment and financial system so far developed is vulnerable to devaluation, inflation, loss of confidence and collapse.<sup>24</sup> This can be seen in the context of commodity moneys (such as cowrie shells, gold and silver) because their supply is fundamentally determined by external factors (such as limited availability and surprise discoveries)<sup>25</sup> resulting in a combination of periodic shocks and inflation in the context of growing economic activity faced with limited monetary supply, resulting in strong incentives for crime and forgery.<sup>26</sup>

Sovereigns have sought to manage these challenges through control of supply and quality (e.g., state monopolies on transfers of gold across borders and on the power of coinage).<sup>27</sup> Even with coins, the temptation arises to cut corners (in some cases literally but often via reducing content of base metal).<sup>28</sup> Likewise, if the economy or government runs into difficulty, coins inevitably depart to other places.

Similar histories developed as sovereigns experimented with paper money, beginning with China<sup>29</sup> and, since the early 1970s, fiat currencies across the world, leading to the evolution of the institutional and legal structure of modern central banks, which are designed to maintain monetary and financial stability and maximize economic development via appropriate macroeconomic, institutional and prudential policies, tools and infrastructure.<sup>30</sup> This framework likewise may be at risk today as a result of inflationary pressures.

While essential in the domestic context, money also plays a fundamental role in facilitating international trade and finance. What is money for the purposes of international trade and finance and how are payments made?

## 2.1 INTERNATIONAL MONETARY ARRANGEMENTS

When trade moves beyond a small area, arrangements for money and payment quickly become a central question. For transactions to move beyond barter (with all of its challenges and inefficiencies, particularly as distance increases), there must be

---

<sup>22</sup> Claus D. Zimmermann, A CONTEMPORARY CONCEPT OF MONETARY SOVEREIGNTY 24-31 (2013).

<sup>23</sup> *Id.*, at 30 (emphasis added).

<sup>24</sup> *Id.*

<sup>25</sup> FERGUSON, *supra* note 16, at 25, citing Thomas J. Sargent and François R. Velde, THE BIG PROBLEM OF SMALL CHANGE (2002). See also Barry J. Eichengreen, GLOBALIZING CAPITAL: A HISTORY OF THE INTERNATIONAL MONETARY SYSTEM 8–12 (2nd ed. 2008).

<sup>26</sup> DiBIASIO, *supra* note 13, at 128.

<sup>27</sup> See SARGENT AND VELDE, *supra* note 24.

<sup>28</sup> For example, “Nero in the year 64 CE, thinking no one would notice, cut back on the silver content of the denarius [the standard Roman silver coin at the time]. He set a pattern that would continue for the next 200 years, in which each emperor engaged in debasement”:

DiBIASIO, *supra* note 13, at 49–50.

<sup>29</sup> *Id.* at 77–78; FERGUSON, *supra* note 16, at 27.

<sup>30</sup> DiBIASIO, *supra* note 13, at 177.

common agreement on what is acceptable in the context of payment and how payment can be made. This is the idea of a “medium of exchange” and a “means of payment”.<sup>31</sup>

A “medium of exchange” is thus something mutually acceptable to both parties in a transaction. In the domestic context, the sovereign can legally set the “legal tender” as part of its monetary sovereignty, thus setting what, legally, parties must use and accept as a medium of exchange — a monetary instrument.<sup>32</sup>

A variety of factors determine whether in any domestic context that law is universally obeyed, with much variation depending on the quality of the monetary instrument provider. This is the idea that monetary stability is a public good based upon trust and confidence supported by institutional, legal, political and technological factors: while a given monetary instrument may be legal tender (and may in fact be the only legal tender), if it is unavailable or subject to continual losses in value (inflation), alternatives will be used.<sup>33</sup>

At the international level, there was often no sovereign power to establish a mandatory medium of exchange — parties had to choose.<sup>34</sup> Over time, commodities such as beads,<sup>35</sup> cattle, rice, cacao seeds and shells<sup>36</sup> were frequently used, as cigarettes have been more recently.<sup>37</sup>

However, commodity money is often not particularly convenient nor efficient in transactions. For millennia, metals — in particular gold and silver — have been the dominant media of exchange across borders.<sup>38</sup> They have also been the dominant domestic monetary instrument, either directly or as the underpinning of paper money (in the context of the gold and silver standards prevailing until the end of World War II).<sup>39</sup>

With the Gold Standard dominant up to World War II, gold provided a simple medium of exchange, as it underpinned domestic monetary instruments as a matter of domestic law and international practice.<sup>40</sup> However, as a matter of convenience, transactions would often take place not in gold but in the currencies of the major powers. This was particularly the case in imperial systems more broadly, with the British pound sterling as the dominant monetary instrument — albeit always with gold underpinning.<sup>41</sup>

Gold remained dominant as the underpinning of the gold exchange standard (in which the US dollar was fixed in value to gold and other currencies were fixed in value to the US dollar) established in international law via the Articles of Agreement

---

<sup>31</sup> FERGUSON, *supra* note 16, at 23.

<sup>32</sup> F. A. Mann, *THE LEGAL ASPECT OF MONEY* 460–78 (5th ed. 1992).

<sup>33</sup> David Fox, François R. Velde and Wolfgang Ernst, *Monetary History Between Law and Economics*, in *MONEY IN THE WESTERN LEGAL TRADITION: MIDDLE AGES TO BRETTON WOODS* 3, 14–6 (David Fox and Wolfgang Ernst eds., 2016).

<sup>34</sup> See François Gianviti, *Current Legal Aspects of Monetary Sovereignty*, in *CURRENT DEVELOPMENTS IN MONETARY AND FINANCIAL LAW* vol. 4 (IMF ed. 2005), at <https://www.imf.org/external/pubs/nft/2006/cdmf/ch1law.pdf>.

<sup>35</sup> DiBIASIO, *supra* note 13, at 238.

<sup>36</sup> *Id.* at 8.

<sup>37</sup> See, e.g., Stephen E. Lankenau, *Smoke'em if you got 'em: Cigarette Black Markets in U.S. Prisons and Jails*, 81(2) *THE PRISON J.* 142 (2001).

<sup>38</sup> FERGUSON, *supra* note 16, at 24. See also EICHENGREEN, *supra* note 24, at 7–8.

<sup>39</sup> EICHENGREEN, *supra* note 24, at 91.

<sup>40</sup> *Id.* at 19–23.

<sup>41</sup> *Id.* at 22–3.

of the International Monetary Fund.<sup>42</sup> Since 1973 and the end of the Bretton Woods international monetary system and the link between the US dollar and gold, fiat currencies now provide the dominant medium of exchange.<sup>43</sup>

While the US dollar is the most frequently used medium of exchange, other currencies (in particular the euro, pound sterling, yen and yuan) are also frequently used,<sup>44</sup> in some cases supplemented by new digital monetary instruments such as Bitcoin.<sup>45</sup>

Acceptability to both parties is the key to use as a medium of exchange; the more widely accepted, the more useful to potential users via network effects.<sup>46</sup> Acceptability is thus a matter of usefulness and convenience for immediate transactions<sup>47</sup> and of trust and confidence as time elements are added.<sup>48</sup> These are influenced by a range of factors, including technology (used not only to facilitate payments but also to protect monetary instruments from forgery), legal and institutional arrangements (to provide trust and confidence), historical experience and path dependence, and political concerns.<sup>49</sup>

Historically, the money of the major regional or international power was often used for international transactions (e.g., Roman coins, pounds sterling, US dollars),<sup>50</sup> with trustworthiness of coinage (e.g., the Spanish silver dollar dominant in China and much of East Asia until the 20th century) key to its acceptance.<sup>51</sup>

Payment systems are central to usefulness and convenience, as the means of payment is the mechanism through which the medium of exchange is delivered.<sup>52</sup> In Asia, this meant a preference for physical delivery of silver for cross-border transactions until the 20th century.<sup>53</sup> In the West, a variety of technologies and legal and institutional systems evolved to address the risks and challenges of physical delivery of the medium of exchange, whether commodity, metal or paper.<sup>54</sup>

These payment systems evolved from Rome through the Mediterranean and Middle East: bills of exchange, notes, dual entry accounting systems, correspondent banks and cheques.<sup>55</sup> All evolved over centuries as a combination of the existing technological horizon with available legal and institutional frameworks to reduce the costs and challenges of transactions across distance. Generally, these have all been matters of private law and contract between parties, often supported by institutionalized trust frameworks (such as banks with operations in multiple trade

---

<sup>42</sup> *Id.* at 95.

<sup>43</sup> *Id.* at Ch. 5.

<sup>44</sup> Eswar S. Prasad, *THE FUTURE OF MONEY: HOW THE DIGITAL REVOLUTION IS TRANSFORMING CURRENCIES AND FINANCE* 29 (2021).

<sup>45</sup> *Id.* at 5.

<sup>46</sup> See Nobuhiro Kiyotaki and Randall Wright, *Acceptability, Means of Payment, and Media of Exchange*, 16(3) FEDERAL RESERVE BANK OF MINNESOTA Q. R. 1, 1 (1991).

<sup>47</sup> DiBIASIO, *supra* note 13, at 9.

<sup>48</sup> FERGUSON, *supra* note 16, at 29–30.

<sup>49</sup> See Christine Desan, *Money as a Legal Institution*, in *MONEY IN THE WESTERN LEGAL TRADITION: MIDDLE AGES TO BRETTON WOODS*, *supra* note 32, at 18.

<sup>50</sup> See, e.g., EICHENGREEN, *supra* note 24, at chs 2–4.

<sup>51</sup> See Austin Dean, *CHINA AND THE END OF GLOBAL SILVER, 1873–1937* (2020).

<sup>52</sup> See Benjamin Geva, *THE PAYMENT ORDER OF ANTIQUITY AND THE MIDDLE AGES: A LEGAL HISTORY* (2011).

<sup>53</sup> See *id.*

<sup>54</sup> See DiBIASIO, *supra* note 13.

<sup>55</sup> See *id.*

centers)<sup>56</sup> and, from the 19th century, formalized in legal frameworks such as the UK *Bills of Exchange Act 1882*.

Under these structures, gold or paper currencies representing gold could be used as the medium of exchange; they could function as a means of payment via parallel accounts held in major transactions locations, with gold or sterling debited from one account and credited to another, facilitating transactions.<sup>57</sup> Hawala is similar. In many cases (such as correspondent banking structures and dual entry accounting), they continue to be the basis of contemporary international payment systems.<sup>58</sup> Today, electronic payment systems dominate cross-border payments but the underlying parallel structures continue.

In addition to acceptability (medium of exchange) and usability (means of payment), money (as highlighted above) should be a store of value. This entails both stability (so absence of toxic levels of inflation or debasement)<sup>59</sup> and the ability to use the monetary instrument for finance and investment purposes.<sup>60</sup> Finance, investment and value involve time and thus different risks than distance, but also the availability and level of development of related instruments and markets: the financial system.<sup>61</sup>

Thus, a monetary instrument should be widely usable for transactions (the more widely, the better), supported by effective payment systems, and with a variety of available financing and investment options. This is often a rationale for the continued dominance of the US dollar: the depth and sophistication of its financial system and the wide availability and liquidity — as well as attractive return profile combined with an acceptable level of inflation/debasement — all underpin its role as the most widely used currency for international transactions of all forms.<sup>62</sup>

It was the availability of the dollar off-shore via the Euromarkets that likewise supported its widespread international use. These are underpinned by technology, legal and institutional structures, and history and path dependence.

They were also strongly underpinned by international legal arrangements in addition to domestic law, particularly the Bretton Woods international monetary system established under the IMF Articles of Agreement at the end of World War II.

---

<sup>56</sup> Fox, Velde and Ernst, *supra* note 32, at 7–9.

<sup>57</sup> See, e.g., EICHENGREEN, *supra* note 24, at 19–24.

<sup>58</sup> See, e.g., Committee on Payments and Market Infrastructures, *Correspondent Banking*, BANK FOR INTERNATIONAL SETTLEMENTS (July, 2016), at <https://www.bis.org/cpmi/publ/d147.pdf> and Edoardo Beretta and Alvaro Cencini, *Double-entry Bookkeeping and the Balance of Payments: the Need for a Substantial, Conceptual Reform*, BANK FOR INTERNATIONAL SETTLEMENTS 6 (Feb. 17–8, 2020), at [https://www.bis.org/ifc/publ/ifcb52\\_07.pdf](https://www.bis.org/ifc/publ/ifcb52_07.pdf).

<sup>59</sup> James Tobin, *Monetary Theory: New and Old Looks – Money, Capital and Other Stores of Value*, 51(2) AMERICAN ECONOMIC ASSOCIATION 26 (1961).

<sup>60</sup> Andreas F. Lowenfeld, *INTERNATIONAL ECONOMIC LAW* 18 (2003).

<sup>61</sup> See Tobin, *supra* note 59.

<sup>62</sup> See, e.g. Gustavo Adler et al., *IMF Staff Discussion Note: Dominant Currencies and External Adjustment*, INTERNATIONAL MONETARY FUND (July 20, 2020), at <https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2020/07/16/Dominant-Currencies-and-External-Adjustment-48618>. But see Serkan Arslanalp, Barry Eichengreen and Chima Simpson-Bell, *The Steal Erosion of the Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies*, INTERNATIONAL MONETARY FUND (March 24, 2022), at <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>.

## 2.2 THE INTERNATIONAL MONETARY AND PAYMENTS SYSTEM

Because of the central role of money, payment and finance in trade and geopolitical competition over thousands of years, monetary and payments systems have been a common focus of attention, sometimes with active encouragement by a given sovereign of its monetary instrument (e.g., Rome, Spain, UK, US, and China in the 21st century)<sup>63</sup> but often largely at the choice of market participants (sometimes reinforced by sovereign efforts).<sup>64</sup> Rome and Spain focused on minting arrangements to facilitate use and access.<sup>65</sup>

In the 19th century, the Gold Standard developed as a matter of both domestic public and private law, as well as private international law and customary international law; it was, however, neither treaty-based nor supported by international institutions.<sup>66</sup> Rather, it was supported by a range of private firms (banks in particular) as well as central banks (which evolved as sovereign domestic mechanisms to maintain monetary stability, financial stability, facilitate cross-border payments via gold, and support sovereign and other debt markets, all by the beginning of the 20th century).<sup>67</sup>

The Gold Standard was highly effective from the standpoint of a medium of exchange; it was supported by a range of paper-based systems (correspondent banking, bills of exchange)<sup>68</sup> with electronic communications added from the late 19th century.<sup>69</sup> This system certainly underpinned globalization up to World War I.<sup>70</sup> While it was certainly constraining from the standpoint of domestic macroeconomic policy (in the context of the classic trilemma: the impossibility of having more than two of free movement of capital, independent monetary policy and fixed exchange rates), this was acceptable at the time (with the choice generally being free movement of capital and fixed exchange rates).<sup>71</sup>

Gold was also useful as store of value — although subject to certain volatility as a result of major discoveries during the 19th century<sup>72</sup> — but not very effective from the standpoint of finance and investment. The key to the Gold Standard was not only gold, but also the fact that it tied gold to paper currencies, which could then be used more easily for payments and for finance and investment, on a global basis.<sup>73</sup> The highly developed financial markets of the UK and France offered liquidity and

---

<sup>63</sup> See DiBIASIO, *supra* note 13.

<sup>64</sup> See Fox, Velde and Ernst, *supra* note 32, at 14.

<sup>65</sup> See Michael North, *Monetary Reforms in the Holy Roman Empire in the Fifteenth and Sixteenth Centuries*, in MONEY IN THE WESTERN LEGAL TRADITION: MIDDLE AGES TO BRETTON WOODS, *supra* note 32, at 191 and Wim Decock, *Spanish Scholastics on Money and Credit*, in MONEY IN THE WESTERN LEGAL TRADITION: MIDDLE AGES TO BRETTON WOODS, *supra* note 32, at 267.

<sup>66</sup> See EICHENGREEN, *supra* note 24, at 15–9.

<sup>67</sup> *Id.* at 32–4.

<sup>68</sup> See Maria Cristina Marcuzzo and Annalisa Roselli, *Profitability in the International Gold Market in the Early History of the Gold Standard*, 54(215) ECONOMICA 367 (1987).

<sup>69</sup> Alexandre Ottoni Teatini Salles, *Institutional Framework of the Classical Gold Standard: Examining the First Historical Wave of Financial Globalization*, 16(1) HISTÓRIA ECONÔMICA and HISTÓRIA DE EMPRESAS 101, 121 (2013).

<sup>70</sup> *Id.* at 110.

<sup>71</sup> See Maurice Obstfeld, Jay C. Shambaugh and Alan M. Taylor, *The Trilemma in History: Tradeoffs Among Exchange Rates, Monetary Policies and Capital Mobility*, NBER WORKING PAPER SERIES (March, 2004), at [https://www.nber.org/system/files/working\\_papers/w10396/w10396.pdf](https://www.nber.org/system/files/working_papers/w10396/w10396.pdf).

<sup>72</sup> See A GLOBAL HISTORY OF GOLD RUSHES (Benjamin Mountford and Stephen Tuffnell eds. 2018).

<sup>73</sup> Michael Bordo and Angela Redish, *Putting the 'System' in the International Monetary System*, in MONEY IN THE WESTERN LEGAL TRADITION: MIDDLE AGES TO BRETTON WOODS, *supra* note 32, at 595, 599–600; EICHENGREEN, *supra* note 24, at 19–29, 59.

attractive performance, while other markets (such as the US, Argentina, China etc.) offered options for those seeking more risk.

The competition and conflict of the first half of the 20th century doomed this system, as domestic priorities and geopolitical competition overpowered the attractions of globalization.<sup>74</sup> However, during the 20th century a new system, based on international organizations and treaties, arose.

### **Bank for International Settlements**

The Bank for International Settlements (BIS) was established in the aftermath of World War I to facilitate payments from defeated powers (in particular Germany) to the Allied powers.<sup>75</sup> It was an international institution created among governments albeit not a treaty-based organization. It was more similar to an international central bank of the time, which were often private companies with both government and non-government shareholders.<sup>76</sup>

The role of BIS — based in Basel, Switzerland<sup>77</sup> — was to serve as a payment conduit between the central banks of its members. It also took on the role of a forum for central bank discussions in the early 1930s<sup>78</sup> before largely becoming dormant by the mid to late 1930s.<sup>79</sup> In the aftermath of World War II, it was meant to be closed and wound up,<sup>80</sup> reflecting Keynes' analysis both of the highly negative impact of war reparations and of free movement of capital,<sup>81</sup> and replaced by the International Monetary Fund (IMF) in the new postwar international architecture.<sup>82</sup>

In the event, BIS was not closed and reemerged in the postwar period as a forum for central bank discussion and cooperation, as well as settlement of transactions, in addition to the central role played by the Federal Reserve Bank of New York and the Bank of England in this respect.<sup>83</sup> However, its primary role has been as a central bank for central banks and as an important discussion forum, particularly as finance and investment re-internationalized from the late 1960s onwards.<sup>84</sup>

While BIS has played a limited role in monetary arrangements and payment arrangements, it has often served an important research function and supported technological, legal and institutional cooperation, particularly for wholesale payments

---

<sup>74</sup> See Bordo and Redish, *supra* note 73, at 606–7; EICHENGREEN, *supra* note 24, at 75–8; Charles P. Kindleberger, POWER AND MONEY: THE ECONOMICS OF INTERNATIONAL POLITICS AND THE POLITICS OF INTERNATIONAL ECONOMICS 211–27 (1970).

<sup>75</sup> Bank for International Settlements, *BIS History – Overview*, at [https://www.bis.org/about/history\\_newarrow.htm#:~:text=The%20Bank%20for%20International%20Settlements,for%20international%20central%20bank%20cooperation](https://www.bis.org/about/history_newarrow.htm#:~:text=The%20Bank%20for%20International%20Settlements,for%20international%20central%20bank%20cooperation) (visited May 16, 2022).

<sup>76</sup> *Id.* See also James Calvin Baker, THE BANK FOR INTERNATIONAL SETTLEMENTS: EVOLUTION AND EVALUATION 9 (2002) 9.

<sup>77</sup> Bank for International Settlements, *About BIS – Overview*, at <https://www.bis.org/about/index.htm> (visited May 16, 2022).

<sup>78</sup> For a summary of the early operations of BIS, see Roger Auboin, THE BANK FOR INTERNATIONAL SETTLEMENTS, 1930–1955 7–14 (1955), available at <https://ies.princeton.edu/pdf/E22.pdf>.

<sup>79</sup> *Id.* at 15.

<sup>80</sup> *Id.* at 17.

<sup>81</sup> See John Maynard Keynes, THE ECONOMIC CONSEQUENCES OF THE PEACE (1920), available at <https://oll.libertyfund.org/title/keynes-the-economic-consequences-of-the-peace>.

<sup>82</sup> AUBOIN, *supra* note 78, at 17.

<sup>83</sup> See Gianni Tonolo, CENTRAL BANK COOPERATION AT THE BANK FOR INTERNATIONAL SETTLEMENTS, 1930–1973 (2005).

<sup>84</sup> Bank for International Settlements, *supra* note 75.

(since the failure of Herstatt Bank in 1974)<sup>85</sup> and more widely since the establishment of its Innovation Hubs in 2019.<sup>86</sup>

### International Monetary Fund

IMF was established via treaty in 1944 to be the main international institution for international monetary arrangements following World War II.<sup>87</sup> Central to its mandate are to provide support for cross-border payments to facilitate trade (current account, not capital account) and to support resolution of current account crises.<sup>88</sup> It is not a central bank; it does not issue a monetary instrument.

From 1944 to 1973 (and the final treaty change in 1977),<sup>89</sup> IMF was the institution at the heart of postwar international monetary arrangements, based on the US dollar's link to gold and linking all other currencies to the US dollar or gold.<sup>90</sup> This was done out of necessity (most of the world's gold had ended up with the United States), out of a desire to have a fixed and stable monetary system to support re-internationalization of trade, and to support the role of the US and the US dollar at the heart of the international system.<sup>91</sup> From today's vantage point, it is amazing that such a system could ever be agreed and could work as well as it did for more than two decades.

Today, IMF has a limited direct role in international monetary arrangements (other than as a monitor); its role focuses on macroeconomic cooperation and monitoring, and on financial crisis resolution.<sup>92</sup> It has historically — despite a treaty mandate to do so — undertaken very limited direct involvement in international payment arrangements outside of research and advice.<sup>93</sup> It does — with the Special Drawing Right (SDR) — have an internal unit of account, which can (like a currency created by a central bank) be created by its members via agreement.<sup>94</sup>

The SDR — while it can be used to denominate transactions outside of the fund's sovereign members — cannot be used directly except across the accounts of IMF members with the fund.<sup>95</sup> It is thus a simple system of central bank accounts and a sort of proto-monetary instrument among governments that is not a claim on IMF but rather “a potential claim on the freely usable currencies of IMF members”<sup>96</sup> and does not qualify as currency or money. The fund also offers a limited number of debt instruments that can be invested by member governments.<sup>97</sup>

---

<sup>85</sup> *Id.*; Bank for International Settlements, *History – the BIS Going Global (1961–)*, at [https://www.bis.org/about/history\\_4global.htm](https://www.bis.org/about/history_4global.htm).

<sup>86</sup> See Lawrence Wintermeyer, *BIS Innovation Hub Sets the Pace for Central Banking Digital Innovation*, FORBES (March 25, 2021), at <https://www.forbes.com/sites/lawrencewintermeyer/2021/03/25/bis-innovation-hub-sets-the-pace-for-central-banking-digital-innovation/?sh=5ed5f868382e>.

<sup>87</sup> International Monetary Fund, *Articles of Agreement of the International Monetary Fund*, at <https://www.imf.org/external/pubs/ft/aa/index.htm> (visited May 16, 2022).

<sup>88</sup> See Michael D. Bordo and Harold James, *The International Monetary Fund: Its Present Role in Historical Perspective*, NBER WORKING PAPER SERIES (June, 2000), at [https://www.nber.org/system/files/working\\_papers/w7724/w7724.pdf](https://www.nber.org/system/files/working_papers/w7724/w7724.pdf).

<sup>89</sup> International Monetary Fund, *Annual Report of the Executive Directors for the Fiscal Year Ended April 30, 1977*, 45 (1977), available at <https://www.imf.org/external/pubs/ft/ar/archive/pdf/ar1977.pdf>.

<sup>90</sup> Bordo and James, *supra* note 88, at 14–6.

<sup>91</sup> *Id.* at 14.

<sup>92</sup> International Monetary Fund, *What Is the International Monetary Fund?*, at <https://www.imf.org/en/About/Factsheets/IMF-at-a-Glance> (visited May 16, 2022).

<sup>93</sup> Bordo and James, *supra* note 88, at 7.

<sup>94</sup> PRASAD, *supra* note 43, at 304–305.

<sup>95</sup> *Id.* at 304–305.

<sup>96</sup> International Monetary Fund, *Special Drawing Rights (SDR)*, at <https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/14/51/Special-Drawing-Right-SDR> (visited June 27, 2022).

<sup>97</sup> Bordo and James, *supra* note 88, at 11–2.

Since 1973, monetary arrangements have been largely under the control of domestic governments and central banks — with certain regional exceptions, in particular the EU, the European Central Bank (ECB) and the euro, a regional treaty-based framework for a supranational monetary system<sup>98</sup> — with payment systems developed domestically.

Those for the US dollar are most significant, especially CHIPS (Clearing House Interbank Payments System) and Fedwire; as well as those for other major currencies, in particular TARGET (Trans-European Automated Real-time Gross Settlement Express Transfer system) in the EU, CHAPS (Clearing House Automated Payment System) in the UK and CIPS (Cross-Border Interbank Payment System) in China; and internationally via public-private arrangements, with SWIFT (Society for Worldwide Interbank Financial Telecommunications) as the most significant.<sup>99</sup>

### Major currency electronic payment systems

Fedwire was established in 1918 as a payment system among the US Federal Reserve Banks.<sup>100</sup> It is still run by the Federal Reserve, now with over 9,000 member banks.<sup>101</sup> Established in 1970,<sup>102</sup> CHIPS is a system owned and operated by around 50 bank members, under the supervision of the Federal Reserve, and covers over 95 percent of US dollar payments.<sup>103</sup> They are systems for both transfer and settlement in US dollars between members.<sup>104</sup> CIPS began operations in 2015 as part of China's post-2008 financial crisis RMB (renminbi) internationalization strategy.<sup>105</sup>

In addition to these systems, most countries have large value electronic payment systems for their domestic currencies and economies.<sup>106</sup>

Established in 1973, SWIFT is an international electronic payments messaging system, accounting for the majority of cross-border payments.<sup>107</sup> As it is only a messaging system, the actual payment must then be made via a separate system such as CHIPS, TARGET or CIPS.<sup>108</sup> It is a Belgian cooperative, supervised by an international supervisory college of major regulators as a systemically important financial market infrastructure (FMI).<sup>109</sup>

---

<sup>98</sup> See, e.g., EICHENGREEN, *supra* note 24, at Ch. 6.

<sup>99</sup> For an overview of the operation of some of the key payment systems, see Benjamin Geva, BANK COLLECTIONS AND PAYMENT TRANSACTIONS: A COMPARATIVE STUDY OF LEGAL ASPECTS pt. 3 (2001) ('The performance of the mandate').

<sup>100</sup> Board of Governors of the Federal Reserve System, *The Fedwire® Funds Service Assessment of Compliance with the Core Principles for Systemically Important Payment Systems* 7 (July, 2014), at [https://www.federalreserve.gov/paymentsystems/files/fedfunds\\_coreprinciples.pdf](https://www.federalreserve.gov/paymentsystems/files/fedfunds_coreprinciples.pdf).

<sup>101</sup> Ashutosh Deshmukh, DIGITAL ACCOUNTING: THE EFFECTS OF THE INTERNET AND ERP ON ACCOUNTING 104 (2006).

<sup>102</sup> John F. Lee, *Clearing House Interbank Payments System* 6, COMPUTERS & SOCIETY (Winter, 1976), available at <https://dl.acm.org/doi/pdf/10.1145/958852.958854>.

<sup>103</sup> PRASAD, *supra* note 43, at 47; DESHMUKH, *supra* note 101, at 105.

<sup>104</sup> DESHMUKH, *supra* note 101, 104–5.

<sup>105</sup> Hyo-Sung Park, *China's RMB Internationalization Strategy: Its Rationales, State of Play, Prospects and Implications* 4, 25, M-RCBG ASSOCIATE WORKING PAPER SERIES NO 63 (August, 2016), at [https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/files/park\\_final.pdf](https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/files/park_final.pdf).

<sup>106</sup> See, e.g., PRASAD, *supra* note 43, at 28.

<sup>107</sup> PRASAD, *supra* note 43, at 48.

<sup>108</sup> *Id.* at 48, 281.

<sup>109</sup> See Susan V. Scott and Markos Zachariadis, THE SOCIETY FOR WORLDWIDE INTERBANK FINANCIAL TELECOMMUNICATION (SWIFT): COOPERATIVE GOVERNANCE FOR NETWORK INNOVATION, STANDARDS, AND COMMUNITY (2014).

TARGET is the large-value payment system established in 1999 by the ECB and the Eurosystem of central banks for euro payments as a core aspect of the euro regional economic and monetary union project.<sup>110</sup> It is thus a treaty-based international payment system at the wholesale level.

Thus, while monetary arrangements under Bretton Woods were a matter of international law, payments were largely a matter of domestic private law embedded in private, public and public-private wholesale payment systems for the major economy currencies, in particular the US dollar and euro.

### 2.3 HEGEMONY AND POLITICIZATION OF THE US DOLLAR

The Bretton Woods system, established in 1944, designated the US dollar as the main reserve currency (the currency in which countries hold their foreign reserves, because of lack of gold). This move gave the US the central role in the international economic and financial system, a position that has been continually subjected to criticism and challenge as an “exorbitant privilege” and tool of US policy and hegemony: monetary hegemony.<sup>111</sup>

As highlighted in the previous sections, the US dollar is not the first monetary hegemon, essentially the dominant monetary instrument of a given period or region. The Bretton Woods system addressed a pragmatic challenge (the fact that gold reserves were largely held by the United States and therefore were unable to back the relaunch of domestic currencies around the world) and strengthened the role of the US financially and economically.<sup>112</sup>

As countries gradually built up gold reserves, they sought to diversify their foreign exchange reserves but the US dollar maintained a dominant position, both before and after the end of the Bretton Woods system and the move to fiat currencies (whose value is determined only by markets although managed by institutional and legal frameworks, in particular independent central banks).<sup>113</sup> This was certainly one of the drivers of the European single currency project, which eventually resulted in the Economic and Monetary Union, euro and TARGET.<sup>114</sup>

In addition to monetary and financial concerns, the use of the US dollar and the role of the US dollar in the international monetary, payment and financial system has been a growing concern, almost from the very beginning, as the Union of Soviet Socialist Republics (USSR), Soviet Bloc, non-aligned and even Western and allied economies all feared the possible “weaponization” of the US dollar against them, via sanctions or even seizures.<sup>115</sup> Thus the Soviet Bloc developed a ruble-based

---

<sup>110</sup> European Central Bank, *What is TARGET2?*, at <https://www.ecb.europa.eu/paym/target/target2/html/index.en.html> (visited May 16, 2022).

<sup>111</sup> See, e.g. David Fields, *Dollar Hegemony*, in EDWARD ELGAR ENCYCLOPEDIA ON CENTRAL BANKING 145–7 (L. P. Rochon et al. eds. 2015).

<sup>112</sup> EICHENGREEN, *supra* note 24, at Ch. 4.

<sup>113</sup> *Id.* at Ch. 5.

<sup>114</sup> See Maurice Obstfeld, *Europe’s Gamble*, 2 BROOKINGS PAPERS ON ECONOMIC ACTIVITY 241 (1997), available at [https://www.brookings.edu/wp-content/uploads/1997/06/1997b\\_bpea\\_obstfeld\\_alesina\\_cooper.pdf](https://www.brookings.edu/wp-content/uploads/1997/06/1997b_bpea_obstfeld_alesina_cooper.pdf)

<sup>115</sup> See, e.g. Julius Sen, *The Weaponisation of the Dollar: Policy Options for Small Countries*, LSE IDEAS STRATEGIC UPDATE (August, 2019), at <https://www.lse.ac.uk/ideas/Assets/Documents/updates/LSE-IDEAS-Weaponisation-Dollar.pdf>.

system;<sup>116</sup> others sought to base their US dollar holdings outside the United States when possible (for instance in London, a major driver of the so-called Euromarkets).<sup>117</sup>

These concerns increased from the 1970s, first with sanctions against Iran and reserve seizures,<sup>118</sup> and then by the freezing of Libyan assets in the 1980s,<sup>119</sup> which led to the landmark case of *Libyan Arab Foreign Bank vs Bankers Trust Co*<sup>120</sup> and the use of the US dollar system to enforce US money-laundering, anti-corruption and taxation policies globally.<sup>121</sup>

In some cases, such as AML/CFT (anti-money-laundering/combating the financing of terrorism), anti-corruption, and taxation transparency, these policies were eventually multilateralized through the Financial Action Task Force (FATF) and the Organisation for Economic Co-operation and Development (OECD), respectively.<sup>122</sup> In the aftermath of the 2008 financial crisis, use of such tools increased again, particularly in relation to Iran, North Korea and Russia, encouraging efforts in the EU, China and Russia in particular to seek to develop arrangements which would reduce their vulnerabilities to both economic and financial as well as political risks of US monetary hegemony, in addition to gain some of the benefits of reserve currency status (particularly the ability to trade and finance on a cross-border basis without currency risks and with lower costs, thereby enhancing competitiveness, security and financial stability).<sup>123</sup>

Prior to 2020, however, with the exception of the euro, none of these projects had succeeded in significantly reducing US dollar dominance.<sup>124</sup> At the same time, from 2008, a number of new challengers arose, driven by technology rather than sovereigns.

---

<sup>116</sup> Thomas Costigan, Drew Cottle and Angela Keys, *The US Dollar as the Global Reserve Currency: Implications for US Hegemony* 8(1) WORLD REVIEW OF POLITICAL ECONOMY 104, 118 (2017).

<sup>117</sup> Gary Burn, *The State, the City and the Euromarkets*, 6(2) REVIEW OF INTERNATIONAL POLITICAL ECONOMY 225, 229–31 (1999).

<sup>118</sup> Executive Order 12170 – Blocking Iranian Government Property, 3 C.F.R., 1979 COMP. 457, available at <https://www.archives.gov/federal-register/codification/executive-order/12170.html>.

<sup>119</sup> Executive Order 12544 – Blocking Libyan Government property in the United States or held by U.S. persons, 3 CFR, 1986 COMP. 183, available at <https://www.archives.gov/federal-register/codification/executive-order/12544.html>.

<sup>120</sup> [1989] Q.B. 728.

<sup>121</sup> Rena S. Miller and Liana W. Rosen, *Anti-Money Laundering: An Overview for Congress*, CONGRESSIONAL RESEARCH SERVICE 5 (Research Report No. 7-57001, March, 2017), at <https://sgp.fas.org/crs/misc/R44776.pdf>.

<sup>122</sup> *Id.* at 19–24.

<sup>123</sup> See Sen, *supra* note 115.

<sup>124</sup> See Carol Bertaut, Bastian von Beschwitz and Stephanie Curcuru, *The International Role of the U.S. Dollar*, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM (October 6, 2021), at <https://doi.org/10.17016/2380-7172.2998>.

### 3. NEW TECHNOLOGIES AND THE CHALLENGE TO THE INTERNATIONAL MONETARY SYSTEM

The Bitcoin white paper was released in October 2008 at the height of the 2008 Global Financial Crisis; and Bitcoin itself was launched in January 2009 as the first decentralized digital currency and the first significant non-permissioned blockchain application. Bitcoin was designed explicitly as an alternative and a direct challenge to the central bank fiat currency model, which evolved from the 1970s and was seen to be at the heart of the 2008 crisis.

While Bitcoin has spawned seemingly endless distributed ledger technology and blockchain projects, initiatives and discussions, it so far has not emerged as a major challenge to major fiat currencies or dollar hegemony. Generally speaking, it has not been as effective as major fiat currencies in the role of a medium of exchange, a means of payment or a store of value.<sup>125</sup> It has, however, become widely used in a range of contexts, in particular by developing economies with weak monetary and financial systems, where Bitcoin provides a credible and useful alternative monetary instrument and payment system.<sup>126</sup>

However, in 2019 a new potential — and very credible — challenger emerged. In June 2019 Facebook revealed plans to roll out in 2020 its own cryptocurrency — a global stablecoin called Libra.<sup>127</sup> In design terms, Libra as originally announced was a mobile money scheme of the kind made famous by M-Pesa in Kenya — parties would buy Libra “coins” for fiat, which would be in turn deposited in the “Libra Reserve”.

Each Libra coin would be backed by deposited major fiat currency or short-term government securities denominated in such currencies, loosely based on the composition of the SDR.<sup>128</sup> Libra, in turn, would provide the monetary instruments across a range of payment systems (in particular those of Facebook: FacebookPay, WhatsAppPay and Instagram Pay) linked via digital identification systems of Facebook and others.<sup>129</sup>

In terms of monetary history and the role of technology, the announcement of Libra is a key date, regardless of whether it ever comes into existence, which now looks highly unlikely. Libra was a potent catalyst, not due to some profound design innovation, but because of its extraordinary global reach — one-third of humanity regularly uses their Facebook account.<sup>130</sup>

---

<sup>125</sup> See Dirk G. Baur, KiHoon Hong and Adrian D. Lee, *Bitcoin: Medium of Exchange or Speculative Assets?*, 54 JOURNAL OF INTERNATIONAL FINANCIAL MARKETS INSTITUTIONS & MONEY 177 (2018).

<sup>126</sup> See Andres F. Cifuentes, *Bitcoin in Troubled Economies: The Potential of Cryptocurrencies in Argentina and Venezuela*, 3 LATIN AMERICAN LAW REVIEW 99 (2019).

<sup>127</sup> See Financial Stability Board, *Addressing the regulatory, supervisory and oversight challenges raised by “global stablecoin” arrangements* (April, 2020), at <https://www.fsb.org/2020/04/addressing-the-regulatory-supervisory-and-oversight-challenges-raised-by-global-stablecoin-arrangements-consultative-document/>.

<sup>128</sup> *Economics and the Reserve*, DIEM (last visited July 19, 2022), at <https://www.diem.com/en-us/economics-and-the-reserve/#overview>.

<sup>129</sup> Deborah Liu, *Simplifying Payments with Facebook Pay*, META (November 12, 2019), at <https://about.fb.com/news/2019/11/simplifying-payments-with-facebook-pay/>.

<sup>130</sup> Joe Myers, *Nearly a third of the globe is now on Facebook – chart of the day*, WORLD ECONOMIC FORUM (August 5, 2019), at <https://www.weforum.org/agenda/2019/08/facebook-users-social-media-internet/>.

Libra thus had the potential — in very short order — to be the first digital currency able to become a systemic competitor for major currencies around the world — a characteristic Bitcoin and its progeny have so far lacked, outside of developing economies with weak monetary and payment systems.

Unlike Bitcoin, Facebook's scale and reach, combined with the evolution of efficient systems for digital payments, meant that Libra was — both domestically and internationally — a viable means of payment with major attractions: Libra demonstrated that the technology exists to build a better system of international payments, now the focus of a G20 initiative launched in 2020. It also offered an attractive medium of exchange and store of value (as a basket of major currencies, similar in composition to the SDR, with planned access to a range of financial products). This combination raised issues of monetary sovereignty as well as a range of legal and regulatory concerns about safety (from the standpoint of financial stability, market integrity and consumer/investor protection), leading to a coordinated global approach to regulation.<sup>131</sup>

At the same time, the potential challenge to both the international and domestic monetary systems led central banks to rethink their approach to sovereign digital currencies (SDCs), mostly in the form of central bank digital currencies (CBDCs).<sup>132</sup>

### **3.1 LIBRA'S IMPACT ON THE FUTURE OF MONETARY AND PAYMENT SYSTEMS**

A number of features gave Libra the potential to be disruptive for domestic and cross-border monetary and payment systems, including:

- Libra's role as an alternative payment system operated by private entities with massive resources and scale meant a "wait and see" regulatory strategy was never likely, since Libra had the potential to become systemic virtually upon launch. The impact of Libra could move from being too-small-to-care to too-large-to-ignore to too-big-to-fail within months.<sup>133</sup>
- In its original design, offering a composite monetary instrument — effectively a new private cryptocurrency backed by a basket of major currencies — Libra would have provided a potential alternative monetary instrument to all national fiat currencies, not dissimilar to a privately issued SDR, potentially leading to currency substitution.
- Libra could have generated a broad spectrum of risks for consumers and payment systems that demand a regulatory response, including undermining competition in the payment services market (if the platform is non-interoperable); weakening the effect of monetary policy measures; increasing global demand for assets within

---

<sup>131</sup> Oliver Read and Stefan Schäfer, *Libra Project: Regulators Act on Global Stablecoins*, 55(6) *INTERECONOMICS* 392, 394–395.

<sup>132</sup> See C. Barontini and H. Holden, *Proceeding with Caution – A Survey on Central Bank Digital Currency* (January, 2019), at <https://www.bis.org/publ/bppdf/bispap101.pdf>.

<sup>133</sup> See D. W. Arner, J. Barberis and R. P. Buckley, *The Evolution of FinTech: A New Post-Crisis Paradigm*, 47(4) *GEORGETOWN JOURNAL OF INTERNATIONAL LAW* 1271 (2016).

the Libra Reserve; and jeopardizing global or regional financial stability (as disruption of Libra could affect many economies at once).<sup>134</sup>

- Libra raised other risks, including<sup>135</sup> legal uncertainty, due to its unclear legal status under national laws; lack of sound governance, as its value is based on the value of underlying assets (which form the Libra Reserve) and depends on the efficiency of the corresponding stability mechanism; and failure to ensure operational resilience of a large-scale currency platform.

Most significantly, Libra forced central banks to reconsider their own monetary offerings to better meet the needs of the economy and financial system, and resist potential competitors, be they private, public-private or state sponsored.

### 3.2 LIBRA: THE FIRST GLOBAL STABLECOIN?

Libra would have arisen as the first global stablecoin (GSC) because of its potential for near-instantaneous scale, reach and impact. Like most forms of systemically important financial market infrastructure or systemically important financial institutions, precise definition of a GSC can be difficult.<sup>136</sup> The elements of a GSC, however, include size, scale and interconnectiveness; economies of scope and scale combined with network effects tend to suggest systemic significance in financial systems.

From the standpoint of the existing international monetary and financial system — the international financial architecture — GSCs are a challenge but one to which the system is well-placed to respond, particularly in the aftermath of the 2008 global financial crisis and related post-crisis regulatory reforms.

The first stage in dealing with GSCs is to identify them. This can be difficult in practice because offerings by non-traditional participants in finance, the Big Techs, have the potential to scale up very quickly. The second stage is to develop appropriate regulatory and supervisory tools in advance — tools that can be activated when a GSC is identified.

An activity-, institutional- or infrastructure-based approach can then be taken, depending on the nature of the GSC. These approaches will vary based on the type of service or product, and whether the GSC will be used for monetary, payments or securities settlement services. Cooperation and coordination on licensing, market access, supervision and resolution will be required.

The Libra experience served as a catalyst to develop global systems through the G20, Financial Stability Board (FSB) and others to identify GSCs, put in place appropriate supervisory arrangements and monitor their activities and impact. The response has reinforced international regulatory approaches rather than undermined

---

<sup>134</sup> See G7 Working Group on Stablecoins, *Investigating the Impact of Global Stablecoins* (October, 2019), at <https://www.bis.org/cpmi/publ/d187.pdf>.

<sup>135</sup> *Id.* at 5-11; Dirk A. Zetsche, Ross P. Buckley and Douglas W. Arner, *Regulating Libra*, 41(1) OXFORD JOURNAL OF LEGAL STUDIES 80 (2021).

<sup>136</sup> Bank for International Settlements, *Global Systemically Important Banks: Assessment Methodology and the Additional Loss Absorbency Requirement* (April 2020), at <https://www.bis.org/bcbs/gsib/>.

or challenged them.

### 3.3 GLOBAL STABLECOINS CONSTRAINED

Reacting to the remarkably strong pushback from regulators,<sup>137</sup> the parameters of Libra 2.0 were announced in a new white paper in April 2020,<sup>138</sup> at which time Libra also formally applied for supervision by the Financial Market Supervisory Authority (FINMA).<sup>139</sup> These two events coincided with the launch of FSB's consultation on regulatory and supervisory approaches to global stablecoins,<sup>140</sup> culminating in a final report and high-level recommendations published in October 2020.<sup>141</sup>

The high-level recommendations are intended to engender a coordinated approach to the regulation, supervision and oversight of privately issued global stablecoin arrangements in an effort to address its risk to financial stability, while promoting responsible innovation.

The high-level recommendations to governmental authorities include using necessary powers and resources to regulate, supervise and oversee global stablecoin arrangements; applying regulatory, supervisory and oversight requirements on a functional basis proportionate to potential risks; coordinating with authorities domestically and abroad to develop consultation and communication; and applying a governance framework setting out accountability for functions and activities.

Libra 2.0 dramatically scaled back the original ambition of Libra 1.0 to create a global digital currency. Instead, it opted for a series of domestic currency stablecoins, linked in a global basket, not dissimilar to another project focused on linking, if not merging, fiat currencies and DLT environments, FNLITY's Utility Settlement Coin.<sup>142</sup> While such new stablecoins will likely challenge domestic currencies of developing countries, they will not challenge the major currencies or the international monetary system. They may, however, challenge international payments systems — mostly because these are deeply in need of challenge.

From the standpoint of the international monetary system, Libra highlighted how the technology, capital and scale now exist to potentially challenge the dominant paradigm that central banks issue and control currencies, even major central banks

---

<sup>137</sup> Facebook-funded Cryptocurrency Diem Winds Down, BBC NEWS (February 1, 2022), at <https://www.bbc.com/news/technology-60156682>; Rebecca Bellan, G7 Bankers Oppose Launch Of Facebook's Libra Until Properly Regulated, FORBES (October 12, 2020), at <https://www.forbes.com/sites/rebeccabellan/2020/10/12/g7-bankers-oppose-launch-of-facebooks-libra-until-properly-regulated/?sh=77bce2612ad5>.

<sup>138</sup> Libra Association Members, *White Paper v 2.0* (April, 2020), at <https://web.archive.org/web/20201230045534/https://www.diem.com/en-us/white-paper/>.

<sup>139</sup> FINMA, *Libra Association: FINMA licensing process initiated* (April 16, 2020), at <https://finma.ch/en/news/2020/04/20200416-mm-libra/>.

<sup>140</sup> Financial Stability Board, *FSB consults on regulatory, supervisory and oversight recommendations for "global stablecoin" arrangements* (April 14, 2020), at <https://www.fsb.org/2020/04/fsb-consults-on-regulatory-supervisory-and-oversight-recommendations-for-global-stablecoin-arrangements/>.

<sup>141</sup> Financial Stability Board, *Regulation, Supervision and Oversight of "Global Stablecoin" Arrangements* (October 13, 2020), at <https://www.fsb.org/wp-content/uploads/P131020-3.pdf>.

<sup>142</sup> Fnlity Press Office, *Utility Settlement Coin (USC) continues to evolve* (June 3, 2019), at <https://www.fnality.org/news-views/usc-continues-to-evolve>.

and currencies. Libra also prompted central banks to consider how they might use technology to build better monetary and payment systems as the foundation of economic and financial activities, as well as for political objectives, both domestic and international.

This, in turn, has facilitated the emergence of proposals for wholesale legal reform of digital assets, such as the draft Lummis-Gillibrand Responsible Financial Innovation Act introduced in June 2022, which seeks to establish “a complete regulatory framework for digital assets” in the United States,<sup>143</sup> including a comprehensive set of obligations for all issuers of “payment stablecoins” and Office of Foreign Assets Control guidance on sanctions compliance responsibilities of such issuers.<sup>144</sup>

The announcement of Libra was followed by a dramatic scaling up of work on SDCs, mainly in the form of CBDCs — both ongoing and new. The highest profile announcement came from China’s central bank, the People’s Bank of China (PBoC), in late 2019, taking the lead by announcing its intention to launch its own CBDC.<sup>145</sup>

---

<sup>143</sup> Lummis, Gillibrand Introduce Landmark Legislation To Create Regulatory Framework For Digital Assets, KAREN GILLIBRAND (June 7, 2022), at <https://www.gillibrand.senate.gov/news/press/release/-lummis-gillibrand-introduce-landmark-legislation-to-create-regulatory-framework-for-digital-assets>.

<sup>144</sup> Proposal for a ‘Lummis-Gillibrand Responsible Financial Innovation Act, KAREN GILLIBRAND §§601, 602 (June 6, 2022), at <https://www.gillibrand.senate.gov/imo/media/doc/Lummis-Gillibrand%20Responsible%20Financial%20Innovation%20Act%20%5bFinal%5d.pdf>.

<sup>145</sup> See H. Murphy and Y. Yang, *Patents reveal extent of China’s digital currency plans*, FINANCIAL TIMES (February 12, 2020), at <https://www.ft.com/content/f10e94cc-4d74-11ea-95a0-43d18ec715f5>. In 2018, the BIS conducted a survey among 63 central banks from countries representing circa “80% of the world’s population and over 90% of its economic output” to measure the state of development of central bank digital currencies. Some 70% of respondents were working on CBDCs or were planning to do so soon. See Barontini and Holden, *supra* note 132. A similar survey conducted one year later showed this percentage had grown to 80%. See C. Boar, H. Holden and A. Wadsworth, *Impending arrival – a sequel to the survey on central bank digital currency 3* (January, 2020), at <https://www.bis.org/publ/bppdf/bispap107.pdf>.

## 4. THE DIGITAL YUAN AND THE EMERGENCE OF CBDCS

In October 2019, China announced it would launch its “digital currency/electronic payment” (DC/EP), now relabeled the eCNY. This project to create a “digital yuan” is likely to make China the first major economy to launch a major currency CBDC.<sup>146</sup> The proposed creation of a private global stablecoin such as Libra by a foreign company was always expected to trigger the precise response seen from China.<sup>147</sup> China has been researching and experimenting with DLT and blockchain technologies since 2014. The PBoC was thus well placed to move swiftly to live trials of DC/EP.<sup>148</sup>

We suggest that China’s digital yuan, if — or when — available offshore and on a wholesale (and not just retail) basis, will prove to be *the* powerful disruption that triggers a move from the extensive SDC-related research and piloting we have seen in Canada, Sweden, the UK and elsewhere, to multiple instances of CBDC *issuance*, particularly by major economies. Of these, the most significant by far will be major currency CBDCs: in addition to the digital yuan, a digital euro and a digital dollar, although others (such as the pound, yen and Swiss franc) may also be significant.

The key is that the launch by one major economy will have global implications, not only for all of those trading and investing with that economy, but also from the standpoint of potential currency substitution and Westphalian fragmentation of the international monetary and payment system. System design will thus relate to objectives and purposes as well as to impact, both domestic and international.

### 4.1 DESIGN CHOICES

The digital yuan is shaped by China’s monetary, financial, economic and political context and aims to provide a true CBDC as well as a payment system. It will operate in a two-tiered system.<sup>149</sup> The top level will be a network of top-tier intermediaries (TTIs) including major banks and large technology firms such as Alibaba/Ant and Tencent connected to the central bank’s RTGS. These entities will in turn make the digital yuan available to individuals through digital wallets.<sup>150</sup>

This far-reaching reform has been described as “a credit-based currency from a value perspective, a crypto-currency from a technical perspective, an algorithm-

---

<sup>146</sup> We have used the best sources available to us for this section, but our analysis may be influenced by their reliability or the quality of their translation into English.

<sup>147</sup> This response was predicted in an article posted online on July 11, 2019. See Zetzsche, Buckley and Arner, *supra* note 135.

<sup>148</sup> Karen Yeung, *China’s digital currency takes shape as trials begin with travel subsidies and Communist Party fees*, SOUTH CHINA MORNING POST (April 19, 2020), at <https://www.scmp.com/economy/china-economy/article/3080594/travel-subsidies-party-fees-chinas-digital-currency-takes>.

<sup>149</sup> Working Group on E-CNY Research and Development of the People’s Bank of China, *Progress of Research & Development of E-CNY in China*, PEOPLE’S BANK OF CHINA 3 (July, 2021), at <http://www.pbc.gov.cn/en/3688110/3688172/4157443/4293696/2021071614584691871.pdf>.

<sup>150</sup> *Id.*, at 8–9; Karen Yeung, *What is China’s sovereign digital currency?*, SOUTH CHINA MORNING POST (May 13, 2020), at <https://www.scmp.com/economy/china-economy/article/3083952/what-chinas-cryptocurrency-sovereign-digital-currency-and-why>.

based currency in terms of its implementation and a smart currency when it comes to application scenario”.<sup>151</sup>

The digital yuan will be a hybrid system (see Section 6): the tokens issued by the PBoC to TTIs can then be transferred to retail or wholesale accounts.<sup>152</sup> It will run on a centralized permissioned DLT.<sup>153</sup> It is a monetary system designed to underpin the existing electronic payment systems, including traditional bank-intermediated systems and the ecosystems of Alipay and WeChatPay. These were both non-interoperable closed-loop private systems prior to the launch of the eCNY and a range of regulatory reforms in the aftermath of the decision to halt the initial public offering (IPO) of Ant in October 2020.<sup>154</sup>

The digital yuan initially will not replace cash and will be interoperable with existing domestic payment systems but not foreign systems; although foreign participants in China will be able to use it. Competition from private entities will be prohibited.<sup>155</sup> In addition to preventing the emergence of alternatives (such as Libra and Bitcoin) in China, it will provide much-improved sources of data to the government for monitoring the economy and market integrity (especially if it eventually replaces cash) and will centralize control of the underlying monetary instrument across all payment systems.

The digital yuan should provide a means of controlling the flow of currency into the RMB area, initially Mainland China. In time, its geographic reach could be expanded, especially on the back of the Belt and Road Initiative, the Regional Comprehensive Economic Partnership and a variety of bilateral trade areas and to countries involved in those initiatives. In doing so, it will serve as a potential dollar alternative outside the reach of the US but fully under the oversight of China. It is supported by a range of liquidity facilities to enhance its attractiveness as a medium of exchange, means of payment and store of value at the international level.

Such a fundamental reconfiguration of the global monetary system would have far-reaching consequences — denying the US some of the “exorbitant privilege” it receives from minting the world’s principal global reserve currency and the capacity to impose financial sanctions on foreign countries.<sup>156</sup> Similar motivations underlie related discussions in other jurisdictions.

From a domestic standpoint, as a CBDC, the eCNY would be legal tender<sup>157</sup> in addition to providing a useful digital medium of exchange, means of payment and store of value. The attractions in these respects underpin many of the CBDC

---

<sup>151</sup> 姚前 [Qian Yao], *理解央行数字货币: 一个系统性框架* [Understanding Central Bank Digital Currency: A Systemic Framework], 47(11) 中国科学 SCIENTIA SINICA 1592 (2017). See also Qian Yao, *A Systematic Framework to Understand Central Bank Digital Currency*, 61(3) Sci. CHINA INFORMATION SCIENCES 1 (2018).

<sup>152</sup> Working Group on E-CNY Research and Development of the People’s Bank of China, *supra* note 149, at 4.

<sup>153</sup> Aditi Kumar and Eric Rosenbach, *Could China’s Digital Currency Unseat the Dollar?*, FOREIGN AFFAIRS (May 20, 2020), at <https://www.foreignaffairs.com/articles/china/2020-05-20/could-chinas-digital-currency-unseat-dollar>.

<sup>154</sup> Evelyn Cheng, *With Ant’s IPO on hold, China calls for fintech regulation*, CNBC (November 6, 2020), at <https://www.cnbc.com/2020/11/06/with-ants-ipo-on-hold-china-emphasizes-need-for-fintech-regulation.html>.

<sup>155</sup> Laney Zhang, *Regulation of Cryptocurrency: China*, LIBRARY OF CONGRESS LEGAL REPORTS (June, 2018), at <https://www.loc.gov/law/help/cryptocurrency/china.php>.

<sup>156</sup> Kumar and Rosenbach, *supra* note 153.

<sup>157</sup> Working Group on E-CNY Research and Development of the People’s Bank of China, *supra* note 149.

initiatives around the world.

## 4.2 TECHNOLOGY AND THE DESIGN OF MONETARY AND PAYMENTS SYSTEMS

In this section we present an SDC taxonomy and discuss the opportunities and challenges that come with SDCs more generally. We are particularly interested in design choices related to CBDCs. These design choices must be based on the circumstances of individual economic and financial systems rather than on any single model. This was emphasized by BIS and a group of developed economy central banks in a report issued in October 2020, highlighting — even among similarly situated economies — that there should be no one-size-fits-all CBDC.<sup>158</sup>

In their report, BIS and some of the world’s leading central banks outlined a set of CBDC core features and foundational principles (the “BIS Report”).<sup>159</sup> While recognizing the role of central banks in issuing cash for use by the public, the report highlights the accelerated use of digital payments, spurred on not only by Covid-19, but also by the decline in the use of cash in making payments. As such, a primary driver for central banks considering whether to issue a general-purpose CBDC is how it can be used as an alternative form of money for payments, complemented by physical central bank cash.

The BIS Report follows a risk-based approach in terms of foundational principles. It points out the need to identify any risks that could be associated with issuing a CBDC, particularly those which threaten financial stability, and which may alter financial market structures negatively.

Based on these considerations, the BIS Report outlines three important foundational principles for central banks to consider in issuing a CBDC. First, financial stability should not be compromised in issuing a general purpose CBDC. Central banks must be able to perform their core role of maintaining monetary and financial stability and should not be deterred by the issuance of a CBDC. Second, a general purpose CBDC should be used alongside and complement existing forms of money. Finally, a general purpose CBDC must promote innovation and competition to increase efficiency and provide users with access to a safe form of money.

The BIS Report highlights the work of the major central banks in deciding whether to issue a CBDC. It makes no claim to be definitive about whether those decisions have been made. The BIS’ work will continue, particularly its next phase involving additional policy analysis and CBDC design choice and technical experimentation.

### **SDC taxonomy**

SDC projects typically differ across four major design parameters: users; architecture; technology; and scope.

---

<sup>158</sup> Bank for International Settlements, *Central bank digital currencies: foundational principles and core features* (2020), at <https://www.bis.org/publ/othp33.pdf>.

<sup>159</sup> *Id.*

The range of potential users is very broad. Some SDC projects include TTIs only, some include all intermediaries (TTIs and non-TTI payment service providers), while others seek to include all wholesale or even all retail transactions. At first sight, opening SDCs for all (retail and wholesale) users seems a major leap. But central banks have a long history of opening direct accounts for non-financial institutions and individuals.<sup>160</sup>

As with any settlement system, the efficiency of central bank access for non-banks and individuals depends on demand: disintermediation is only achievable when both parties to a payment transaction have an account with the central bank. This is ensured where *all* transactions are settled with the central bank.

As to architecture, we distinguish between three different kinds of SDCs:<sup>161</sup>

### 1. Centralized SDCs

Each user has an account with the central bank where their units of value are stored and available for all transactions. Such a design is necessarily account-based, which means verification is required to access and spend the currency based on the identity of the currency owner, similar to identification of bank account holders.<sup>162</sup> By design,<sup>163</sup> centralized SDCs are permissioned systems and lack cash-like qualities, in particular anonymous exchange.<sup>164</sup> However, as an intermediary-based system, security and anti-fraud features would be easier to incorporate into such a system.<sup>165</sup>

### 2. Decentralized SDCs

A decentralized SDC bears the closest resemblance to Bitcoin and other decentralized digital alternative payment systems. In this system, mining is still required to produce a record of transactions, but alternative consensus algorithms can be implemented. Crucially, a truly decentralized SDC offers cash-like features and does not necessarily require identification and KYC checks for each user, making peer-to-peer and offline payments easier.<sup>166</sup> Technically, full decentralization is achievable through tokenization.

### 3. Hybrid SDCs

---

<sup>160</sup> J. P. Koning, *Fedcoin: A Central Bank-Issued Cryptocurrency*, R3 REPORTS 13 (November, 2016), at <https://www.r3.com/reports/fedcoin-a-central-bank-issued-cryptocurrency/>.

<sup>161</sup> Our taxonomy is equivalent to that proposed by R. Auer and R. Böhme, *The technology of retail central bank digital currency*, BIS QUARTERLY REVIEW (March 1, 2020), at [https://www.bis.org/publ/qrtrpdf/r\\_qt2003i.htm](https://www.bis.org/publ/qrtrpdf/r_qt2003i.htm) but understands the design choice “account” or “token” as inherent to the degree of centralization or decentralization: full decentralization requires some kind of token, while full centralization will require some kind of account.

<sup>162</sup> This is in contrast to token-based verification, which is based on the validity of the actual units of currency (similar to the operation of cash, but in a digital format). For more detail, see Committee on Payments and Market Infrastructures, *Central Bank Digital Currencies 4* (March, 2018), at <https://www.bis.org/cpmi/publ/d174.pdf>.

<sup>163</sup> In theory, it is conceivable that the state may try to label a centralized SDC as “anonymous” or “cash-like” but such an attempt would raise major credibility concerns. “In theory, a government could itself offer debit accounts that were guaranteed to be private. Unfortunately, that promise would not be worth the paper it was written on, so to speak. Given governments’ past behaviour, who could take such a promise seriously?” See K. S. Rogoff, *THE CURSE OF CASH 102* (2016).

<sup>164</sup> In its second report on the e-krona project, Swedish Riksbank concludes that the “focus of this programme should be on developing an e-krona that constitutes a *prepaid value* (electronic money) without interest and with *traceable transactions*.” See Sveriges Riksbank, *E-krona Project: Report No. 2* (October, 2018), at <https://www.riksbank.se/en-gb/payments--cash/e-krona/e-krona-reports/e-krona-project-report-2/>; See also Consult Hyperion, *Bitcoin or Brit-PESA?* (January 4, 2016), at <https://www.chyp.com/bitcoin-or-brit-pesa/>.

<sup>165</sup> Bank for International Settlements, *supra* note 158.

<sup>166</sup> *Id.*

A hybrid SDC is a blend of a centralized and decentralized SDC.<sup>167</sup> While it may use central bank accounts, not all users need to have such an account: intermediaries link the users to the central bank, while each of the intermediaries runs its own DLT-based system. Within each distributed ledger, tokenization may lead to cash-like characteristics such as anonymity. If each of the distributed ledgers is an enclosed system, AML/KYC checks can be performed at the initial stage.<sup>168</sup>

Technology remains an evolving choice, with some systems centralized using traditional payments processing technologies (such as RTGS) and others based on DLT/blockchain, an issue we return to below. The system may extend only to monetary arrangements or to payment arrangements, or include elements of both. We return to this issue as well.

### **Benefits, opportunities and challenges**

A CBDC is often an attempt to marry the benefits of alternative payment systems and central bank money. The dream is to ensure universal acceptance within the formal payment system, while eliminating or greatly reducing the role of costly intermediaries.<sup>169</sup>

Such a design would bring a number of benefits, including:

- Central banks could act as the ultimate trusted, bankruptcy-proof intermediary, replacing commercial banks and using a CBDC as a vehicle for critical national expenditure to bypass commercial banks completely, potentially reducing systemic risks associated with commercial banks.
- Central banks and governments could modernize their ageing wholesale payment systems with advanced functionality, including support for smart contracts.<sup>170</sup>
- SDCs can be used for raising money by the state — a feature of Venezuela's Petro,<sup>171</sup> an asset-backed cryptocurrency that was designed to supplement Venezuela's ailing economy, raise capital and attract investment by circumventing US sanctions. This feature remains possible notwithstanding that, for other reasons, the Petro did not succeed.

Regulatory challenges related to SDCs include:

---

<sup>167</sup> Ross P. Buckley, et al., *Sovereign Digital Currencies: Reshaping the Design of Money and Payments Systems*, 15(1) JOURNAL OF PAYMENTS STRATEGY AND SYSTEMS 7, 14–15 (2021).

<sup>168</sup> *Id.*

<sup>169</sup> M. Hampl, *Central banks, digital currencies and monetary policy in times of elastic money*, BANK FOR INTERNATIONAL SETTLEMENTS 2 (Speech at OMFIF Roundtable, July 11, 2017), at <https://www.bis.org/review/r170720b.pdf>.

<sup>170</sup> M. Bech and R. Garratt, *Central bank cryptocurrencies*, BIS QUARTERLY REVIEW 66–7 (2017), at [https://www.bis.org/publ/qtrpdf/r\\_qt1709f.pdf](https://www.bis.org/publ/qtrpdf/r_qt1709f.pdf).

<sup>171</sup> Government of Venezuela, *Petro: Towards the Economic Digital Revolution* 14 (2018), at <https://www.petro.gob.ve/eng/assets/descargas/petro-whitepaper-english.pdf>.

- Technical issues involved in setting up an SDC, despite the existence of international standards on DLT and blockchain<sup>172</sup> — regulators are faced with a multitude of possible design choices, yet may have inadequate resources or limited access to the required expertise to answer the many technical questions required.
- Concerns about the impact of SDCs on the payment system, financial markets and economy:
  - Regulators should perform a comprehensive *ex ante* analysis of the system, identifying entities that may end up in direct competition with the state once it implements an SDC (such as commercial banks and electronic money issuers).
  - Alternately, regulators may seek to level the playing field by artificially making SDCs less attractive by placing limits on interest or other features (at least initially).
  - Regulators must also consider implications for money supply and whether the new currency will be issued via an initial coin offering or in exchange for other forms of sovereign money (such as cash) or commercial bank money (or both), and design corresponding conversion mechanisms.
- Legal issues about the need to introduce the concept of SDC into the national regulatory system will need to be resolved. This may, in turn, alter the existing approach to regulation of non-sovereign cryptocurrencies.

### Departure from DLT

An often-discussed aspect of CBDCs is technology.<sup>173</sup> Although the examination of the option of issuing an SDC may flow from consideration of the opportunities offered by the technologies underlying Bitcoin against the recurring challenges facing payment systems, implemented SDCs may use neither DLT nor blockchain.

In the words of a recent Bank of England discussion paper, “[al]though CBDC is often associated with [DLT], we do not presume any CBDC must be built using DLT, and there is no inherent reason it could not be built using more conventional centralized technology.”<sup>174</sup> According to a recent BIS report, only five out of 17 general-access SDC projects presently focus on using DLT.<sup>175</sup>

Fully decentralized systems will need to use permissionless DLTs (most likely with blockchain), while the more likely centralized and hybrid SDCs would use permissioned DLT, if they use DLT at all. In terms of issuance control, the system is likely to be centralized. Yet, DLT often suffers from performance, data

<sup>172</sup> *ISO/TC 307 Blockchain and distributed ledger technologies*, INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (2016), <https://www.iso.org/committee/6266604.html>. The Standards contain 42 participating members, including China, Russia and most of Europe – and 21 observing members: *ISO/TC 307 Participation*, INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (last visited July 19, 2022), <https://www.iso.org/committee/6266604.html?view=participation>.

<sup>173</sup> For discussion of related issues, see M. Bouchard et al., *ConsenSys Whitepaper: Central Banks and the Future of Digital Money – A practical proposal for central bank digital currencies on the Ethereum blockchain*, CONSENSYS (January, 2020), at <https://pages.consensys.net/central-banks-and-the-future-of-digital-money>.

<sup>174</sup> See Bank of England, *Central Bank Digital Currency: Opportunities, challenges and design 6* (March, 2020), at <https://www.bankofengland.co.uk/-/media/boe/files/paper/2020/central-bank-digital-currency-opportunities-challenges-and-design.pdf?la=en&hash=DFAD18646A77C00772AF1C5B18E63E71F68E4593>.

<sup>175</sup> See R. Auer, G. Cornelli and J. Frost, *Taking stock: ongoing retail CBDC projects*, BIS MARCH QUARTERLY REVIEW (March 1, 2020), at [https://www.bis.org/publ/qtrpdf/r\\_qt2003z.htm](https://www.bis.org/publ/qtrpdf/r_qt2003z.htm).

protection/privacy, liability and other difficulties. Systems designers tend to favor DLT for token-based systems, while account-based systems mostly rely on conventional infrastructure.<sup>176</sup>

A DLT environment must also make difficult design choices due to issues of cybersecurity, mistakes/erroneous payments and user identification. In light of all these factors, we expect most SDCs not to use DLT or blockchain.<sup>177</sup>

### **Central bank access: Efficiency vs financial inclusion**

The four design parameters of users, architecture, technology and scope lie at the heart of a CBDC and interrelate: if user groups are strictly limited, efficiency can be the guiding rationale. As large financial intermediaries, most TTIs can withstand short-term shocks and periods of non-operation. Thus, if necessary, TTIs can refinance themselves in the capital markets and discuss compensation with the central banks. All of this can occur internally without threatening public trust.

However, the same is not true for most retail and many wholesale users — any service interruption would immediately erode trust in the financial system. The more user groups in a system, the more the focus shifts from efficiency to safety. Given that intermediation isolates some operational risk in the organization of one intermediary, where central banks follow the safety paradigm, a hybrid (semi-decentralized) model is most likely.

For developing countries, the main concern will be creating an inclusive infrastructure: a stable system that includes rural residents and the poor.<sup>178</sup> Here, full disintermediation may be favored since intermediary-based coverage does not exist. However, a developing country's choice in favor of a centralized SDC may only be temporary. As additional services are provided by the private sector, the respective central banks may return to a hybrid SDC model with gradually receding *optional* central bank access replaced by the private sector.

Another factor is the degree of operational resilience of the issuing central bank. If a central bank is reliable, tech savvy and capable, and seeks to enhance financial inclusion, a centralized architecture will probably be more suitable; where it is unreliable or unable to operate retail accounts well, a decentralized architecture will, in principle, be advisable.

From this design choice will follow who has access: where efficiency is paramount, access will be limited to TTIs. Where financial inclusion matters most, central banks may favor retail access.

---

<sup>176</sup> *Id.*

<sup>177</sup> DLT has been criticized by some central banks as lacking adequate scalability, offering no fundamental advantages over existing systems or failing to ensure cash-like resilience during blackouts. *See id.*

<sup>178</sup> *See, e.g.,* Edil Corneille, *Cambodian Central Bank Implements First Retail Payments System in the World Using Blockchain Technology*, BLOOMBERG (August 24, 2020).

## Towards public-private partnerships

Within this framework are three alternative approaches: central bank accounts with general access; central bank accounts with intermediated access; and new digital forms of fiat currency.<sup>179</sup>

Within these three approaches, a *fully* disintermediated SDC, while conceivable in theory and desirable from a financial inclusion perspective, is unlikely to be maintained by central banks in the long run. There is little evidence that the daily operations of central banks could handle millions of retail clients, nor that these banks have the appetite to do so.

Central banks tend to lack both the infrastructure and expertise for such a role.<sup>180</sup> Further, while SDC mining and destruction could be monopolized in the hands of the central bank to ensure monetary stability, a truly decentralized SDC would likely come with reduced enforcement of AML/CFT standards and reduced information flow to the respective central bank.

For these reasons, central banks and regulators will most likely collaborate with commercial banks, TechFins and FinTechs to use their existing infrastructure. Successful CBDCs will most likely be public-private partnerships; the central banks will provide the definitions, interfaces and accounts, and the private sector will offer the applications and operational interface to service mass clients.

Such systems most likely will be complemented by a range of CBDCs, in many cases combined with new forms of fast payment systems, potentially eliminating traditional intermediated structures in some cases, and being operated by them in others. Hence, the most likely outcome is a mix of central bank accounts with intermediated access and new digital forms of fiat currency.

## 4.3 MONEY VERSUS PAYMENT?

A real opportunity exists to address the separation between transactions (such as securities or derivatives transactions) and payment for those transactions, particularly at the wholesale level.<sup>181</sup> Rather than issuing an SDC, a central bank might allow the creation of a stablecoin, backed by deposits of fiat currency with the central bank — what the IMF has called a “synthetic CBDC”,<sup>182</sup> which could effectively serve as sovereign currency in specific systems.<sup>183</sup>

---

<sup>179</sup> For a more detailed discussion of available approaches, see Didenko and Buckley, *supra* note 17, at 1085–93; Bank for International Settlements *et. al.*, *Options for access to and interoperability of CBDCs for cross-border payments – Report to the G20* 1, 51 (July, 2022), <https://www.bis.org/publ/othp52.pdf>.

<sup>180</sup> Auer and Böhme, *supra* note 161, at 90; Raphael Auer and Rainer Böhme, *CBDC architectures, the financial system, and the central bank of the future*, VoxEU (October 29, 2020), at <https://voxeu.org/article/cbdc-architectures-financial-system-and-central-bank-future>.

<sup>181</sup> See, e.g. Société Générale, *Société Générale Performs the First Financial Transaction Settled with a Central Bank Digital Currency* (May 20, 2020), at <https://www.societegenerale.com/en/news/newsroom/societe-generale-performs-first-financial-transaction-settled-central-bank-digital>.

<sup>182</sup> See T. Adrian and T. Mancini-Griffoli, *From Stablecoins to Central Bank Digital Currencies*, IMF BLOG (September 26, 2020), at <https://www.imf.org/en/Blogs/Articles/2019/09/26/Blog-TEST>; T. Adrian and T. Mancini-Griffoli, *The Rise of Digital Money*, IMF (FinTech Notes No. 19/01, July, 2019), at <https://www.imf.org/en/Publications/fintech-notes/Issues/2019/07/12/The-Rise-of-Digital-Money-47097>.

<sup>183</sup> I. Allison and D. Palmer, *Wells Fargo to Pilot Dollar-Linked Stablecoin for Internal Settlement*, COINDESK (September 17, 2019), at <https://www.coindesk.com/wells-fargo-to-pilot-dollar-linked-crypto-for-internal-settlement>.

Fundamentally, regulators must determine whether they want to build a monetary or payment system. The word *currency* implies building the former. But this can be achieved only if the SDC is designed to substitute for cash, i.e., with anonymous transactions and payment finality. As we have shown, both the decentralized and hybrid SDC models are able to have these features. If these features are implemented, the distinction between payment and monetary system ceases to exist.

We suggest that the hybrid model will prove to be the most widely adopted; but the greatest benefit in many cases may come not from a digital monetary instrument alone, but instead from a merger of monetary and payment arrangements as highlighted in the context of the digital dollar. An eCNY approach is likely to be most effective where comprehensive electronic payment arrangements (such as in China or the EU) currently exist. In jurisdictions where there are substantial numbers of people without access to accounts (including the US, UK and most developing countries), a centralized account structure may prove more efficacious.

The potential is clear for CBDCs to provide a better medium of exchange, means of payment and store of value at the domestic level. The technology is not the constraint. Revised legal and institutional frameworks will be required and can readily be implemented.

The outstanding question is whether the technological evolution of CBDCs also offers an opportunity to build a better international monetary and payment system or whether the combination of technology, geopolitics and geoeconomics will instead fragment the existing architecture.

## 5. THE GEOPOLITICS OF CBDCS

The four catalysts of technology, Libra, the eCNY and Covid-19 were already causing major changes in money and payments systems before Russia invaded Ukraine. The question is whether the combination of these factors and the weaponization of digital finance in response to the invasion will together drive an end to the existing paradigm or even a rethinking of the future of international money and payments.

CBDC projects have generally been focused domestically. However, the combination of enabling technology and geopolitical demands is driving the possibility of a restructuring, or even a redesign of the international monetary system, away from the dominance of a single currency towards — in our view — an interconnected system of major currency areas.

If and when the eCNY fully launches, it will most likely be the first major-currency CBDC. China has already triggered the acceleration or activation of similar projects around the world. The intention is that it will be gradually opened to foreign participation within China, but probably not for use outside of China's internet environment, at least in the foreseeable future.

Importantly, the possibility of implementation of SDCs for *cross-border* payments is not a prominent feature of existing projects. Many are structured as strictly domestic schemes. As stated, eCNY is only being used on a trial basis, albeit by over 250 million users so far, with a focus on domestic retail payments.<sup>184</sup>

Similarly, the sand dollar of the Bahamas “will not pay interest and cannot be held non-domestically” and, consequently, payees domiciled outside the jurisdiction cannot be paid using the new currency. Other projects may not expressly reject cross-border functionality — however, the latter is typically not a priority and remains a residual issue for later consideration.

For example, the Bank of Canada and the Monetary Authority of Singapore joined forces to work on a cross-border cross-currency DLT-based system combining the two domestic CBDC platforms only as the fourth stage of their respective research projects (Project Jasper<sup>185</sup> in Canada and Project Ubin<sup>186</sup> in Singapore), following years of experimentation in a purely domestic setting. The initial stages involved investigating the use of DLT for high-value interbank settlement (phases 1 and 2 of Project Jasper and Project Ubin) and implementing SDC for delivery versus payment (DvP) settlement of tokenized assets (phase 3 of both projects).

---

<sup>184</sup> In February 2021, the Digital Currency Institute of the People's Bank of China (PBoC) and the Central Bank of the United Arab Emirates joined the Multiple CBDC (m-CBDC) Bridge, a cross-border payments project in partnership with the BIS Innovation Hub, the Hong Kong Monetary Authority and the Bank of Thailand. The project aims to develop a proof-of-concept prototype to facilitate real-time cross-border foreign exchange payments on distributed ledger technology. The project takes the participating central banks one step closer to implementing SDCs for cross-border fund transfers, international trade settlement and capital market transactions in their own jurisdictions. See Bank for International Settlements, *Central banks of China and United Arab Emirates join digital currency project for cross-border payments* (Press release, February 23, 2021), at <https://www.bis.org/press/p210223.htm>.

<sup>185</sup> Bank of Canada, *Digital currencies and fintech: Projects*, at <https://www.bankofcanada.ca/research/digital-currencies-and-fintech/projects/#project-jasper> (visited June 26, 2022).

<sup>186</sup> Monetary Authority of Singapore, *Project Ubin: Central Bank Digital Money using Distributed Ledger Technology*, at <https://www.mas.gov.sg/schemes-and-initiatives/project-ubin> (visited June 26, 2022).

A similar pattern was followed by the Bank of Thailand, which started investigating cross-border use cases of CBDC<sup>187</sup> only after successful completion of two domestic phases of its Project Inthanon: phase I focusing on wholesale fund transfer<sup>188</sup> and phase II targeting DvP settlement.<sup>189</sup>

In a sense, development of SDC platforms in Canada, Singapore and Thailand resembles the Libra/Diem project, but in reverse. While the latter started as an ambitious cross-border project that had to reduce its scope to a series of domestic stablecoins and eventually just an electronic payment system, albeit one with tremendous potential, projects Jasper, Ubin and Inthanon began as domestic experiments that later investigated cross-border functionality.

Having said this, we do not wish to dismiss or diminish the opportunities presented by SDCs for cross-border payments. In a cross-border context, SDCs can be implemented in different ways. On the one hand, they could be used to make payments to and from another currency area. On the other hand, different jurisdictions may facilitate interoperability of their domestic SDC platforms to simplify cross-currency payments.<sup>190</sup>

The resulting benefits could be substantial and may include faster transaction processing on a 24/7 basis; improved transparency; or enhanced settlement mechanisms (such as “atomic” settlement, which guarantees, in a bilateral settlement, that transfer of a currency in one direction occurs if and only if a corresponding transfer is made in the opposite direction).<sup>191</sup>

In our view, the potential game changer in this regard is the eCNY. In keeping with its incrementalist approach to major changes, it makes sense that China will initially establish the digital yuan as both the monetary instrument and one of the main rails of domestic payments, and ensure first it is working extremely well domestically.

However, once that is achieved, allowing the eCNY to be used offshore fits perfectly with China’s long-held ambition to internationalize the yuan and reduce China’s dependence on the US dollar, partially displacing the US dollar from its dominant role as the global reserve currency. Minting the world’s major reserve currency confers upon the US, in Barry Eichengreen’s words, an “exorbitant privilege”.<sup>192</sup>

China wants some of these benefits for itself and to minimize its geopolitical and financial risks: it wants to put its international transactions beyond the reach of US

---

<sup>187</sup> Bank of Thailand and Hong Kong Monetary Authority, *Inthanon-LionRock: Leveraging Distributed Ledger Technology to Increase Efficiency in Cross-Border Payments* (2020), at [https://www.hkma.gov.hk/media/eng/doc/key-functions/financial-infrastructure/Report\\_on\\_Project\\_Inthanon-LionRock.pdf](https://www.hkma.gov.hk/media/eng/doc/key-functions/financial-infrastructure/Report_on_Project_Inthanon-LionRock.pdf).

<sup>188</sup> Bank of Thailand, *The outcome and findings of Project Inthanon Phase I and the Project’s next steps* (Press release 5, 2019), at <https://www.bot.or.th/English/PressandSpeeches/Press/2019/Pages/n0562.aspx>.

<sup>189</sup> Bank of Thailand, *The outcomes and findings of Project Inthanon Phase II and the Project’s next steps* (Press release 39, 2019), at <https://www.bot.or.th/English/PressandSpeeches/Press/2019/Pages/n3962.aspx>.

<sup>190</sup> See Bank for International Settlements, *supra* note 158, at 7.

<sup>191</sup> Bank for International Settlements, et al., *supra* note 179.

<sup>192</sup> Barry Eichengreen, *EXORBITANT PRIVILEGE: THE RISE AND FALL OF THE DOLLAR AND THE FUTURE OF THE INTERNATIONAL MONETARY SYSTEM* (2012).

sanctions (all of which, practically, are implemented through the transactions having to settle in US dollars).

Promoting eCNY for use in international trade transactions — and potentially as the domestic currency of some poor countries that struggle with their own currency — fits with China's long-held ambition to build a parallel international financial architecture to that established by the dominant Western powers at Bretton Woods towards the end of World War II (the architecture involving the IMF and World Bank in which the West has yet allow China a role commensurate with that of its large economy and financial system).<sup>193</sup> This has been a stated major goal of China since the 2008 global financial crisis.<sup>194</sup>

For these reasons, we are confident that, when well established domestically, China will launch eCNY for offshore use. Given that China's motives are primarily strategic, not commercial, one can be confident that the eCNY will undercut payments options in terms of price (domestic eCNY is currently free). As a digital currency, eCNY should also interact highly efficiently with the digitalization of the trade process, and paperless trade. It should thus be attractive as a means of payment and medium of exchange, given the volumes of bilateral trade involving China.

At this point, China's major trading partners will need to respond with SDCs of their own, if they have not already done so; if not, the extremely valuable data attached to the payments for these international transactions will all end up in Shanghai or Beijing, not in the trading partner's country.

We therefore see the offshore launch of eCNY as the signal event that will trigger the utter reshaping from the ground up, so to speak, of the global monetary and payments system. However, it will not be the launch of the eCNY offshore but its usage that will force other nations to respond, and usage by merchants will depend upon their level of trust in China and its central bank.

While it is likely to grow rapidly for current transactions, questions remain about its role as a store of value, both as a result of continuing Chinese capital controls (despite having the world's second-largest debt markets) and due to concerns about the potential ability to use the eCNY to gather information or as a political instrument (which is ironic, given that this is one of the reasons others seek alternatives to the US dollar-based system).

Whether China and the PBoC earn this trust, and whether the yuan will be sufficiently usable from the standpoint of finance outside of China (as has been the case with the US dollar in the Euromarkets) are factors that defy accurate prediction. We are confident the eCNY will be attractive as an international means of payment

---

<sup>193</sup> Ross P. Buckley, *The Economic Policies of China, India and the Washington Consensus: An Enlightening Comparison*, 27 WISCONSIN INTERNATIONAL LAW JOURNAL 707 (2009); Ross P. Buckley, *From Fragmentation to Coherence: A Way Forward for East Asia*, in INTERNATIONAL ECONOMIC LAW AFTER THE CRISIS: A TALE OF FRAGMENTED DISCIPLINES 107 (Bryan Mercurio and C. L. Lim eds. 2015).

<sup>194</sup> See Reserve Bank of Australia, RMB Internationalisation: Where to Next? (September 20, 2018), at <https://www.rba.gov.au/publications/bulletin/2018/sep/pdf/rmb-internationalisation-where-to-next.pdf>; D. Arner and A. Soares, *A Globalized Renminbi: Will It Reshape Latin America?*, ATLANTIC COUNCIL (October, 2016), at <https://www.atlanticcouncil.org/in-depth-research-reports/report/a-globalized-renminbi/>; W. Overholt, G. Ma and C. K. Law, *RMB RISING: A NEW GLOBAL MONETARY SYSTEM EMERGES* (2016); C. Brummer, *Renminbi ascending: How China's currency impacts global markets, foreign policy, and transatlantic financial regulation*, ATLANTIC COUNCIL (June, 2015), at <https://www.atlanticcouncil.org/in-depth-research-reports/report/renminbi-ascending-how-china-s-currency-impacts-global-markets-foreign-policy-and-transatlantic-financial-regulation/>.

and medium of exchange but expect it to face substantial concerns about its role as a store of value.

The first two systemic catalysts for CBDCs examined here — Libra and the digital yuan — challenged money and payment systems, policy makers and regulators around the globe, and give rise to different levels of disruption. However, the immediate impetus for governments and central banks to review and redesign electronic payment systems was provided by the Covid-19 crisis starting in 2020.

The coronavirus pandemic highlighted the central role of monetary and payments systems in crisis resilience and response, due to the need to be able efficiently and swiftly to channel financial support to individuals, firms and healthcare systems, and to ensure that national payment systems were capable of dealing with the far higher levels of online and electronic payments in the crisis.

While the full launch of the digital yuan will, in time, accelerate major country CBDC efforts, it is the rise in presence-less payments associated with the Covid-19 crisis that is forcing central banks and governments to consider urgently whether they can and should develop and implement their own CBDCs.<sup>195</sup>

This trigger was also relevant to China. While the plan to launch the DC/EP was announced only months after the announcement of Libra in mid-2019, its launch was delayed, despite the technical arrangements in place, until the Covid-19 crisis provided the catalyst for China to initiate the next step towards the transformation of its domestic monetary and payment system.<sup>196</sup>

Given this context, we will compare the approaches of developed economies to CBDCs. We will first consider the approaches taken by the digital euro in the EU and a digital dollar in the US before considering the positions of Canada and Sweden and those of the major financial centers of London, Singapore and Hong Kong Special Administrative Region (SAR).

### **The digital euro**

When compared to the approaches taken by its international counterparts, the EU until late in 2020 was relatively restrained in voicing any plans to issue a digital euro. The first clear insight into a possible digital euro only came from Christine Lagarde, speaking at the Deutsche Bundesbank Conference on Banking and Payments in the Digital World in September 2020.<sup>197</sup>

---

<sup>195</sup> N. Khadem, *Coronavirus crisis sparks large bank withdrawals, despite looming cash transaction ban*, ABC News (May 26, 2020), at <https://www.abc.net.au/news/2020-05-26/digital-world-without-cash-post-the-coronavirus-pandemic/12282856>. A coalition of central banks have committed to work together to assess CBDC use cases and design choices. They comprise the Bank of Canada, Bank of England, Bank of Japan, European Central Bank, Sveriges Riksbank and Swiss National Bank. The Peoples Bank of China is not a member, although its work is more progressed than any other central bank. Other central banks that have announced they are researching or testing use cases for CBDC include Bahamas, Brazil, Cambodia, Denmark, Eastern Caribbean Currency Union, Ecuador, France, Iceland, Israel, Marshall Islands, Norway, Saudi Arabia, South Africa, South Korea, Thailand, Turkey, United Arab Emirates, Ukraine and Uruguay. See Davis Polk, *The Federal Reserve and Central Bank Digital Currencies* (Client memorandum, August 20, 2020), at <https://alerts.davispolk.com/10/5131/uploads/the-federal-reserve-and-central-bank-digital-currencies.pdf?sid=281566df-9de6-477a-9d7e-834d74e82e20>.

<sup>196</sup> Yeung, *supra* note 150.

<sup>197</sup> Christine Large, *Payments in a digital world*, EUROPEAN CENTRAL BANK (September 10, 2020), at <https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200910~31e6ae9835.en.html>.

The ECB, by its own mandate, is uniquely placed to consider the merits behind issuing a digital euro and the further integration of payments in Europe. Lagarde's speech championed innovative digital payments and their potential to increase efficiency and reduce the cost of transactions and balanced this with a cautious note about the potential for new risks.

In 2020, a new Eurosystem task force considered the merits of issuing a digital euro in its *Report on a digital euro*<sup>198</sup> published in October 2020. The report provides a glimpse into how the EU intends to catch up with major international players and ensure that its consumers have access to central bank money in accordance with their needs in the digital era. The report is a starting point for broader discussion and does not provide details on the chosen designs for a digital euro. However, it sets out how the ECB intends to issue a CBDC for Europe based on three critical elements.

These elements are meant to provide the foundation for the practical experimentation required to decide on the design features for a digital euro with the goal of developing a "minimum viable product".<sup>199</sup> From an operational perspective, the ECB intends to retain the role of issuing digital euros, while permitting private intermediaries to provide user-facing facilities interoperable with it.<sup>200</sup>

First, a digital euro must comply with the Eurosystem's core principles, mandates and policies.<sup>201</sup> Among its guiding principles for design, a digital euro would not act as a parallel currency, but instead as an additional method of supplying euros to users in all euro area jurisdictions.<sup>202</sup> In other words, a digital euro would act as a complement to cash, not as a substitute for it. A digital euro would be convertible at par with banknotes, central bank reserves and commercial bank deposits in euros.<sup>203</sup>

A digital euro would be regarded as a Eurosystem liability and therefore characterized as risk-free central bank money.<sup>204</sup> Further, the needs of consumers in using digital payments must be considered in the creation of a digital euro that does not discourage digital currency solutions developed by private firms.<sup>205</sup> Finally, measures must be taken to ensure a digital euro is trusted from initial issuance, and this trust maintained indefinitely.<sup>206</sup>

Second, the report considers the prerequisites to balance the issuance of a digital euro with the needs of users and the Eurosystem's core principles and aims.

These prerequisites include enhanced digital efficiency to support the digitization of the EU's economy; inclusion of cash-like design features (e.g., offline usage) to counter the general decline in cash usage; employment of cutting-edge design features to compete with existing payment solutions; consideration of ways to

---

<sup>198</sup> *Report on a digital euro*, EUROPEAN CENTRAL BANK (October 2, 2020), at [https://www.ecb.europa.eu/pub/pdf/other/Report\\_on\\_a\\_digital\\_euro~4d7268b458.en.pdf](https://www.ecb.europa.eu/pub/pdf/other/Report_on_a_digital_euro~4d7268b458.en.pdf).

<sup>199</sup> *Id.* at 6.

<sup>200</sup> *Id.* at 9–10.

<sup>201</sup> *Id.* at 4.

<sup>202</sup> *Id.* at 7.

<sup>203</sup> *Id.*

<sup>204</sup> *Id.*

<sup>205</sup> *Id.* at 8

<sup>206</sup> *Id.*

improve monetary policy, such as possible remuneration at modifiable interests rates; usage of a digital euro as a back-up system available widely and separately from other payment solutions in case of extreme events; accessibility and usage at an international level to non-euro area users; and cost reduction and environmentally friendly design features.<sup>207</sup>

Finally, the report identifies a set of general requirements that will ensure that the EU economy is protected against risks arising from the issuance of a digital euro.

The requirements include: capacity to control the number of digital euros in circulation to avoid large investments therein, which would detract from bank deposits; collaboration with market participants to use existing user-facing facilities; compliance with existing regulatory standards; safe and efficient design in compliance with the Eurosystem's goals; wide accessibility and usage throughout the euro area; set conditions for use of a digital euro by non-euro residents; and cyber resilience.<sup>208</sup>

In developing a digital euro, the focus needs to be maintained on its potential impact on the banking industry as consumers move their deposited money into digital euro wallets, possibly creating risks to financial stability.

The report also sets out some initial ideas of the ECB. Overall, restricted usage through synchronized functionality offline seems plausible. Offering offline private payments could also provide the EU with a competitive edge over services provided by wallet providers and stablecoin issuers.<sup>209</sup>

Discussions about providing a digital euro through an account-based system or as a bearer instrument will most likely continue and depend on the choice of underlying back-end infrastructure. In a centralized system, all digital euro transactions would be recorded in the Eurosystem's ledger.<sup>210</sup> In contrast, in a decentralized system, all transactions would be recorded by the supervised intermediaries and users based on the rules set by the Eurosystem.

Digital euros will most likely be accessed via hardware such as the user devices accepted by merchants and ATMs; and software-based payment solutions will include web-based applications and interfaces, digital wallets and cards.<sup>211</sup>

The legal implications for issuing a digital euro are also considered. The report concludes that EU law does not preclude the possibility of using a digital euro as legal tender.<sup>212</sup> In addition, the practical arrangements related to access and distribution of a digital euro could be outsourced under Eurosystem supervision.<sup>213</sup>

---

<sup>207</sup> *Id.* at 48.

<sup>208</sup> *Id.* at 48–49.

<sup>209</sup> *Id.* at 30–31.

<sup>210</sup> *Id.* at 36.

<sup>211</sup> *Id.* at 42.

<sup>212</sup> *Id.* at 24.

<sup>213</sup> *Id.*

Finally, the choice of EU law to be used as the basis of the issuance of a digital euro will be dependent on its design features and the principal reasons for its issuance.<sup>214</sup>

On a practical level, a viable commercial case for the digital settling and delivery of financial securities using digital euros for interbank settlements was illustrated by the issue of €40 million covered bonds as security tokens directly registered on a public blockchain by Banque de France.<sup>215</sup> However, only time will reveal the extent to which the EU will launch a digital euro, and associated design choices and features, and how it will impact trade at a global level, interacting perhaps with a digital yuan, and US and Canadian digital dollars.

In January 2022, a study commissioned by the European Parliament's Committee on Economic and Monetary Affairs identified several policy considerations in the implementation of a digital euro.<sup>216</sup> Key objectives included the preservation of monetary sovereignty and public money in a digital economy.<sup>217</sup> To that end, the study advocated the possibility of specialization: the focus of the digital euro would be as a medium of exchange for the purpose of normal payments, rather than as a store of value.<sup>218</sup> The proposed technical infrastructure would aim to enhance accessibility, privacy and safety, but also introduce either a cap on individual digital euro holdings or tiered fees at particular thresholds.<sup>219</sup>

The euro has evolved into the second most widely used currency internationally, both for payments and finance.<sup>220</sup> The euro project — despite concerns about Greece in 2010 — has become an international monetary instrument supported by highly effective domestic and international digital payment systems. It has been mainly constrained by geopolitics (in particular, a lack of real effort to internationalize its use as a potential competitor to the US dollar) and by the fragmented nature of EU euro debt markets. Both of these constraints may be changing as a result of Ukraine and US domestic politics, supported and enabled by technology.

### **The digital dollar**

In contrast to the EU's conservative approach to payments innovation, the US digital dollar proposal reflects national aspirations to compete with the eCNY by advancing its own currency CBDC with global implications. A digital dollar could have even greater immediate impact, albeit with very different design features from those of the eCNY, reflecting the very different domestic and global monetary, financial, economic and political contexts of the two countries.

The digital dollar proposal was included in the US legislative package of responses to the Covid-19 crisis in March 2020. It includes both monetary and payment

---

<sup>214</sup> Some excellent groundbreaking legal analyses of a digital euro can be found at: Seraina Grünwald, Corinne Zellweger-Gutknecht and Ben Geva, *Digital Euro and ECB Powers*, 58 COMMON MARKET LAW REVIEW 1029 (2021); Ben Geva, Seraina Grünwald and Corinne Zellweger-Gutknecht, *The E-banknote as a 'Banknote': A Monetary Law Interpreted*, 41(4) OXFORD JOURNAL OF LEGAL STUDIES 1119 (2021); Seraina Grünwald, Ben Geva and Corinne Zellweger-Gutknecht, *Digital Euro, Monetary Objects, and Price Stability*, 7 JOURNAL OF FINANCIAL REGULATIONS 284 (2021).

<sup>215</sup> Société Générale, *supra* note 181.

<sup>216</sup> Policy Department for Economic, Scientific and Quality of Life Policies, *The digital euro: policy implications and perspectives*, EUROPEAN PARLIAMENT (January 21, 2022), at [https://www.europarl.europa.eu/thinktank/en/document/IPOL\\_STU\(2022\)703337](https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2022)703337).

<sup>217</sup> *Id.* at 12–6.

<sup>218</sup> *Id.* at 40–1.

<sup>219</sup> *Id.* at 42.

<sup>220</sup> European Central Bank, *International use of the euro remained stable in 2021* (June 14, 2022), at <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220614~97ed81761f.en.html>.

elements. It is unlike the eCNY as it includes discussions of a digital token (which could be used in wholesale and retail transactions) and a universal account-based payment system. In this system, each person would have their own account with the Federal Reserve (albeit probably limited to those who did not otherwise have access to a bank account or digital wallet, potentially around 20 million). It would thus enable rapid delivery of financial resources across the economy and technologically enable a wide range of interventions from the central bank.

In January 2022, the Federal Reserve released a report<sup>221</sup> outlining the potential adoption of CBDCs as a payments system and seeking consultation on policy and design considerations.<sup>222</sup> The Federal Reserve suggested that a viable CBDC for the US payments environment would have these features: adequate privacy-protection for customers; intermediaries provided by the private sector offering accounts or digital wallet services; wide transferability between customers of different intermediaries; and identity verification (to be conducted by intermediaries) for combating money laundering and terrorism financing.<sup>223</sup>

A digital dollar could also be structured as a hybrid involving the public and private sectors: a stablecoin where a private consortium partners with the central bank or a synthetic CBDC in which a private stablecoin has direct access to fiat currency and/or liquidity from the central bank. The digital dollar is thus largely focused initially on the domestic context albeit with an eye towards a wider global role.

As previously noted, SDCs will interact particularly efficiently with the digitalization of international trade processes and smart contracts. Without a digital dollar, the eCNY — once allowed offshore<sup>224</sup> — could potentially undercut the dominant role of the US dollar in the denomination of international trade.<sup>225</sup> For this reason alone, it is difficult to see the US not launching a digital dollar as a defensive measure should the prospect of the eCNY being used outside of China become imminent.

### **Developed open economies**

Notwithstanding progress in the EU and US, Canada's and Sweden's preparations to issue CBDCs arguably remain the most advanced of the Western economies, with Sweden seemingly further ahead in this work than Canada.

The move away from cash usage is most advanced in Sweden, and its central bank has produced a series of substantial reports that, if one reads between the lines, imply clearly that the central bank will issue a centralized CBDC before it stops printing cash. The central bank expects this to happen in 2023 or 2024 and anticipates operating its CBDC on a centralized ledger (not with DLT or blockchain).<sup>226</sup>

---

<sup>221</sup> Federal Reserve, *Money and Payments: The U.S. Dollar in the Age of Digital Transformation* (January, 2022), at <https://www.federalreserve.gov/publications/files/money-and-payments-20220120.pdf>.

<sup>222</sup> *Id.* at 13.

<sup>223</sup> *Id.* at 13–4.

<sup>224</sup> See G. Dufey and L. Lim., *China's digital currency getting more buzz than warranted*, STRAITS TIMES (June 1, 2020), at <https://www.straitstimes.com/opinion/chinas-digital-currency-getting-more-buzz-than-warranted> (highlighting limited RMB internationalization to date).

<sup>225</sup> EICHENGREEN, *supra* note 192.

<sup>226</sup> This is only implied in the two reports: Sveriges Riksbank, *The Riksbank's E-krona project, report 1*, (September, 2017), at <https://www.riksbank.se/en-gb/payments--cash/e-krona/e-krona-reports/e-krona-project-report-1/>; Sveriges Riksbank, *supra* note 164.

In February 2020, the Bank of Canada issued a laudably clear document analyzing its contingency plans and explaining that, while the Bank of Canada had no plans to launch a CBDC, it was building capacity to do so if it became necessary.<sup>227</sup> The Bank of Canada envisaged two scenarios in which such a need could arise.

The first scenario sees a Canadian move to a cashless society.<sup>228</sup> Should the move away from cash necessitate Canada issuing a CBDC, the report envisages that it would be “cash-like”, i.e., it would earn no interest and be universally accessible.<sup>229</sup> The report also envisages that it would offer privacy<sup>230</sup> but not anonymity. As in most major economies, the use of cash in Canada has been in decline.

The Covid-19 pandemic further accelerated this decline, with 58 percent of Canadians reporting in 2020 that they used less cash than they had prior to the pandemic. Moreover, 36 percent of Canadians reported that they do not expect to return to using cash to the extent they did pre-Covid-19, while 43 percent reported that the pandemic has changed their payment preferences to digital and contactless payments for the long term. This compares with cash being used in some 32 percent of transactions in Australia in 2019 and only 9 percent of transactions in Sweden in 2020.<sup>231</sup>

The second scenario would arise if Canada’s monetary sovereignty were to be threatened by “a private digital currency not denominated in Canadian dollars”.<sup>232</sup> This is an obvious reference to the launch of Libra or some similar initiative.

The Bank of Canada’s report is interesting in that it focuses on the loss of monetary sovereignty, whereas the reports of the Sveriges Riksbank in Sweden consider this but focus far more on the impact on those without financial means and those living remotely or only having commercially provided payment mechanisms.

By February 2020, China had publicly committed to develop the eCNY but, interestingly, the otherwise comprehensive Canadian report does not mention this development nor does the Swedish report from February 2020. This cannot be an oversight. It is particularly interesting, as the third scenario in which Canada might choose to issue a CBDC would be where a major trading partner such as China, or the US (with a digital dollar), issues a CBDC that is available for use in international trade.

Such a development would be highly likely to force Canada’s hand because a CBDC would interact exceptionally well with dematerialized trade documents operating as

---

<sup>227</sup> Bank of Canada, *Contingency Planning for a Central Bank Digital Currency* (February, 2020), at <https://www.bankofcanada.ca/2020/02/contingency-planning-central-bank-digital-currency>.

<sup>228</sup> *Id.*

<sup>229</sup> *Id.*

<sup>230</sup> *Id.*

<sup>231</sup> Reserve Bank of Australia, *Cash Use in Australia: Results from the 2019 Consumer Payments Survey* (Bulletin, June, 2020), at <https://www.rba.gov.au/publications/bulletin/2020/jun/pdf/cash-use-in-australia-results-from-the-2019-consumer-payments-survey.pdf>; Sveriges Riksbank, *Payments in Sweden 2020* (October 29, 2020), at <https://www.riksbank.se/en-gb/payments--cash/payments-in-sweden/payments-in-sweden-2020/1.-the-payment-market-is-being-digitalised/cash-is-losing-ground/>.

<sup>232</sup> Bank of Canada, *supra* note 227.

smart contracts. The potential savings from the digitization and dematerialization of trade documentation are massive — the paperwork associated with international shipments is estimated to comprise about 20 percent of the total cost of shipment.<sup>233</sup>

In this unarticulated (by Canada) scenario, CBDC issuance by Canada or Sweden (or any other country for that matter) becomes compelling because, without it, much valuable information about trade contracts that use the eCNY will end up in Shanghai or Beijing rather than Toronto or Stockholm.

### **Major international financial centers**

While the analyses of Canada and Sweden will be relevant to most countries as they face similar challenges — including from the advent of major currency CBDCs — the approaches of the UK and Singapore will also be watched closely given their leading roles as financial centers, particularly for FinTech and RegTech. Both have focused on their positions and the potential role of CBDCs, particularly in the wholesale and trade contexts. Switzerland is focusing on interchanges between its currency and others — in CBDC form — and blockchain systems.<sup>234</sup>

Indeed, all of these jurisdictions are focused on their potential to be intermediaries between digital currencies. This issue is central to Hong Kong's future, considering that it could emerge as the major point of exchange for transactions between the eCNY and the rest of the world.<sup>235</sup>

---

<sup>233</sup> *The Digitisation of Trade's Paper Trail May Be at Hand*, THE ECONOMIST (March 22, 2018), at <https://www.economist.com/finance-and-economics/2018/03/22/the-digitisation-of-trades-paper-trail-may-be-at-hand>.

<sup>234</sup> Swiss National Bank, *BIS, SNB and SIX successfully test integration of wholesale CBDC settlement with commercial banks* (Press release, January 13, 2022), at [https://www.snb.ch/en/mmr/reference/pre\\_20220113/source/pre\\_20220113.en.pdf](https://www.snb.ch/en/mmr/reference/pre_20220113/source/pre_20220113.en.pdf).

<sup>235</sup> Andy Mukherjee, *Crypto Yuan Will Meet the Dollar — in Hong Kong*, BLOOMBERG (August 24, 2020), at <https://www.bloomberg.com/opinion/articles/2020-08-23/china-s-crypto-currency-may-challenge-u-s-dollar-peg-in-hong-kong>.

## 6. TECHNOLOGY, GEOPOLITICS AND THE FUTURE INTERNATIONAL MONETARY SYSTEM

Russia's invasion of Ukraine has brought into focus the potential role of money and payments in conflicts. It has also highlighted the role of technology, as it has been through the technological infrastructure that the powerful European and US financial response to Russia's invasion has been effected.

Money and finance have always been central to warfare. However, the digitization of the global monetary and payment system coupled to the US dollar as the dominant global reserve, investment and payments currency has underscored the weaponization of finance as the central feature of international responses.

### The weaponization of global digital finance

In response to the invasion of Ukraine, the US and EU — and many of their allies — imposed wide-reaching sanctions on Russia.<sup>236</sup> These range from cutting Russian banks off from SWIFT to restricting imports to and exports from Russia, and banning Russia from making debt repayments owed to US bondholders, which will likely push Russia into forced default,<sup>237</sup> whereby a sanctioned state is able and willing to pay, but third parties are not allowed (by virtue of sanctions) to let the money reach the intended recipients.

The decision to freeze some US\$300 billion of currency reserves held by the Central Bank of Russia is the most extraordinary.<sup>238</sup> Although freezing a central bank's foreign currency reserves is not new, Russia is the first large, globally integrated economy to suffer this fate.<sup>239</sup> While Russia has taken steps to insulate its economy from sanctions since its annexation of Crimea in 2014 — for example, by steadily divesting from its reserves most US dollar assets and nearly doubling its holdings of other foreign currencies and gold — the freezing of its reserves was particularly audacious, and has undermined its ability to stabilize the ruble and recapitalize its sanctioned banks as they face the risk of bank runs.<sup>240</sup> In the long term, Russia's ability to stabilize the ruble might be affected too — although the short-term statistics suggest otherwise.<sup>241</sup>

---

<sup>236</sup> See Minami Funakoshi, Hugh Lawson and Kannaki Deka, *Tracking sanctions against Russia*, REUTERS (May 31, 2022), at <https://graphics.reuters.com/UKRAINE-CRISIS/SANCTIONS/byvrienzmve/>.

<sup>237</sup> Jeff Stein, *U.S. pushes Russia toward default by blocking debt payments*, WASHINGTON POST (May 24, 2022), at <https://www.washingtonpost.com/us-policy/2022/05/24/treasury-russia-debt-default/>.

<sup>238</sup> REUTERS, *supra* note 4.

<sup>239</sup> See Laurence H. Tribe and Jeremy Lewin, *\$100 Billion. Russia's Treasure in the U.S. Should Be Turned Against Putin*, NEW YORK TIMES (April 15, 2022), at <https://www.nytimes.com/2022/04/15/opinion/russia-war-currency-reserves.html>.

<sup>240</sup> Robin Harding, *Toppling the dollar as reserve currency risks harmful fragmentation*, FINANCIAL TIMES (March 11, 2022), at <https://www.ft.com/content/601786bd-6d11-47ca-8c8b-02072c15d955?sharetype=blocked>; Nicholas Gordon, *Banks are stopping Putin from tapping a \$630 billion war chest Russia stockpiled before invading Ukraine*, FORTUNE (March 3, 2022), at <https://fortune.com/2022/03/03/russia-sanctions-central-bank-ruble-us-eu-foreign-reserves/> (noting that its reserves ballooned “to \$630 billion today from \$368 billion seven years ago”); Mike Dolan, *Column: Russia central bank freeze may hasten “peak” world FX reserves*, REUTERS (March 2, 2022), at <https://www.reuters.com/markets/europe/russia-central-bank-freeze-may-hasten-peak-world-fx-reserves-mike-dolan-2022-03-02/>; Alan Rappeport and David E. Sanger, *Seizing Russian Assets to Help Ukraine Sets Off White House Debate*, NEW YORK TIMES (May 31, 2022), at <https://www.nytimes.com/2022/05/31/us/politics/russia-sanctions-central-bank-assets.html> (noting that “[b]y all accounts, Russian officials were stunned at the speed at which they were frozen — a very different reaction from the one it faced after annexing Crimea in 2014, when it took a year for weak sanctions to be imposed”).

<sup>241</sup> Irina Ivanova, *Russia's ruble is the strongest currency in the world this year*, CBS NEWS (June 28, 2022), at <https://www.cbsnews.com/news/russia-ukraine-ruble-currency-russian-economy-sanctions-2022/>.

As the costs of Ukraine's defense and reconstruction grow, calls are increasing to move from freezing to seizing Russia's currency reserves to finance these efforts.<sup>242</sup> In Europe, the Polish government, along with the governments of Estonia, Latvia, Lithuania and Slovakia, has advocated for this extra measure, which has also received support from EU High Representative for Foreign Affairs and Security, Josep Borrell.<sup>243</sup> While US Treasury Secretary Janet Yellen has stated the US does not have legal authority to seize and sell frozen Russian reserves, the Biden administration has been urged to develop new processes to enable this action, which is being studied.<sup>244</sup>

In the past, such steps would have been unthinkable. During the Crimean War of 1854-1856, which was brutally fought on the territory of modern-day Ukraine, the British Treasury continued paying its debts to the Tsarist government, and Russia continued paying interest to British owners of sovereign debt.<sup>245</sup> Indeed, as one British minister put it, it was a given for "civilized nations that public debts should be paid to an enemy during war".<sup>246</sup> It is clear that customs have changed over time and the barriers between public war and private economic life that characterized the 19th century have eroded.<sup>247</sup> Global trade and finance now serve as key battlegrounds of modern warfare.

However, weaponizing the international monetary system will have lasting repercussions for the world economy and the international monetary and payments systems. Freezing – and potentially seizing – Russia's reserves trample on basic notions of private property and national sovereignty. We expect this to have two main consequences.

First, by freezing Russia's foreign currency reserves, the West has undermined the credibility of the existing international monetary and payments systems (not to mention the credibility of businesses whose failure to process Russia's payment instructions on the grounds of sanctions constitutes another example of forced default), while emphasizing the power of digital finance. This system is founded on the trust that states can safely store their savings with foreign banks and central banks and these funds will not be frozen or expropriated in circumstances such as these. The West is thus seen by many to have violated the international rules-based order.<sup>248</sup>

---

<sup>242</sup> In April 2022, the Ukrainian government estimated that the impact of the armed invasion could reach US\$560 billion, including indirect losses: see Jorge Valero, *EU Weighs Joint Debt to Fund Ukraine's Long-Term Rebuilding*, BLOOMBERG (May 10, 2022), at <https://www.bloomberg.com/news/articles/2022-05-09/eu-weighs-joint-debt-to-fund-ukraine-s-long-term-reconstruction>.

<sup>243</sup> Sam Fleming, James Shotter and Amy Kazmin, *EU debates tapping sanctions-hit Russian assets to pay for rebuilding Ukraine*, FINANCIAL TIMES (April 27, 2022), at <https://www.ft.com/content/91ffdd88-fa02-4ae2-931d-f47f042e9ed4>; Sam Fleming, *EU should seize Russian reserves to rebuild Ukraine, top diplomat says*, FINANCIAL TIMES (May 9, 2022), at <https://www.ft.com/content/82b0444f-889a-4f3d-8dbc-1d04162807f3>.

<sup>244</sup> David Lawder, *Yellen: Not legal for U.S. to Seize Russian official assets*, REUTERS (May 19, 2022), at <https://www.reuters.com/world/yellen-not-legal-us-government-seize-russian-central-bank-assets-2022-05-18/>; Tribe and Lewin, *supra* note 239; Robert E. Litan, *Russia can be made to pay for Ukraine Damage now*, BROOKINGS INSTITUTION (March 17, 2022), at <https://www.brookings.edu/opinions/russia-can-be-made-to-pay-for-ukraine-damage-now/>; Rappeport and Sanger, *supra* note 240 (noting that experts believe "If Secretary Yellen believes this is illegal, I think she's flatly wrong," he said. "It may be that they are blending legal questions with their policy concerns.").

<sup>245</sup> Nicholas Mulder, *THE ECONOMIC WEAPON: THE RISE OF SANCTIONS AS A TOOL OF MODERN WAR* (2022) 16.

<sup>246</sup> *Id.*

<sup>247</sup> *Id.*

<sup>248</sup> Joshua Kirschenbaum and Nicolas Véron, *Now is not the time to confiscate Russia's central bank reserves*, BRUEGEL (May 16, 2022), at <https://www.bruegel.org/2022/05/now-is-not-the-time-to-confiscate-russias-central-bank-reserves/>.

Russia's reserves are made up of earnings from legitimate sales, mostly to the West, and are not illegally obtained.<sup>249</sup> This step has undoubtedly been effective: Russia cannot access the hundreds of billions of foreign dollars, euros and other currencies and investments it has accumulated to stabilize the ruble or fund its armed invasion of Ukraine. However, refusing to honor debt obligations and politicizing Western financial institutions will undermine their trustworthiness.<sup>250</sup>

Although freezing (and in some cases seizing) currency reserves has been done previously to less powerful states like Iran, Venezuela and Afghanistan, this is the first time it has been done to a member of the G20 and a permanent member of the United Nations Security Council.<sup>251</sup>

As one Russian official said, “anyone who keeps money in dollars [or euros, pounds, yen etc.] today can no longer be sure that the US [and the EU] will not steal their money.”<sup>252</sup> This may prove to be a gravely underestimated cost of imposing these sanctions on Russia. As Kirschenbaum and Véron note, it may be that “credibly standing for a rules-based order is worth more” than the short-term tactical advantages of freezing or appropriating Russia's reserves.<sup>253</sup>

Second, and relatedly, these sanctions have undermined trust in the US dollar as the global reserve currency and potentially limited the appeal of the euro, yen, pound and others as reserve currencies, which could lead to a fundamental reorientation of the global financial system.<sup>254</sup> While the unmatched depth and liquidity of US markets — particularly the market for US Treasuries — has underpinned the dollar's role as the global reserve currency, the sanctions against Russia will prompt other states to question how they can safeguard their foreign assets in the future.<sup>255</sup> This could prove highly significant for global markets. Central bank reserves totaled a record US\$12.83 trillion in 2021;<sup>256</sup> the US dollar accounted for 59 percent of these reserves, and the euro around 20 percent.<sup>257</sup>

China will be particularly concerned about the precedent set by these measures, given that it holds a massive US\$3.3 trillion in foreign currency reserves.<sup>258</sup> Yet, China has found it very difficult to diversify away from US Treasury securities since the US is the only market deep and liquid enough to absorb its surplus balances

---

<sup>249</sup> Wolfgang Münchau, *A BRIC, impenetrable to sanctions*, EURO INTELLIGENCE (March 13, 2022), at <https://www.eurointelligence.com/column/a-bric-impenetrable-to-sanctions>.

<sup>250</sup> *Id.*

<sup>251</sup> Peter Martin, *Putin's biggest mistake of the Ukraine war? Trusting the Western financial system*, THE CONVERSATION (March 8, 2022), at <https://theconversation.com/putins-biggest-mistake-of-the-ukraine-war-trusting-the-western-financial-system-178635>.

<sup>252</sup> Robin Wigglesworth, Polina Ivanova and Colby Smith, *Financial warfare: will there be a backlash against the dollar?*, FINANCIAL TIMES (April 7, 2022), at <https://www.ft.com/content/220db8f2-2980-410f-aab8-f471369ac3cf>.

<sup>253</sup> Kirschenbaum and Véron, *supra* note 248.

<sup>254</sup> Münchau, *supra* note 249.

<sup>255</sup> Mattias Vermeiren, *Freezing Russia's Central Bank Reserves: Much Ado About Nothing?*, Ghent UNIVERSITY (March, 2022), at [https://www.ugent.be/ps/politiekewetenschappen/gies/en/gies\\_papers/2022-ukraine/freezing-russias-central-bank-reserves-much-ado-about-nothing#\\_edn12](https://www.ugent.be/ps/politiekewetenschappen/gies/en/gies_papers/2022-ukraine/freezing-russias-central-bank-reserves-much-ado-about-nothing#_edn12).

<sup>256</sup> Dolan, *supra* note 240.

<sup>257</sup> Serkan Arslanalp, Barry Eichengreen and Chima Simpson-Bel, *The Stealth Erosion of Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies*, IMF 5 (Working Paper No. 22/58, March, 2022).

<sup>258</sup> Vermeiren, *supra* note 255; Yu Yongding, *America Has Stopped Playing by the Monetary Rules*, PROJECT SYNDICATE (April 27, 2022), at <https://www.project-syndicate.org/commentary/us-freeze-russian-reserves-what-it-means-for-china-by-yu-yongding-2022-04?barrier=accesspaylog>;

Hung Tran, *Wargaming a Western Freeze of China's Foreign Reserves*, ATLANTIC COUNCIL (April 29, 2022), at <https://www.atlanticcouncil.org/blogs/econographics/wargaming-a-western-freeze-of-chinas-foreign-reserves/> (noting that the sanctions against Russia “have also prompted discussions about the possibility of similar sanctions being imposed on China in the event of its military invasion of Taiwan”).

without much disruption.<sup>259</sup> We may therefore see China instead attempt to stockpile commodities or take further steps to reduce its trade surplus by reorienting its economy toward domestic consumption, although this has so far proven difficult.<sup>260</sup>

Conversely, China could appear to be an option for other states looking to move their reserves from the US or EU, although the yuan accounts for just 2.7 percent of global reserves and China's tight capital controls and concerns about China's governance may make this a generally unattractive option.<sup>261</sup>

In the absence of a safe alternative to US and euro markets, we may well witness falling levels of foreign currency reserves. As Barry Eichengreen notes, the stockpiling of reserves in recent decades has been driven by two concerns: the need to intervene to stabilize domestic markets, or for use as a war chest in times of conflict, disaster or balance-of-payments crises.<sup>262</sup>

If foreign currency reserves can be reduced to worthless computer entries when states need them most, many will question the point of having them in the first place. It is possible that we will see a shift away from reserves entirely, which could be accompanied by countries taking steps to harden their economies against currency risk, such as by discouraging corporates from borrowing in foreign currency<sup>263</sup> or by holding increasing volumes of gold, silver or even cryptocurrencies.

All of this could have a significant impact on the global monetary, payments and financial systems in coming years. We do indeed live in the most interesting of times.

### **The end of dollar hegemony**

One fascinating development is tied to whether, and when, China will allow the digital yuan to be used offshore. The potential of eCNY expanding overseas has been recognized by the US legislators: the proposed Lummis-Gillibrand Responsible Financial Innovation Act seeks to develop standards and guidelines to boost the security of US government devices that use China's CBDC.<sup>264</sup>

The challenge — as highlighted earlier — is that use of the digital yuan offshore and/or outside China's "Great Firewall" means the loss of control of capital flows to an extent that, so far, has been unacceptable to China. However, for the digital yuan to reward China with the benefits of minting a global reserve currency, it will need to be usable outside of China's control.

Even without allowing use outside of China, the digital yuan nonetheless offers the basis for the most credible effort since the Cold War to develop a fully functioning monetary and payment system outside of the US dollar system. If the bubble of the digital yuan were to expand outside China over time, it could effectively underpin a

---

<sup>259</sup> Kent Troutman, *A World of Known Unknowns: A Closer Look at the Allocation of China's Foreign Exchange Reserves*, PIIE (December 24, 2013), at <https://www.piie.com/blogs/china-economic-watch/world-known-unknowns-closer-look-allocation-chinas-foreign-exchange>.

<sup>260</sup> Jon Sindreu, *If Russian Currency Reserves Aren't Really Money, the World Is in for a Shock*, WALL STREET JOURNAL (March 3, 2022), at [https://www.wsj.com/articles/if-currency-reserves-arent-really-money-the-world-is-in-for-a-shock-11646311306?mod=trending\\_now\\_news\\_1](https://www.wsj.com/articles/if-currency-reserves-arent-really-money-the-world-is-in-for-a-shock-11646311306?mod=trending_now_news_1).

<sup>261</sup> Barry Eichengreen, *The Monetary Consequences of Vladimir Putin*, PROJECT SYNDICATE (March 10, 2022), at <https://www.project-syndicate.org/commentary/russia-financial-sanctions-will-change-currency-reserves-by-barry-eichengreen-2022-03>.

<sup>262</sup> *Id.*

<sup>263</sup> *Id.*

<sup>264</sup> *Proposal for a Lummis-Gillibrand Responsible Financial Innovation Act*, *supra* note 137, at §603.

digital divide between two largely separate and competing monetary and financial worlds.

At the same time, the way in which a digital dollar and/or digital euro evolve will be central to the future contours of the world's monetary and financial systems.

The eCNY has tremendous potential to transform international payments from the correspondent banking model to one based on direct electronic movement of digital monetary instruments. At the same time, a payment system (such as CIPS) operated by China would suffer from the same risks of politicization as Fedwire, CHIPS and TARGET.

From the standpoint of a medium of exchange, China is now the largest bilateral trading partner for most countries. As a result, the eCNY is potentially useful for goods and commodities transactions, in the same way that other currencies from dominant economies have been throughout history — the pound sterling after the Industrial Revolution, for instance. This is reflected in the increasing use of the RMB for cross-border payments and its inclusion as part of the SDR basket.

From the standpoint of a store of value, in the 21st century, China has sought to maintain the stability of its currency and develop its financial markets. The Chinese debt markets are now the world's second largest, with increasing foreign participation.<sup>265</sup> As a result, venues for finance and investment in RMB now exist and the eCNY will likely facilitate them.

At the same time, China continues to maintain capital controls, which impact the attractiveness of its financial system internationally. For some governments and businesses, finance and investment in RMB via the eCNY presents greater risks than the US financial system and US dollar investments, domestically and internationally. Nonetheless, the combination of China's economic and financial significance, the latent value of diversification highlighted by the Russian sanctions, and the potential of the new eCNY monetary and payment infrastructure for cross-border transactions suggest that the offshore use of eCNY will grow, when it is allowed, particularly if the legal and institutional framework for the international use of eCNY reduces concerns about political and legal risks.

The role of the euro as a reserve currency could also increase. It is already the world's second most widely used currency for cross-border payments and finance/investment.<sup>266</sup> It has proven its effectiveness as a medium of exchange, means of payment and store of value, although with periodic and continuing concerns about its long-term viability in light of the Eurozone debt crisis of 2010.

While the EU has — if anything — been even more active than the US in using sanctions in the context of Russia's invasion of Ukraine, it is also the case that the combination of Covid-19 and the armed conflict is driving the EU to address two central weaknesses of the euro as a major reserve currency: lack of common debt,

---

<sup>265</sup> State Council, *RMB assets show growing appeal for global investors*, PEOPLE'S REPUBLIC OF CHINA (June 7, 2022), at [https://english.www.gov.cn/news/topnews/202206/07/content\\_WS629f46d8c6d02e533532bd04.html#:~:text=As%20the%20world's%20second%20largest,2017%2C%20central%20bank%20data%20showed](https://english.www.gov.cn/news/topnews/202206/07/content_WS629f46d8c6d02e533532bd04.html#:~:text=As%20the%20world's%20second%20largest,2017%2C%20central%20bank%20data%20showed).

<sup>266</sup> European Central Bank, *supra* note 220.

constraining liquidity, depth and scale, particularly in comparison to the US; and lack of an effective defense system. Both of these weaknesses are seemingly being addressed.<sup>267</sup>

Combined with a traditional focus on monetary stability, development of highly efficient payment systems, and the increasing size, scale and liquidity of its debt markets, in the wake of the Ukraine invasion it seems the euro may well continue to increase its role as a reserve currency. This could be reinforced by an appropriately designed digital euro as well as by a decision (so far lacking) to promote the international use of the euro, something that seems much more likely if Donald Trump is ever re-elected in the United States.

Similar arguments could apply to other currencies. While each of these arguments would reduce the dominance of the US dollar, none seems to present a strong case for a new monetary hegemon. This would also appear to be the case with Bitcoin and other cryptocurrencies.

Rather, one is likely to see increasing competition between CBDCs as well as synthetic CBDCs (stablecoins backed by the home central bank in the same way as an RTGS) or regulated stablecoins. As international CBDCs and stablecoins come to offer attractive alternatives to non-major currencies, it may push the non-major economies to develop their own CBDCs, as otherwise they will want to restrict access to non-domestic digital monetary and payments instruments — something many central banks have tried to do with Bitcoin and other cryptocurrencies, albeit largely unsuccessfully.<sup>268</sup>

### **Development of a new international monetary system**

From the standpoint of efficiency, the best solution to these profound challenges would be to build a new international monetary and payments system. Throughout most of history, the major international monetary instrument has not been a fiat currency but some form of metal, with various legal, institutional and technological approaches to reduce the difficulties of physically moving and transferring actual metal or metal coins.

While the pound sterling was the most widely used currency prior to World War II, this was facilitated by the Gold Standard. The role of the dollar was underpinned by gold (as well as the international legal and institutional framework of the IMF) until 1974. Thus, a dominant fiat currency has only been used as the major monetary instrument for less than 50 years.

The economic attractions of a new system are clear. The technology is available, as are the legal and institutional underpinnings: the IMF or the BIS could be tasked with issuing the monetary instrument, and there are mechanisms to build supervisory frameworks for international FMI. In particular, Article IV(2) of the IMF Articles of Agreement provides that members can establish general exchange arrangements,

---

<sup>267</sup> European Central Bank, *The international role of the euro* 8–10 (June, 2022), at <https://www.ecb.europa.eu/pub/pdf/ire/ecb.ire202206~6f3ddeab26.en.pdf>.

<sup>268</sup> Raphael Auer et al., *Banking in the shadow of Bitcoin? The institutional adoption of cryptocurrencies*, BANK FOR INTERNATIONAL SETTLEMENTS 3–4 (May, 2022), at <https://www.bis.org/publ/work1013.pdf>.

including par values, by 85 percent vote. While the US has a blocking minority of votes, the framework for change of this magnitude nonetheless exists.

The IMF appears to support this move, as its managing director recently called for a new public payment system to connect and regulate various payment systems and counter the growing fragmentation of the international monetary system spurred by the global financial response to the Russian invasion of Ukraine.<sup>269</sup>

The challenge is geopolitical — and one that has become much more difficult following the Ukraine invasion. In this environment, it is also possible that technological evolution could, in fact, strengthen the role of the US dollar.

### **Evolution of the international monetary system**

When the US implements a digital dollar, an important aspect will be the extent to which it can be used internationally. In addition to international transactions, finance and investments that are underpinned by domestic US dollar payment systems — in particular, CHIPS — the US also exports a huge amount of dollars as hard currency since dollar bills are widely circulated outside the United States.

A digital dollar could accelerate this trend dramatically if the US is able to manage adroitly the potential for the technology to monitor and restrict transactions.<sup>270</sup> In fact, an easily usable digital dollar could result in widespread currency substitution, a real risk for both developing and developed economies. This risk is one of the principal drivers for other countries to research and develop their own CBDCs.

The proliferation of the US dollar could be reinforced by establishing a legal and regulatory framework for US dollar stablecoins, appropriately supervised and with potential liquidity support from the central bank, as is the case with certain systemically important FMI. Clearly, international usage will be a principal consideration underlying US digital dollar design and development.

### **A new multipolar monetary system**

We are increasingly moving towards multipolar international monetary arrangements. This is because new monetary and payments technologies make it easier to use a few major currencies with similar convenience to the past use of a single monetary hegemon. Yet, it remains to be seen whether this emerging multipolar system will be characterized by integration — as technology facilitates new and better global financial architecture — or geo-economic fragmentation.

A variety of projects, particularly those coordinated by the BIS Innovation Hub, are seeking to build the networks and systems needed to promote effective integration. For example, a successful cross-border CBDC experiment, Project Jura, was recently undertaken in collaboration with the Banque de France and the Swiss National Bank.<sup>271</sup>

---

<sup>269</sup> Kristalina Georgieva, *Confronting Fragmentation: How to Modernize the International Payment System*, IMF (May 10, 2022), at [https://www.imf.org/en/News/Articles/2022/05/10/sp051022-md-concluding-remarks-at-the-snb-high-level-conference?utm\\_medium=email&utm\\_source=govdelivery](https://www.imf.org/en/News/Articles/2022/05/10/sp051022-md-concluding-remarks-at-the-snb-high-level-conference?utm_medium=email&utm_source=govdelivery).

<sup>270</sup> Getting the balance right between compliance with AML/CTF requirements, usability and privacy is a challenge that will confront all CBDCs, be they an e-CNY, a digital euro or any other digital currency.

<sup>271</sup> Banque de France, Bank for International Settlements and Swiss National Bank, *Cross-Border Settlement Using Wholesale CBDC* (December, 2021).

Project Jura resulted in the safe and efficient settlement of foreign exchange transactions in euro and Swiss franc wholesale CBDCs, as well as the issuance, transfer and redemption of tokenized euro-denominated French commercial paper between French and Swiss institutions. As the deputy governor of the Banque de France commented, “[Project] Jura demonstrates how wholesale CBDCs can optimize cross-currency and cross-border settlements, which are a key facet of international transactions.”<sup>272</sup>

Another example is Project Nexus. In collaboration with the Monetary Authority of Singapore, the Bank of Italy and the Central Bank of Malaysia, the BIS Innovation Hub is exploring the possibility of developing a standardized process for domestic payment systems to speak to each other, thereby enabling interoperability between payment systems across borders.<sup>273</sup>

Although still in the testing phase, Project Nexus has the potential to enable payment system operators to connect to a single entity — the Nexus platform — instead of building custom connections for each new country, thereby greatly facilitating the process of linking fast payment systems.<sup>274</sup>

These projects exemplify how countries can work together to investigate the use of new technologies to develop better financial infrastructure for cross-border payments and foreign exchange transactions. These developments have the potential to increase the multipolarity of the international monetary system.

The imposition of sanctions has accelerated the development of a multipolar monetary system, but through fragmentation rather than integration. While the sanctions imposed by the US and European countries directly target Russia, their costs have also been borne by other countries, which are looking for alternatives to the existing financial system to circumvent their effects.

For instance, Pakistan entered a trade deal with Russia shortly after the United Nations voted to condemn the invasion and demand that Russia withdraw.<sup>275</sup> India — a major importer of oil and fertilizers from Russia — is considering new rupee-rouble trade arrangements to maintain trade with Russia, bypassing the international payment mechanisms from which Russia has been removed.<sup>276</sup> China is also looking to promote trade and financial ties with Russia — which is unsurprising given the two agreed in 2019 to reduce dependence on the dollar in international settlements between them.<sup>277</sup>

---

<sup>272</sup> *Id.* at 2, 4.

<sup>273</sup> Bank for International Settlements, *Nexus: A Blueprint for Instant Cross-Border Payments* (July, 2021).

<sup>274</sup> Bank for International Settlements, *Project Nexus: blueprint for instant cross-border payments moves to testing phase*, at <https://www.bis.org/about/bisih/topics/fmis/nexus.htm> (visited on June 26, 2022).

<sup>275</sup> *Why so much of the world won't stand up to Russia*, THE ECONOMIST (April 16, 2022), at <https://www.economist.com/international/why-so-much-of-the-world-wont-stand-up-to-russia/21808737>.

<sup>276</sup> Chloe Cornish, *India explores 'rupee-rouble' exchange scheme to beat Russia sanctions*, FINANCIAL TIMES (March 17, 2022), at <https://www.ft.com/content/a5ee2d6b-693f-475d-80c6-0036c2657ef1>.

<sup>277</sup> Yew Lun Tian, *China says not deliberately circumventing sanctions on Russia*, REUTERS (April 2, 2022), at <https://www.reuters.com/world/china/china-says-not-deliberately-circumventing-sanctions-russia-2022-04-02/>; Mrugank Bhusari and Maia Nikoladze, *Russia and China: Partners in Dedollarization*, ATLANTIC COUNCIL (February 18, 2022), at <https://www.atlanticcouncil.org/blogs/econographics/russia-and-china-partners-in-dedollarization/>. See also *Kazakhstan to Use Ruble When Doing Business with Russia, Belarus*, RADIO FREE EUROPE (March 18, 2022), at <https://www.rferl.org/a/31760079.html>; Arshaluis

If the US and European countries fail to consider how other countries will manage the fallout of sanctions — and support measures to assist them — indirectly affected countries may look to develop or engage with alternatives to the existing international financial system to protect their national interests.<sup>278</sup> This will likely encourage the emergence of parallel, disjointed payment systems to mitigate the risk of Western sanctions, resulting in the fragmentation of the international monetary system.<sup>279</sup>

Similarly, the push for alternatives within sanctioned countries has increased the risk of fragmentation. As Russians sought to protect their assets and maintain liquidity as the value of the ruble declined in the early stages of the conflict, spending on Bitcoin and other cryptocurrencies skyrocketed.<sup>280</sup> While Western sanctions extend to cryptocurrencies, this trend poses a range of risks, from financial instability and exchange-rate volatility to fragmentation of the international financial system.<sup>281</sup> Since cryptocurrencies operate outside the traditional banking system, they are far less susceptible to Western sanctions, further reducing the policing power of the US and European states.<sup>282</sup>

The trend towards multipolarity in the international monetary system is being driven by efforts to integrate through joint technological development, which makes the use of a range of major currencies feasible, and geo-economic fragmentation (through the application of sanctions and the development of alternative systems to circumvent their effects).

It is important that countries collaborate with each other and with international organizations — including the IMF, FSB and BIS — to develop new financial infrastructure that connects and regulates various payment systems, thereby countering the risks of fragmentation in the international monetary system.<sup>283</sup>

We could thus see technology making possible an environment without a monetary hegemon, with transactions enabled digitally across currencies. This is the optimistic multipolar scenario.

If countries do not cooperate continuously, it is likely that we will see the world once again split into multiple economic blocs, as in the Cold War, hindering the cross-

---

Mgdesyan, *Armenia and Russia working to dedollarize bilateral trade*, EURASIANET (April 21, 2022), at <https://eurasianet.org/armenia-and-russia-working-to-dedollarize-bilateral-trade>.

<sup>278</sup> Mihir Sharma, *Why India Is Losing Faith in the West*, BLOOMBERG (March 17, 2022), at <https://www.bloomberg.com/opinion/articles/2022-03-17/ukraine-invasion-why-india-is-angry-about-russia-sanctions>. See also *Why so much of the world won't stand up to Russia*, THE ECONOMIST (April 16, 2022), at <https://www.economist.com/international/why-so-much-of-the-world-wont-stand-up-to-russia/21808737> (noting that, in addition to India, South Africa is the other major democracy to abstain from UN votes to condemn Russia and that the broader “pattern of abstentions speaks in part to concerns that sanctions on Russia are driving up food and energy prices.” As one European diplomat put it, “[t]wo elephants are fighting, and the little guys get hurt”.)

<sup>279</sup> Georgieva, *supra* note 269.

<sup>280</sup> Andy Mukherjee, *Putin's War Could Make Central Banks a Crypto Battlefield*, BLOOMBERG (March 18, 2022), at <https://www.bloomberg.com/opinion/articles/2022-03-17/putin-s-war-will-put-central-bankers-on-the-cryptocurrency-frontlines>.

<sup>281</sup> *Id.*

<sup>282</sup> *Id.*

<sup>283</sup> Georgieva, *supra* note 269.

border flow of capital, goods, services, ideas and technologies to the detriment of productivity and living standards in all countries.<sup>284</sup>

The costs of these parallel payment and monetary systems, and the deglobalization of the world's economic order, can hardly be overstated: states and private market participants will be forced — by economic circumstances and the need to maintain sovereignty — to respond to the risk of weaponization of finance present in each system. The additional risk management measures will lead to additional transaction costs.

One obvious consequence will be higher payment costs due to fragmentation and less liquidity, resulting in lower market efficiency. This development will take away much of the welfare gains achieved in recent decades and those which remain achievable now from enhanced international coordination, technological harmonization and integration.

---

<sup>284</sup> *Id.*; Kristalina Georgieva, Gita Gopinath and Ceyla Pazarbasioglu, *Why We Must Resist Goeconomic Fragmentation—And How*, IMF BLOG (May 22, 2022), at <https://blogs.imf.org/2022/05/22/why-we-must-resist-geoeconomic-fragmentation-and-how/>.

## 7. CONCLUSION

The systemic catalysts of Bitcoin, Libra, the digital yuan, Covid-19 and the invasion of Ukraine have each challenged policy makers and regulators around the globe. The combination of new technologies and geopolitics represents a real threat to existing payments infrastructure and provides a great impetus for payment systems to evolve dramatically, quite probably towards a multipolar system that will be markedly less efficient.

These developments also represent, for the United States, a real and present danger to the dominance of the US dollar in international trade and finance and the consequential loss of the numerous benefits to the US from the existing system.

How might we remedy this challenge to the global financial system? Where power rules, rules are useless. In a hot political climate like Russia's invasion of Ukraine, few limits will be accepted *ad hoc*, as short-term interests will prevail.

Yet, history has taught us that rules can reduce the atrocity of warfare: the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare of 1925 (known as the Geneva Protocol) followed the appalling consequences of poison gas use in World War I. The Geneva Protocol was a rules-based response to the rule-less state of war.

Today, the long-term public and private interests of all societies will be harmed by the unprecedented weaponization of finance. In such a situation, we argue for a set of rules defining options and limiting the financial sanctions states can use in warfare, including limits on freezing or seizing central bank reserves.

We humbly suggest the time has come for a Geneva Protocol for the world's financial system<sup>285</sup> or, alternatively, the redesign of international monetary and payment arrangements as a universal public good, based on existing arrangements such as the IMF Articles of Agreement or the BIS, or on the development of a new international payments organization, a multilateral SWIFT.

We expect countries to seek or actively build alternatives to maintain sovereignty in an environment where the monetary and payments systems are weaponized. Regardless of who takes advantages of its dominant role in world finance, the dominated will respond, facilitated by technology, and all of us will be the poorer.

A rules-based order that focuses on preserving and enhancing the world's monetary and payment systems could reduce the detrimental effects of the weaponization of finance and serve the long-term interests of all the world's societies and peoples.

---

<sup>285</sup> This is not the place for specifying details of such a convention or institutional design. Yet, it could entail, for instance, rules about interfering with a central bank's balance, an individual's private property, and sanctioning powers more generally.

## ABOUT THE AUTHORS

Douglas W Arner is the Kerry Holdings Professor in Law, Senior Fellow of the Asia Global Institute, RGC Senior Fellow in Digital Finance and Sustainable Development, and Associate Director, HKU-Standard Chartered Foundation FinTech Academy at The University of Hong Kong.

Ross P Buckley is the KPMG Law – King & Wood Mallesons Professor of Disruptive Innovation, Australian Research Council Laureate Fellow, and Scientia Professor at the University of New South Wales, Sydney.

Anton N Didenko is Senior Lecturer at the Faculty of Law and Justice of the University of New South Wales, Sydney.

Dirk A Zetsche is Professor of Law, ADA Chair in Financial Law (Inclusive Finance), Faculty of Law, Economics and Finance at the University of Luxembourg, and Director, Centre for Business and Corporate Law at Heinrich-Heine University, Düsseldorf, Germany.

## ABOUT ASIA GLOBAL INSTITUTE

Inaugurated on July 1, 2015, the Asia Global Institute is a multidisciplinary think tank co-established by The University of Hong Kong and the Fung Global Institute. Its mission is to generate and disseminate research and ideas on global issues from Asian perspectives.

## ACKNOWLEDGEMENT

The authors thank Jame DiBiasio, Ben Geva, Martin Char, Jed Kroncke and Kuzi Charamba, as well as the participants in a European Banking Institute Roundtable on June 13, 2022 and in a range of events looking at issues relating to central bank digital currencies. All errors are those of the authors. The authors also gratefully acknowledge the Australian Research Council Laureate Program (project number FL200100007) and the Hong Kong Research Grants Council Theme-based Research Scheme for financial support.

The views expressed in this report are those of the authors and do not necessarily reflect those of the Asia Global Institute. The authors are solely responsible for any errors or omissions.

Copyright © 2023 Asia Global Institute

All rights reserved. No part of this publication may be reproduced, stored in or introduced into a retrieval system, or transmitted, in any form, or by any means (electronic, mechanical, photocopying, recording or otherwise) without the prior written permission of the publisher. Any person who does any unauthorized act in relation to this publication may be liable to criminal prosecution and civil claims for damages.

ISSN: 2706-8554 (print); 2706-8552 (online)