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

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## Ukraine, Sanctions and Central Bank Digital Currencies:

### The Weaponization of Digital Finance and the End of Global Monetary Hegemony?

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*This paper analyses the geopolitical and strategic dimensions of how technology is reshaping the international monetary and payments systems. Freezing some \$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 analyse 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.

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## I. INTRODUCTION

On 24 February 2022, Russia invaded Ukraine.<sup>1</sup> Following condemnation at the United Nations, the US, EU, NATO and their global allies responded with a huge range of financial sanctions against Russia, Russian government officials, their families, many large businesses and a range of related individuals and their assets across the world.<sup>2</sup> These sanctions included restrictions on making payments in the US dollar and euro 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 Central Bank of Russia and froze some US\$ 300 billion of that central bank'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 amount to the “weaponization of finance” via the international digital monetary, payments and financial systems.<sup>5</sup> This raises a range of 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.

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 fundamental to cross-border transactions than to domestic transactions. Digital payments and financial infrastructures are at the heart of economic and financial globalization.

In this paper, we consider the impact of new technologies and geopolitics on the 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 the existing

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<sup>1</sup> President of Russia, *Address by the President of the Russian Federation* (Feb. 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 (Mar. 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 (Mar. 13, 2022), at <https://www.reuters.com/article/ukraine-crisis-russia-reserves-idUSL5N2VG0BU>.

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

international monetary and payment systems and in particular the role of the US dollar at its heart?

In Section II, we consider the evolution of the international monetary and payment systems and the use of this system 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 in particular its relationship to the core attributes of money at the international level, namely its function as medium of exchange, means of payment and store of value. We highlight how technology combined with geopolitics, geoeconomics and legal and 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 existing 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 the plumbing of global finance and also a motivation for economies to build systems which would reduce their risks from dependence on the existing international digital payments framework.

In Section III, the paper discusses 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 immense

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<sup>6</sup> Of the 131 countries that were reforming their national payment systems according to a World Bank survey in 2012, 113 (86 per cent) 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* (Dec. 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 article but understand integrity as inherent to the safety objective.

<sup>8</sup> For a discussion about interrelation between transaction costs and economic growth more generally see D. Bywaters & P. Młodkowski, *The Role of Transaction Costs in Economic Growth*, 7 INT'L J. ECON. POL'Y STUDIES 53 (2012).

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

hype around cryptocurrencies, they have not to date 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 19<sup>th</sup> century. 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 IV, we discuss the emergence of central bank digital currencies, led by China’s eCNY or ‘digital Yuan’. These 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, with this trend 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 so far 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 clearly have the potential to underpin new international monetary and payments arrangements. This was demonstrated by how Libra catalysed the focus of the

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<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’).

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

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 V, which offers a number of possible scenarios for the international monetary and payment system, arguing that the most likely result is increased multipolarity as a result of efforts – particularly of major economies – to build domestic payment systems for their own CBDCs in order 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 dollar, reinforcing an existing trend, but new networked frameworks for cross-currency payments between major monetary systems could in fact make it convenient to use a small number of currencies, rather than the traditional outcome of international monetary hegemony.

We argue that going forward countries need to consider future arrangements carefully, with strong arguments 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 – more optimally – to restructure existing international monetary and payments arrangements as multilateral public goods, centred perhaps on a new international payments organization or via activation of existing arrangements through the BIS and/or IMF, ideally on a new international monetary instrument, a sort of global Libra.

## II. THE EVOLUTION OF THE INTERNATIONAL MONETARY AND PAYMENTS SYSTEMS: TECHNOLOGICAL CO-DEVELOPMENT, DIGITALIZATION, EFFICIENCY AND RISK

Trade, money, payment systems, finance, technology, institutional and legal structure, and human civilization are co-developmental.<sup>13</sup> Money and payment systems – because of their utility in simplifying transactions – have evolved to support economic and social activities across human history.<sup>14</sup> The 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

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<sup>12</sup> Ussal Sahbaz, *It Is G20's Imperative to Act as a Leader in Regulating Crypto-assets*, OBSERVER RESEARCH FOUNDATION (Oct. 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* (Oct. 13, 2020), at <https://www.fsb.org/wp-content/uploads/P131020-1.pdf>.

<sup>13</sup> See, e.g., JAME DiBIASIO, *COWRIES TO CRYPTO: THE HISTORY OF MONEY, CURRENCY AND WEALTH* (2020).

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



systems and central bank digital currencies<sup>15</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>16</sup>

In considering the question of what is money, analysis focuses on three factors: means of payment, store of value, and medium of exchange.<sup>17</sup> These features interrelate with governance systems, economic and financial frameworks, technology, and institutional and legal structures. In fact, monetary sovereignty is a major 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>18</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>19</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 seek to maximize their ability to spend (on military adventures, domestic projects etc) while maintaining sufficient political and societal support to remain in power.<sup>20</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, particularly systemic, disruptions) and financial integrity (absence of unlawful practices such as money laundering and insider trading).<sup>21</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

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

<sup>16</sup> *Id.* See also NIALL FERGUSON, *THE ASCENT OF MONEY: A FINANCIAL HISTORY OF THE WORLD* 17–64 (2008).

<sup>17</sup> See Anton N. Didenko & Ross P. Buckley, *The Evolution of Currency: Cash to Cryptos to Sovereign Digital Currencies*, 42(4) *FORDHAM INT’L L. J.* 1041, 1056 (2019); FERGUSON, *supra* note 16, at 23.

<sup>18</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* (Dec. 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 22 March 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>19</sup> NIALL FERGUSON, *THE CASH NEXUS: MONEY AND POWER IN THE MODERN WORLD, 1700 – 2000* 284–305 (2002).

<sup>20</sup> See, e.g., DiBIASIO, *supra* note 13.

<sup>21</sup> CLAUS D. ZIMMERMANN, *A CONTEMPORARY CONCEPT OF MONETARY SOVEREIGNTY* 24–31 (2013).

sovereign powers in monetary and financial matters should be such as *not to put global monetary and financial stability at risk*.<sup>22</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>23</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>24</sup> resulting in a combination of periodic shocks as well as inflation in the context of growing economic activity faced with limited monetary supply, resulting in strong incentives for crime and forgery.<sup>25</sup> Sovereigns have sought to manage these challenges through control of supply and quality (for instance state monopolies on transfers of gold across borders and on the power of coinage).<sup>26</sup> Even with coins however the temptation arises to cut corners (in some cases literally but often via reducing content of base metal).<sup>27</sup> Likewise, if the economy or government runs into difficulties, the coins inevitably depart for other places. Similar histories have developed as sovereigns have experimented with paper money, beginning with China<sup>28</sup> and more recently fiat currencies across the world since the early 1970s, leading to the evolution of the institutional and legal structure of modern central banks, designed to maintain monetary and financial stability as well as maximize economic development via appropriate macroeconomic, institutional and prudential policies, tools and infrastructure.<sup>29</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?

#### A. *Evolution of International Monetary Arrangements*

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<sup>22</sup> *Id.*, at 30 (emphasis added).

<sup>23</sup> *Id.*

<sup>24</sup> FERGUSON, *supra* note 16, at 25, citing THOMAS J. SARGENT & 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>25</sup> DiBIASIO, *supra* note 13, at 128.

<sup>26</sup> *See* SARGENT & VELDE, *supra* note 24.

<sup>27</sup> For example, “Nero in the year 64CE, 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>28</sup> *Id.* at 77–78; FERGUSON, *supra* note 16, at 27.

<sup>29</sup> DiBIASIO, *supra* note 13, at 177.

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 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>30</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>31</sup> Of course, a variety of factors determine whether in any domestic context, that law is universally obeyed, with much variation depending upon 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 a range of 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>32</sup>

At the international level, there was frequently no sovereign power to establish a mandatory medium of exchange – parties have to choose.<sup>33</sup> Over time, commodities such as beads,<sup>34</sup> cattle, rice, cacao seeds and shells<sup>35</sup> have frequently been used, as have cigarettes more recently.<sup>36</sup> Commodity money however is often not particularly convenient or efficient in transactions. For millennia, metals – in particular gold and silver – have been the dominant media of exchange across borders,<sup>37</sup> in particular because they have been the dominant domestic monetary instrument as well, either directly or as the underpinning of paper money (in the context of the gold and silver standards dominant until the end of World War II).<sup>38</sup> With the Gold Standard dominant up to World War II, gold provided a simple medium of

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<sup>30</sup> FERGUSON, *supra* note 16, at 23.

<sup>31</sup> F. A. MANN, *THE LEGAL ASPECT OF MONEY* 460–78 (5th ed. 1992).

<sup>32</sup> David Fox, François R. Velde & 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 & Wolfgang Ernst eds., 2016).

<sup>33</sup> See François Gianviti, *Current Legal Aspects of Monetary Sovereignty*, in *CURRENT DEVELOPMENTS IN MONETARY AND FINANCIAL LAW* vol. 4 (IMF ed. 2005), available at <https://www.imf.org/external/pubs/nft/2006/cdmf/ch1law.pdf>.

<sup>34</sup> DiBIASIO, *supra* note 13, at 238.

<sup>35</sup> *Id.* at 8.

<sup>36</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>37</sup> FERGUSON, *supra* note 16, at 24. See also EICHENGREEN, *supra* note 24, at 7–8.

<sup>38</sup> EICHENGREEN, *supra* note 24, at 91.

exchange, as it underpinned domestic monetary instruments as a matter of domestic law and international practice.<sup>39</sup> However, as a matter of convenience, transactions would often take place not in gold but in the currencies of the major powers, particularly in the context of imperial systems but also more broadly, with the British Pound Sterling being the dominant monetary instrument albeit always with gold underpinning.<sup>40</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 of the International Monetary Fund (IMF).<sup>41</sup> Since 1973 and the end of the Bretton Woods international monetary system and the link between the US dollar and gold, fiat currencies provide the dominant medium of exchange.<sup>42</sup> While the US dollar is the most frequently used medium of exchange, a variety of other currencies (in particular the euro, pound sterling, yen and yuan) are also frequently used,<sup>43</sup> in some cases supplemented by new digital monetary instruments such as bitcoin.<sup>44</sup>

The key to use as a medium of exchange is acceptability to both parties; the more widely accepted, the more useful to potential users via network effects.<sup>45</sup> Acceptability is thus a matter of usefulness and convenience for immediate transactions<sup>46</sup> and of trust and confidence as time elements are added.<sup>47</sup> These are influenced by a range of factors, including technology (particularly for payments but also of the monetary instrument itself eg how easily it can be forged etc), legal and institutional arrangements (to provide trust and confidence), historical experience and path dependence, and political concerns.<sup>48</sup> Historically, the money of the major regional or international power is often used for international transactions (eg Roman coins, pounds sterling, US dollars),<sup>49</sup> with the key being the trustworthiness of coinage (eg the Spanish silver dollar dominant in China and much of East Asia until the 20<sup>th</sup> century).<sup>50</sup>

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<sup>39</sup> *Id.* at 19–23.

<sup>40</sup> *Id.* at 22–3.

<sup>41</sup> *Id.* at 95.

<sup>42</sup> *Id.* at ch. 5.

<sup>43</sup> ESWAR S. PRASAD, *THE FUTURE OF MONEY: HOW THE DIGITAL REVOLUTION IS TRANSFORMING CURRENCIES AND FINANCE* 29 (2021).

<sup>44</sup> *Id.* at 5.

<sup>45</sup> See Nobuhiro Kiyotaki & Randall Wright, *Acceptability, Means of Payment, and Media of Exchange*, 16(3) *FED. RESERVE BANK OF MINN. Q. R.* 1, 1 (1991).

<sup>46</sup> DiBIASIO, *supra* note 13, at 9.

<sup>47</sup> FERGUSON, *supra* note 16, at 29–30.

<sup>48</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>49</sup> See, e.g., EICHENGREEN, *supra* note 24, at chs 2–4.

<sup>50</sup> See AUSTIN DEAN, *CHINA AND THE END OF GLOBAL SILVER, 1873–1937* (2020).

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>51</sup> In Asia, this meant a preference for physical delivery of silver for cross-border transactions until the 20<sup>th</sup> century.<sup>52</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>53</sup> These evolved from Rome through the Mediterranean and Middle East: bills of exchange, notes, dual entry accounting systems, correspondent banks, cheques.<sup>54</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 centres)<sup>55</sup> and from the 19<sup>th</sup> century formalised 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>56</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>57</sup> Today, electronic payment systems dominate cross-border payments but the underlying parallel structures continue.<sup>58</sup>

In addition to acceptability (medium of exchange), usability (means of payment), money (as highlighted above) should be a store of value. This involves both stability (so absence of toxic levels of inflation or debasement)<sup>59</sup> as well as the ability to use the monetary instrument for finance and investment purposes.<sup>60</sup> Finance, investment and value involve time and thus

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<sup>51</sup> See Benjamin Geva, *The Payment Order of Antiquity and the Middle Ages: A Legal History* (Hart Publishing, 2011).

<sup>52</sup> See *id.*

<sup>53</sup> See DIBIASIO, *supra* note 13.

<sup>54</sup> See *id.*

<sup>55</sup> Fox, Velde & Ernst, *supra* note 32, at 7–9.

<sup>56</sup> See, e.g., EICHENGREEN, *supra* note 24, at 19–24.

<sup>57</sup> See, e.g., Committee on Payments and Market Infrastructures, *Correspondent Banking*, BANK FOR INT’L SETTLEMENTS (July, 2016), at <https://www.bis.org/cpmi/publ/d147.pdf> and Edoardo Beretta & Alvaro Cencini, *Double-entry Bookkeeping and the Balance of Payments: the Need for a Substantial, Conceptual Reform*, BANK FOR INT’L 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>58</sup> See Geva BFLR article

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

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

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 via effective payment systems, and with a variety of financing and investment options available. This is often a focus 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 which likewise supported its widespread international use. These are of course underpinned by technology, legal and institutional structures, and history and path dependence.

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

### *B. Evolution of 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 (eg Rome, Spain, UK, US, China in the 21<sup>st</sup> century etc),<sup>63</sup> but often largely at the choice of market participants (sometimes reinforced by sovereign efforts).<sup>64</sup> In the context of Rome and Spain, the focus was on minting arrangements to facilitate use and access.<sup>65</sup> In the 19<sup>th</sup> century, the Gold Standard developed as a matter of both domestic public

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<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*, IMF (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 & Chima Simpson-Bell, *The Steal Erosion of the Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies*, IMF (Mar. 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>.

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

<sup>64</sup> See Fox, Velde & 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

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 20<sup>th</sup> century).<sup>67</sup> It 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 being added from the late 19<sup>th</sup> century.<sup>69</sup> This system certainly underpinned globalization up to the First World War.<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 19<sup>th</sup> 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 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 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 20<sup>th</sup> century however doomed this system, as domestic priorities and geopolitical competition overpowered the attractions of

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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 & 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 & HISTÓRIA DE EMPRESAS 101, 121 (2013).

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

<sup>71</sup> See Maurice Obstfeld, Jay C. Shambaugh & Alan M. Taylor, *The Trilemma in History: Tradeoffs Among Exchange Rates, Monetary Policies and Capital Mobility*, NBER WORKING PAPER SERIES (Mar., 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 & Stephen Tuffnell eds. 2018).

<sup>73</sup> Michael Bordo & 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.

globalization.<sup>74</sup> However, it is during the 20<sup>th</sup> century that a new system, based on international organizations and treaties, arose.

### 1. *Bank for International Settlements*

The 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 thus an international institution created among governments albeit not a treaty-based organization but 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 the BIS – based conveniently 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 also of free movement of capital,<sup>81</sup> and replaced by the IMF in the context of the new post war international architecture.<sup>82</sup>

In the event the BIS was not closed and reemerged in the post war 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

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<sup>74</sup> See Bordo & 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).



from the late 1960s onwards.<sup>84</sup> While it has played a limited role in monetary arrangements and payment arrangements, it has often served an important research function and been engaged in supporting technological, legal and institutional cooperation, particularly for wholesale payments (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>

## 2. *International Monetary Fund*

The IMF was established via treaty in 1944 to be the main international institution for international monetary arrangements following the second World War.<sup>87</sup> Central to its mandate are support for cross-border payments to support 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> it was the institution at the heart of post war 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, the 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 –

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

<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 (Mar. 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 & 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 & 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).

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 the members of the IMF 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 the 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 which can be invested by member governments.<sup>97</sup>

Rather, 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 and the euro, a regional treaty-based framework for a supranational monetary system),<sup>98</sup> with payment systems developed domestically (with those for the US dollar being most significant, especially CHIPS and Fedwire, as well as those for other major currencies, in particular TARGET in the EU, CHAPS in the UK and CIPS in China) and internationally via public-private arrangements, with SWIFT being the most significant.<sup>99</sup>

### 3. *Major Currency Electronic Payment Systems: Fedwire, SWIFT, CHIPS, TARGET, CHAPS, CIPS*

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 9000 member banks.<sup>101</sup>

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<sup>93</sup> Bordo & 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 & James, *supra* note 88, at 11–2.

<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* (Oxford University Press, 2001), Part 3 (‘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).

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 per cent 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 internationalization strategy.<sup>105</sup> In addition to these, most countries today 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 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>

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.

### *C. US Dollar Hegemony and the Politicization of the US Dollar*

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<sup>102</sup> John F. Lee, *Clearing House Interbank Payments System* 6, COMPUT. & SOC'Y (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 (Aug., 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 & MARKOS ZACHARIADIS, THE SOCIETY FOR WORLDWIDE INTERBANK FINANCIAL TELECOMMUNICATION (SWIFT): COOPERATIVE GOVERNANCE FOR NETWORK INNOVATION, STANDARDS, AND COMMUNITY (2014).

<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).

Since the establishment of the Bretton Woods system in 1944 with the US dollar as the main reserve currency (the currency in which countries hold their foreign reserves, because of lack of gold) and the central role that it has provided the US in the international economic and financial system, it has been continually subjected to criticisms 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 both 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) but also to strengthen 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 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 EMU, the 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 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 rouble-based 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>

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<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 ECON. 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 (Aug., 2019), at <https://www.lse.ac.uk/ideas/Assets/Documents/updates/LSE-IDEAS-Weaponisation-Dollar.pdf>.

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

<sup>117</sup> Gary Burn, *The State, the City and the Euromarkets*, 6(2) REV. OF INT’L POL. ECON. 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>.

followed by the freezing of Libyan assets in the 1980s<sup>119</sup> leading to the landmark case of *Libyan Arab Foreign Bank v Bankers Trust Co*<sup>120</sup> and the use of the US dollar system to enforce US money-laundering, anticorruption and taxation policies globally.<sup>121</sup> In some cases, such as AML/CFT, corruption, and taxation transparency, these policies were eventually multilateralized (through the FATF and 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.

### III. BITCOIN AND LIBRA: NEW TECHNOLOGIES AND THE CHALLENGE TO THE INTERNATIONAL MONETARY SYSTEM

The Bitcoin whitepaper 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 in fact a direct challenge to the central bank fiat currency model which evolved from the 1970s and which was seen to be at the heart of the 2008 crisis.

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<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 & Liana W. Rosen, *Anti-Money Laundering: An Overview for Congress*, CONG. RSCH SERV. 5 (Research Report No. 7-57001, Mar., 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 & Stephanie Curcuru, *The International Role of the U.S. Dollar*, BD. OF GOVERNORS OF THE FED. RSRV. SYS. (Oct. 6, 2021), at <https://doi.org/10.17016/2380-7172.2998>.

While Bitcoin has spawned seemingly endless distributed ledger technology (DLT) 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 terms of a medium of exchange, a means of payment or a store of value. It has however become widely used in a range of contexts, in particular developing economies with weak monetary and financial systems, where Bitcoin provides a credible and useful alternative monetary instrument and payment system.

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>125</sup> In design terms, Libra as originally announced was basically 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’ such that 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. 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.

In terms of monetary history and the role of technology, the announcement of Libra is a key date, regardless of whether it ever actually 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. 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 very viable means of payment and one in fact with major attractions: Libra demonstrated that the technology now exists to build a better system of international payments, now the focus of a major G20 initiative launched in 2020. It also offered an attractive medium of exchange

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<sup>125</sup> See Financial Stability Board, *Addressing the Regulatory, Supervisory and Oversight Challenges Raised by “Global Stablecoin” Arrangements* (Apr. 2020), at <https://www.fsb.org/2020/04/addressing-the-regulatory-supervisory-and-oversight-challenges-raised-by-global-stablecoin-arrangements-consultative-document/>.

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 both raised real issues of monetary sovereignty as well as a range of legal and regulatory concerns relating to the safety (from the standpoint of financial stability, market integrity, and consumer / investor protection), leading to a coordinated global approach to regulation. At the same time, the potential challenge to both the international monetary system as well as domestic monetary systems led regulators to respond vigorously and central banks to rethink their approach to sovereign digital currencies (SDCs), mostly in the form of central bank digital currencies (CBDCs).<sup>126</sup>

#### *A. Libra's Impact on the Future of Monetary and Payment Systems*

A number of features of Libra gave it the potential to be particularly disruptive for domestic and crossborder monetary and payment systems. Some of these features include:

- (i) Libra's role as an alternative payment system (APS) 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>127</sup>
- (ii) 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, termed 'currency substitution'.
- (iii) Libra could have generated a broad spectrum of risks for consumers and payment systems that demand a regulatory response including: (a) undermining

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<sup>126</sup> See C. Barontini & H. Holden, *Proceeding with Caution – A Survey on Central Bank Digital Currency* (Jan., 2019), at <https://www.bis.org/publ/bppdf/bispap101.pdf>.

<sup>127</sup> See D. W. Arner, J. Barberis & R. P. Buckley, *The Evolution of FinTech: A New Post-Crisis Paradigm*, 47(4) *GEO. J. INT'L L.* 1271 (2016).

competition in the payment services market (if the platform is non-interoperable); (b) weakening the effect of monetary policy measures; (c) increasing global demand for assets within the Libra Reserve; and (d) jeopardizing global or regional financial stability (as disruption of Libra could affect many economies at once).<sup>128</sup>

- (iv) Libra raised other risks, including, among others<sup>129</sup> (a) legal uncertainty, due to unclear legal status of Libra under national laws; (b) lack of sound governance, as Libra's own 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 (c) failure to ensure operational resilience of a large-scale currency platform.

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

### *B. Libra: Potentially the First Global Stablecoin*

The potential impact of Libra, as the first global stablecoin (GSC), would have arisen because of its potential for near-instantaneous scale, reach and impact. Like most forms of systemically important financial market infrastructure (FMI) or systemically important financial institutions (SIFIs), precise definition of a GSC can be difficult.<sup>130</sup> The elements of a GSC, however, include size, scale and interconnectiveness: basically, 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

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<sup>128</sup> See G7 Working Group on Stablecoins, *Investigating the Impact of Global Stablecoins* (Oct., 2019), at <https://www.bis.org/cpmi/publ/d187.pdf>.

<sup>129</sup> *Id.* at 5-11; Dirk A. Zetsche, Ross P. Buckley & Douglas W. Arner, *Regulating Libra*, 41(1) OXFORD J. LEGAL STUD. 80 (2021).

<sup>130</sup> Bank for International Settlements, *Global Systemically Important Banks: Assessment Methodology and the Additional Loss Absorbency Requirement* (Apr., 2020), at <https://www.bis.org/bcbs/gsib/>.



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 so-called BigTechs, have the potential to scale very quickly. The second stage in dealing with GSCs is to develop appropriate regulatory and supervisory tools in advance – tools that can be activated when a GSC is identified. Third, there could be a variety of approaches which could be activity, institutional, or infrastructure based depending on the nature of the specific GSC. Activity-based approaches will vary depending on the nature of the products and services offered, and whether the GSC is to be used for monetary, payments or securities settlement services. Cooperation and coordination on licensing, market access, supervision and resolution will all be required.

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

### *C. Global Stablecoins Constrained: The FSB Response*

Reacting to the remarkably strong pushback from regulators, the parameters of Libra 2.0 were announced in a new whitepaper in April 2020,<sup>131</sup> at which time Libra also formally applied for supervision by the Swiss financial regulator, FINMA.<sup>132</sup> These two events coincided with the launch of the FSB’s consultation on regulatory and supervisory approaches to global stablecoins<sup>133</sup> culminating in a final report and high-level recommendations published in October 2020.<sup>134</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

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<sup>131</sup> Libra Association Members, *White Paper v 2.0* (Apr., 2020), at <https://libra.org/en-US/white-paper/>.

<sup>132</sup> FINMA, *Libra Association: FINMA Licensing Process Initiated* (Apr. 16, 2020), at <https://finma.ch/en/news/2020/04/20200416-mm-libra/>.

<sup>133</sup> Financial Stability Board, *FSB Consults on Regulatory, Supervisory and Oversight Recommendations for “Global Stablecoin” Arrangements* (Apr. 14, 2020), at <https://www.fsb.org/2020/04/fsb-consults-on-regulatory-supervisory-and-oversight-recommendations-for-global-stablecoin-arrangements/>.

<sup>134</sup> Financial Stability Board, *Regulation, Supervision and Oversight of “Global Stablecoin” Arrangements* (Oct. 13, 2020), at <https://www.fsb.org/wp-content/uploads/P131020-3.pdf>.

stability, while at the same time promoting responsible innovation. The high-level recommendations to governmental authorities include, amongst others: (1) utilizing necessary powers and resources to regulate, supervise and oversee global stablecoin arrangements; (2) applying regulatory, supervisory and oversight requirements on a functional basis proportionate to potential risks; (3) coordinating with authorities domestically and abroad to develop consultation and communication; and (4) 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 Libra 2.0 opted for a series of domestic currency stablecoins, linked in a global basket, not dissimilar in some respects from another project focused on linking, if not merging, fiat currencies and DLT environments, FNLITY's Utility Settlement Coin.<sup>135</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 existing international payments systems – mostly because these were deeply in need of challenge.

From the standpoint of the international monetary system, Libra highlighted how, for the first time, the technology, capital and scale now exist to potentially challenge the dominant paradigm that central banks issue and control currencies, even major central banks and major 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 in the area 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>136</sup> including a comprehensive set of obligations for all issuers of 'payment stablecoins' and OFAC guidance on sanctions compliance responsibilities of such issuers.<sup>137</sup>

The announcement of Libra was followed by a dramatic scaling up, around the world, of work on SDCs, mainly in the form of CBDCs – both ongoing and new. The highest profile

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<sup>135</sup> Fnlity Press Office, *Utility Settlement Coin (USC) Continues to Evolve* (Jun. 3, 2019), at <https://www.fnality.org/news-views/usc-continues-to-evolve>.

<sup>136</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>137</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>.

announcement came from China's central bank, the People's Bank of China, in late 2019, taking the lead by announcing its intention to launch its own CBDC.<sup>138</sup>

#### IV. THE DIGITAL YUAN AND THE EMERGENCE OF CBDCs: THE EMPIRE STRIKES BACK

In October 2019, China announced it would launch its 'Digital Currency / Electronic Payment' (DC/EP), now relabelled the eCNY, its project to create a 'Digital Yuan', making it likely to be the first major economy to launch a major currency CBDC.<sup>139</sup> The proposed creation of a private 'global stablecoin' such as Libra by a foreign company was always likely to trigger the precise response seen from China.<sup>140</sup>

China had been researching and experimenting with DLT and blockchain technologies since 2014. The People's Bank of China (PBoC) was thus well placed to move swiftly to live trials of DC/EP.<sup>141</sup> We suggest that China's Digital Yuan, if – or perhaps 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 (e.g. the Pound, Yen, Swiss Franc) may also be significant. The key however 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 moreover from the standpoint of potential currency substitution and Westphalian fragmentation of the international monetary and payment system.

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<sup>138</sup> See H. Murphy & Y. Yang, *Patents Reveal Extent of China's Digital Currency Plans*, FIN. TIMES (Feb. 13, 2020), at <https://www.ft.com/content/f10e94cc-4d74-11ea-95a0-43d18ec715f5>.

In 2018, the Bank for International Settlements (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 current state of development of so-called "central bank digital currencies" (CBDC). Some 70% of respondents were working on CBDCs or were planning to do so soon. See Barontini & Holden, *supra* note 126. A similar survey conducted one year later showed this percentage had grown to 80%. See C. Boar, H. Holden & A. Wadsworth, *Impending Arrival – A Sequel to the Survey on Central Bank Digital Currency 3* (Jan., 2020), at <https://www.bis.org/publ/bppdf/bispap107.pdf>.

<sup>139</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>140</sup> This response was predicted in an article posted online on 11 July 2019: see Zetzsche, Buckley & Arner, *supra* note 129.

<sup>141</sup> Karen Yeung, *China's Digital Currency Takes Shape as Trials Begin with Travel Subsidies and Communist Party Fees*, SOUTH CHINA MORNING POST (Apr. 19, 2020), at <https://www.scmp.com/economy/china-economy/article/3080594/travel-subsidies-party-fees-chinas-digital-currency-takes>.

System design will thus relate to objectives and purposes as well as to impact, both domestic and international.

### A. 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. The Digital Yuan will operate in a two-tiered system. 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 then, in turn, make the digital yuan available to individuals through digital wallets.<sup>142</sup> This dual nature gives the system its original name of DC/EP: digital currency / electronic payments. 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-based currency in terms of its implementation and a smart currency when it comes to application scenario'.<sup>143</sup>

The Digital Yuan will be a hybrid system (as elaborated upon below in Section VI): the tokens issued by the PBoC to TTIs can then be transferred to retail or wholesale accounts. It will run on a centralized permissioned DLT.<sup>144</sup> It is fundamentally a monetary system designed to underpin the existing electronic payment systems, including traditional bank-intermediated systems and the ecosystems of Alipay and WeChatPay, both of which were 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.

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>145</sup> In addition to

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<sup>142</sup> Karen Yeung, *What is China's Cryptocurrency Alternative Sovereign Digital Currency and Why Is it Not Like Bitcoin?*, 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>.

<sup>143</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 INFO. SCI. 1 (2018).

<sup>144</sup> Aditi Kumar & 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>145</sup> Laney Zhang, *Regulation of Cryptocurrency: China*, LIBRARY OF CONGRESS LEGAL REPORTS (June, 2018), at <https://www.loc.gov/law/help/cryptocurrency/china.php>.

preventing the emergence of alternatives (e.g. Libra, 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 currency inflows and outflows into the RMB area, initially Mainland China. In time its geographic reach could well be expanded, especially on the back of the Belt and Road Initiative, Regional Comprehensive Economic Partnership (RCEP) and a range of bilateral trade areas and to countries involved in those initiatives, so as to serve as a potential dollar alternative outside the reach of the US but fully under the oversight of China. This is being 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 currently receives from minting the world’s principal global reserve currency and denying the US the capacity to impose financial sanctions on foreign countries.<sup>146</sup> As we will see below, similar motivations underlie related discussions in other jurisdictions.

From a domestic standpoint, as a CBDC, the eCNY would be legal tender<sup>147</sup> in addition to providing a useful new digital medium of exchange, means of payment and store of value. The attractions in these respects underlie many of the CBDC initiatives around the world.

## *B. CBDCs: 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 relating to CBDCs. These design choices must be based on the specific circumstances of individual economic and financial systems rather than on any single model. This was emphasized by the BIS and a group of developed economy central banks in a report issued in October 2020,

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<sup>146</sup> Kumar & Rosenbach, *supra* note 144.

<sup>147</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* (Jul., 2021), at <http://www.pbc.gov.cn/en/3688110/3688172/4157443/4293696/2021071614584691871.pdf>.

highlighting – even among similarly situated economies – there should be no ‘one size fits all’ CBDC.<sup>148</sup>

In their October 2020 report, the BIS and some of the world’s leading central banks, outlined a set of CBDC core features and foundational principles (the ‘BIS Report’).<sup>149</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 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. In formulating its foundational principles, the BIS Report follows a risk-based approach and points out the need to identify all potential risks 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 thus 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 still 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. Last, a general purpose CBDC must promote innovation and competition to increase efficiency and provide users with access to a safe form of money. Overall, the BIS Report highlights the continued work of the world’s leading central banks in deciding whether to issue a CBDC. It is by no means meant to be definitive on whether those decisions have in fact been made. The BIS’ work will therefore continue, particularly its next phase involving additional policy analysis and CBDC design choice and technical experimentation.

### *1. SDC Taxonomy*

SDC projects typically differ across four major design parameters: (1) users; (2) architecture; (3) technology; and (4) scope.

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<sup>148</sup> Bank for International Settlements, *Central Bank Digital Currencies: Foundational Principles and Core Features* (2020), at <https://www.bis.org/publ/othp33.pdf>.

<sup>149</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 do have a long history of opening direct accounts for non-financial institutions and individuals.<sup>150</sup>

As with any settlement system, however, 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>151</sup> including:

#### (I) Centralized SDCs

In essence, 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>152</sup> By design,<sup>153</sup> centralized SDCs are permissioned systems and lack cash-like qualities, in particular anonymous exchange.<sup>154</sup> However, as an intermediary-based system, security and anti-fraud features would be easier to incorporate into such a system.<sup>155</sup>

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<sup>150</sup> J. P. Koning, *Fedcoin: A Central Bank-Issued Cryptocurrency*, R3 REPORTS 13 (Nov., 2016), at <https://www.r3.com/reports/fedcoin-a-central-bank-issued-cryptocurrency/>.

<sup>151</sup> Our taxonomy is equivalent to that proposed by R. Auer & R. Böhme, *The Technology of Retail Central Bank Digital Currency*, BIS QUARTERLY REVIEW (Mar. 2020), at [https://www.bis.org/publ/qrpdf/r\\_qt2003j.htm](https://www.bis.org/publ/qrpdf/r_qt2003j.htm) but understands the design choice “account” or “token” as inherent to the degree of centralisation or decentralisation: full decentralization requires some kind of token, while full centralisation will require some kind of account.

<sup>152</sup> This is in contrast to token-based verification that 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 (Mar., 2018), at <https://www.bis.org/cpmi/publ/d174.pdf>.

<sup>153</sup> In theory, it is of course conceivable that the state may try to label a centralised 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>154</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* (Oct., 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?* (Jan. 4, 2016), at <https://www.chyp.com/bitcoin-or-brit-pesa/>.

<sup>155</sup> Bank for International Settlements, *supra* note 148.

## (II) Decentralized SDCs

A *decentralized* SDC bears the closest resemblance to Bitcoin and other decentralized digital APS. 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>156</sup> Technically, full decentralization is achievable through tokenization.

## (III) Hybrid SDCs

A *hybrid* SDC is a blend of a centralized and decentralized SDC. 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 tokenisation 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.

Technology remains an evolving choice, with some systems centralized using traditional payments processing technologies (e.g. 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 it may include elements of both. We return to this issue below as well.

## 2. *Benefits, Opportunities and Challenges*

A CBDC is often an attempt to marry the benefits of APS and central bank money. The dream is to ensure universal acceptance within the formal payment system while eliminating,

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<sup>156</sup> *Id.*



or greatly reducing the role of, costly middlemen.<sup>157</sup> Such a design would bring a number of benefits, including:

- (I) central banks could act as the ultimate trusted, bankruptcy-proof intermediary, replacing commercial banks and use a CBDC as a vehicle for critical national expenditure to bypass commercial banks completely, potentially reducing systemic risks associated with commercial banks;
- (II) central banks and governments could modernize their ageing wholesale payment systems with advanced functionality including support for smart contracts;<sup>158</sup> and
- (III) SDCs can also be used for raising money by the state – a feature of Venezuela’s Petro,<sup>159</sup> an asset-backed cryptocurrency which 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 relating to SDCs include:

- (I) technical issues involved in setting up an SDC, particularly in the absence of accepted international standards on DLT and blockchain -- 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;
- (II) concerns about the impact of SDCs on the payment system, financial markets and economy:

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<sup>157</sup> M. Hampl, *Central Banks, Digital Currencies and Monetary Policy in Times of Elastic Money*, BANK FOR INT’L SETTLEMENTS 2 (Speech at OMFIF Roundtable, Jul. 11, 2017), at <https://www.bis.org/review/r170720b.pdf>.

<sup>158</sup> M. Bech & 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>159</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>.

- a. 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 (e.g. commercial banks, electronic money issuers);
  - b. 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);
  - c. regulators must also consider implications for money supply and whether the new currency will be issued via an ICO ('initial coin offering') or in exchange for other forms of sovereign money (e.g. cash) or commercial bank money (or both) and design corresponding conversion mechanisms; and
- (III) legal issues around 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.

### 3. *Technology: Departure from DLT*

An often-discussed aspect of CBDCs is technology.<sup>160</sup> Although the examination of the option of issuing a SDC may flow from consideration of the opportunities offered by the technologies underlying Bitcoin against the recurring challenges facing payment systems, implemented SDCs may well use neither DLT nor blockchain. In the words of a recent Bank of England discussion paper, '[a]lthough CBDC is often associated with Distributed Ledger Technology (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>161</sup> And,

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<sup>160</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 (Jan., 2020), at <https://pages.consensys.net/central-banks-and-the-future-of-digital-money>.

<sup>161</sup> See Bank of England, *Central Bank Digital Currency: Opportunities, Challenges and Design* 6 (Mar., 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>.

according to a recent BIS report, only five out of 17 general access SDC projects presently focus on using DLT.<sup>162</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 protection/privacy, liability and other difficulties. Systems designers seem to prefer DLT for token-based systems, while account-based systems mostly rely on conventional infrastructure.<sup>163</sup>

Further design choices made more difficult to address by a DLT environment relate to cybersecurity, the rectification of mistakes/erroneous payments and user identification. In light of all these factors, we expect most SDCs not to use DLT or blockchain.<sup>164</sup>

#### 4. *Central Bank Access: Efficiency vs Financial Inclusion*

The four major 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. That is because most TTIs, as large financial intermediaries, can withstand short-term shocks and periods of non-operation. If absolutely necessary, TTIs can refinance themselves in the capital markets and discuss compensation with the central banks. All this can occur internally without threatening public trust.

But 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 of necessity shifts from efficiency to safety. Given that intermediation isolates some operational risk in the organisation of one intermediary, where central banks follow the safety paradigm, a hybrid (semi-decentralized) model is most likely.

For developing countries however, the main concern will be *creating an inclusive infrastructure*: a stable system that includes, in particular, rural residents and the poor.<sup>165</sup>

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<sup>162</sup> See R. Auer, G. Cornelli & J. Frost, *Taking Stock: Ongoing Retail CBDC Projects*, BIS MARCH QUARTERLY REVIEW (Mar. 1, 2020), at [https://www.bis.org/publ/qtrpdf/r\\_qt2003z.htm](https://www.bis.org/publ/qtrpdf/r_qt2003z.htm).

<sup>163</sup> *Id.*

<sup>164</sup> DLT has been criticised 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>165</sup> See, e.g., Edil Corneille, *Cambodian Central Bank Implements First Retail Payments System in the World Using Blockchain Technology*, BLOOMBERG, Aug. 24, 2020.

Here, full disintermediation may be favoured since intermediary-based coverage does not exist. However, a developing country choice in favour of a centralized SDC may only be temporary. Once 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 involves the 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, and 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 well prefer retail access.

## 5. *Towards Public-Private Partnerships*

Within this framework we envisage three alternative approaches: (i) central bank accounts with general access; (ii) central bank accounts with intermediated access; and (iii) new digital forms of fiat currency.<sup>166</sup>

Within these three approaches option (i), 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 central banks could handle efficiently day-to-day operations with millions of retail clients and even less evidence to suggest they have any appetite to do so. Central banks tend to lack both the infrastructure and expertise for such a role. 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 KYC/AML 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 utilise their existing infrastructure. To our minds, successful CBDCs will most likely be public-private partnerships, with the central

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<sup>166</sup> For a more detailed discussion of available approaches, see Didenko & Buckley, *supra* note 17, at 1085–93.

banks providing the definitions, interfaces and accounts and the private sector offering the applications and operational interface to service mass clients.

Such systems will most likely be complemented by a range of CBDCs, in many cases combined with new forms of FPS, 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.

### C. Money versus Payment?

A real opportunity in particular exists to address the separation between transactions (such as securities or derivatives transactions) and payment for those transactions, particularly at the wholesale level.<sup>167</sup> In particular, rather than issuing a 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>168</sup> which could effectively serve as sovereign currency in specific systems.<sup>169</sup>

Fundamentally, regulators must determine whether they want to build a monetary or a payment system. The word *currency* implies building the former. But this is only achievable if the SDC is designed to substitute for cash, that is with anonymous transactions and payment finality. As we have shown both the decentralised and the hybrid SDC models are able to have these features. If these features are implemented, the distinction between payment and monetary system – previously so important due to credit, transactional and operational risk – ceases to exist.

We suggest that the hybrid model will prove to be the most widely adopted but that the greatest benefit in many cases may come not from a digital monetary instrument alone but rather 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

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<sup>167</sup> See, e.g., Societe Generale, *Societe Generale Performs the First Financial Transaction Settled with a Central Bank Digital Currency* (May 20, 2020), at <https://www.societegenerale.com/en/NEWSROOM-first-financial-transaction-settled-with-a-digital-currency>.

<sup>168</sup> See T. Adrian & T. Mancini-Griffoli, *From Stablecoins to Central Bank Digital Currencies*, IMF BLOG (Sept. 26, 2020), at <https://blogs.imf.org/2019/09/26/from-stablecoins-to-central-bank-digital-currencies/>; T. Adrian & T. Mancini-Griffoli, *The Rise of Digital Money*, IMF (FinTech Notes No. 19/01, Jul., 2019), at <https://www.imf.org/en/Publications/fintech-notes/Issues/2019/07/12/The-Rise-of-Digital-Money-47097>.

<sup>169</sup> I. Allison & D. Palmer, *Wells Fargo to Pilot Dollar-Linked Stablecoin for Internal Settlement*, COINDESK (Sept. 17, 2019), at <https://www.coindesk.com/wells-fargo-to-pilot-dollar-linked-crypto-for-internal-settlement>.

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 centralised account structure may well 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.

## V. 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 across the world 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 to date 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 a number 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 currently only being used on a trial basis, albeit by over 250 million users so

far, with a primary focus on domestic retail payments.<sup>170</sup> 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 existing 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>171</sup> in Canada and Project Ubin<sup>172</sup> in Singapore), following years of experimentation in a purely domestic setting. The initial stages involved (i) investigating the use of DLT for high-value interbank settlement (phases 1 and 2 of Project Jasper and Project Ubin) and (ii) implementing SDC for delivery versus payment (DvP) settlement of tokenised assets (phase 3 of both projects). A similar pattern was followed by the Bank of Thailand, which started investigating cross-border use cases of CBDC<sup>173</sup> only after successful completion of two domestic phases of its Project Inthanon: phase I focusing on wholesale fund transfer<sup>174</sup> and phase II targeting DvP settlement.<sup>175</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

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<sup>170</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: Bank for International Settlements, *Central banks of China and United Arab Emirates join digital currency project for cross-border payments* (Press Release, Feb. 23, 2021), at <https://www.bis.org/press/p210223.htm>.

<sup>171</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>172</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).

<sup>173</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>174</sup> Bank of Thailand, *The Outcome and Findings of Project Inthanon Phase I and the Project’s Next Steps* (Press Release No. 5, 2019), at <https://www.bot.or.th/English/PressandSpeeches/Press/2019/Pages/n0562.aspx>.

<sup>175</sup> Bank of Thailand, *The Outcomes and Findings of Project Inthanon Phase II and the Project’s Next Steps* (Press Release No. 39, 2019), at <https://www.bot.or.th/English/PressandSpeeches/Press/2019/Pages/n3962.aspx>.

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>176</sup> The resulting benefits could be substantial and may include: (i) faster transaction processing on a 24/7 basis, (ii) improved transparency, or (iii) enhanced settlement mechanisms (eg ‘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).

In our view the potential game changer in this regard is the eCNY. In keeping with its usual incrementalist approach to major changes, it makes perfect sense that China will initially establish the Digital Yuan as the both the monetary instrument and the 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 in China’s long held ambition to international the yuan and reduce China’s dependence on the US dollar, partially displace 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>177</sup> China wants for itself some of these benefits as well as to minimize its geopolitical and financial risks: it wants to put its international transactions beyond the reach of US 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 perfectly 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

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<sup>176</sup> See Bank for International Settlements, ‘Central Bank Digital Currencies: Foundational Principles and Core Features’ (Report No 1, 2020) 7 <<https://www.bis.org/publ/othp33.pdf>>.

<sup>177</sup> BARRY EICHENGREEN, EXORBITANT PRIVILEGE: THE RISE AND FALL OF THE DOLLAR AND THE FUTURE OF THE INTERNATIONAL MONETARY SYSTEM (2012).



commensurate with that of its large economy and financial system).<sup>178</sup> This has been a stated major goal of China since the 2008 Global Financial Crisis.<sup>179</sup>

For these reasons, we are confident that when well established domestically, China will launch eCNY for offshore use. Given China's motives are primarily strategic, not commercial, one can be confident that the eCNY will undercut current payments options in terms of price (domestic eCNY is currently free) and as a digital currency eCNY should interact highly efficiently with the digitalization of the trade process, and paperless trade. It should thus be attractive as a means of payment and also a 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, in they have not already done so, otherwise 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 thus see the offshore launch of eCNY as the signal event which 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 which 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, there remain major questions about its role as a store of value, both as a result of continuing Chinese capital controls (despite now having the world's second largest debt markets) as well as potential concerns about the 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 existing dollar based system). Whether China and the PBOC earns 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), is the factor that currently defies accurate prediction. We are thus confident the eCNY will be attractive as an

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<sup>178</sup> Ross P. Buckley, *The Economic Policies of China, India and the Washington Consensus: An Enlightening Comparison*, 27 WIS. INT'L L. J. 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 & C. L. Lim eds. 2015).

<sup>179</sup> See Reserve Bank of Australia, *RMB Internationalisation: Where to Next?* (Sept. 20, 2018), at <https://www.rba.gov.au/publications/bulletin/2018/sep/pdf/rmb-internationalisation-where-to-next.pdf>; D. Arner & A. Soares, *A Globalized Renminbi: Will It Reshape Latin America?*, ATLANTIC COUNCIL (Oct. 2016), at <https://www.atlanticcouncil.org/in-depth-research-reports/report/a-globalized-renminbi/>; W. OVERHOLT, G. MA & C. K. LAW, *RMB RISING: A NEW GLOBAL MONETARY SYSTEM EMERGES* (2016); C. Brummer, *RMB 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/>.

international means of payment and medium of exchange but expect it to face substantial concerns around 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 existing electronic payment systems was provided by the COVID-19 crisis starting in 2020. COVID 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 – right now it is the rise in presence-less payments associated with the COVID-19 crisis that is forcing central banks and governments around the world to consider urgently whether they can and should develop and implement their own CBDCs.<sup>180</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 actual launch was delayed, despite the technical arrangements being in place, until the COVID-19 crisis provided the final catalyst for China to take the ultimate step of initiating the next step forward towards the utter transformation of its domestic monetary and payment system.<sup>181</sup>

Given this context, we now turn to compare the approaches of developed economies to CBDCs. Initially we 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 then turning to those of the major financial centres of London, Singapore and Hong Kong SAR.

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<sup>180</sup> N. Khadem, *Coronavirus Crises Spark 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. These 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: Ukraine, France, Thailand, South Korea, Uruguay, Turkey, The Bahamas, South Africa, Eastern Caribbean Currency Union, Saudi Arabia, Marshall Islands, UAE, Brazil, Israel, Norway, Cambodia, Denmark, Ecuador, and Iceland. See Davis Polk, *The Federal Reserve and Central Bank Digital Currencies* (Client Memorandum, Aug. 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>181</sup> Yeung, *supra* note 142.

## A. *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 insights 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>182</sup>

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 the 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>183</sup> published in October 2020. This provides a glimpse into how the EU intends catching up with major international players and ensuring 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 therefore does not provide any specific details on the chosen design choices for a Digital Euro. It does however set out how the ECB intends issuing 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 end goal of developing a 'minimum viable product'. From an operational perspective the ECB intends retaining the role of issuing Digital Euro, while permitting private intermediaries to provide user-facing facilities interoperable with it.

First, a Digital Euro must comply with the Eurosystem's core principles, mandates and policies. Among its other central guiding principles for design, a Digital Euro would not act as a parallel currency, but instead as an additional method of supplying euro to users in all euro area jurisdictions. 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

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<sup>182</sup> Christine Large, *Payments in a Digital World*, EURO. CENTRAL BANK (Sept. 10, 2020), at <https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200910~31e6ae9835.en.html>.

<sup>183</sup> *Report on a Digital Euro*, EURO. CENTRAL BANK (Oct. 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).

reserves and commercial bank deposits in euro. It would be regarded as a Eurosystem liability and therefore characterised as risk-free central bank money. Further, the needs of consumers in utilising digital payments must be considered in the creation of a Digital Euro that does not discourage digital currency solutions developed by private firms. Finally, measures must be taken to ensure a Digital Euro is trusted from initial issuance, and this trust is maintained indefinitely.

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 pre-requisites include: (i) enhanced digital efficiency to support the digitisation of the EU's economy; (ii) inclusion of cash-like design features (such as offline usage) to counter the general decline in cash usage; (iii) employment of cutting-edge design features to compete with existing payment solutions; (iv) consideration of ways of improving monetary policy, such as possible remuneration at modifiable interests rates; (v) usage of a Digital Euro as a back-up system available widely and separately from other payment solutions in the case of extreme events; (vi) accessibility and usage at an international level to non-euro area users; and (vii) cost reduction and environmentally friendly design features.

Finally, a set of general requirements is identified with the purpose of ensuring that the EU economy is protected against any risks arising from the issuance of a Digital Euro. The requirements include: (i) capacity to control the number of Digital Euro in circulation to avoid large investments therein which would detract from bank deposits; (ii) collaboration with market participants to utilise existing user-facing facilities; (iii) compliance with existing regulatory standards; (iv) safe and efficient design in compliance with the Eurosystem's goals; (v) wide accessibility and usage throughout the euro area; (vi) set conditions for use of a Digital Euro by non-euro residents; and (vii) cyber resilience. Overall, in developing a Digital Euro, focus needs to be maintained on its potential impact on the banking industry as consumers move their deposited money into potential Digital Euro wallets, creating possible risks to financial stability.

The Report also sets out some initial thoughts of the ECB. Overall, restricted usage through synchronised functionality offline seems plausible. The ECB thinks offering offline private payments could possibly provide the EU with a competitive edge over services provided by wallet providers and stablecoin issuers.

Discussions around the possibility of a Digital Euro being provided through an account-based system or as a bearer instrument will most likely continue and be dependent on the choice of underlying back-end infrastructure. In a centralized system all Digital Euro

transactions would be recorded in the Eurosystem's ledger. Whereas in a decentralized system all transactions would be recorded by the supervised intermediaries and users based on the rules set by the Eurosystem. Digital Euro 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.

The legal implications for issuing a Digital Euro are also considered. The Report concludes that EU law does not preclude the possibility of utilizing a Digital Euro as legal tender. In addition, the practical arrangements related to the access and distribution of a Digital Euro could possibly be outsourced under Eurosystem supervision. 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>184</sup>

On a practical level, a viable commercial case for the digital settling and delivery of financial securities using Digital Euro 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>185</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 this will impact trade at a global level interacting with perhaps a Digital Yuan, and US and Canadian Digital Dollars.

More recently, 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>186</sup> Key objectives included the preservation of monetary sovereignty and public money in a digital economy.<sup>187</sup> To that end, the study advocated the possibility of 'specialisation': the focus of the digital euro would be as a medium of exchange for the purposes of normal payments, rather than as a store of value.<sup>188</sup> The proposed technical infrastructure would aim at enhancing accessibility, privacy and safety, but also introduce either a cap on individual digital euro holdings, or tiered fees at particular thresholds.<sup>189</sup>

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<sup>184</sup> Some excellent groundbreaking legal analysis of a Digital Euro can be found at: Seraina Grünewald, Corinne Zellweger-Gutknecht & Ben Geva, *Digital Euro and ECB Powers*, 58 COMMON MKT. L. R. 1029 (2021); Ben Geva, Seraina Grünewald & Corinne Zellweger-Gutknecht, *The E-banknote as a 'Banknote': A Monetary Law Interpreted*, 41(4) OXFORD J. OF LEGAL STUDIES 1119 (2021); Seraina Grünewald, Ben Geva & Corinne Zellweger-Gutknecht, *Digital Euro, Monetary Objects, and Price Stability*, 7 J. OF FIN. REGUL. 284 (2021).

<sup>185</sup> Societe Generale, *supra* note 167.

<sup>186</sup> Policy Department for Economic, Scientific and Quality of Life Policies, *The Digital Euro: Policy Implications and Perspectives*, EURO. PARLIAMENT (Jan., 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>187</sup> *Id.* at 12–6.

<sup>188</sup> *Id.* at 40–1.

<sup>189</sup> *Id.* at 42.

Looking forward, the euro has already evolved into the second most widely used currency internationally, both for payments and for finance: it is clear that the euro project – despite major concerns around Greece in 2010 – has become a major 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 may now be changing as a result of Ukraine and US domestic politics, supported and enabled by technology.

### *B. The Digital Dollar*

In contrast to the EU’s conservative current approach to payments innovation, the US Digital Dollar proposal reflects national aspirations to compete with the eCNY by advancing its own major currency CBDC with global implications. A Digital Dollar would potentially 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 elements. It is unlike the eCNY as it includes discussions of both a digital token (which could be used in both wholesale and retail transactions) and a universal account-based payment system in which 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, a number around 20 million potentially). It would thus enable rapid delivery of financial resources across the economy and technologically enable a very wide range of interventions from the central bank.

In January 2022, the Federal Reserve released a report,<sup>190</sup> outlining the potential adoption of CBDCs as a payments system and seeking consultation on policy and design considerations.<sup>191</sup> The Federal Reserve suggested a viable CBDC for the US payments

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<sup>190</sup> Federal Reserve, *Money and Payments: The U.S. Dollar in the Age of Digital Transformation* (Jan., 2022), at <https://www.federalreserve.gov/publications/files/money-and-payments-20220120.pdf>.

<sup>191</sup> *Id.* at 13.

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 combatting money laundering and terrorism financing.<sup>192</sup>

A Digital Dollar could also be structured as a hybrid involving both the public and private sector: a stablecoin in which 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 its potential wider global role.

As noted above, SDCs will interact particularly efficiently with the digitalization of international trade processes and smart contracts. Without a Digital Dollar, the eCNY, once eventually allowed offshore,<sup>193</sup> could potentially undercut the dominant role of the US dollar in the denomination of international trade.<sup>194</sup> For this reason alone, it is very difficult to see the US not launching a Digital Dollar as a defensive measure, should the prospect of the eCNY being allowed to be used outside of China become imminent.

### *C. Developed Open Economies: Canada and Sweden*

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 centralised CBDC before it stops printing cash. The central bank anticipates this happening in 2023 or 2024 and anticipates operating its CBDC on a centralized ledger (not with DLT or blockchain).<sup>195</sup>

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<sup>192</sup> *Id.* at 13–4.

<sup>193</sup> See G. Dufey & 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>194</sup> EICHENGREEN, *supra* note 177.

<sup>195</sup> This is only implied in the two reports: Sveriges Riksbank, *The Riksbank's E-krona Project: Report No. 1*, (Sept. 2017), at <https://www.riksbank.se/en-gb/payments--cash/e-krona/e-krona-reports/e-krona-project-report-1/>; Sveriges Riksbank, *supra* note 154.

In February 2020, the Bank of Canada issued a laudably clear document analysing 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>196</sup> The Bank of Canada envisaged two scenarios in which such a need could arise.

The first scenario is if Canada is moving to being a cashless society.<sup>197</sup> Should the move away from cash necessitate Canada issuing a CBDC, its February 2020 report envisages that this would be ‘cash-like’, i.e. ‘earn no interest and be universally accessible’.<sup>198</sup> It also envisages that it would offer a ‘great deal of privacy’<sup>199</sup> but not anonymity. The usage of cash in Canada has been in decline, as it has in most major economies. The COVID-19 pandemic has further accelerated this decline, with 58 per cent of Canadians reporting in 2020 that they had used less cash than they had pre-COVID-19. Moreover, 36 per cent of Canadians reported that they did not expect to return to using cash payments to the extent they did pre-COVID-19, while 43 per cent 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 per cent of transactions in Australia in 2019 and only 9 per cent of transactions in Sweden in 2020.<sup>200</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>201</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 focusses very much on the loss of monetary sovereignty whereas the reports of the Sverige Riksbank in Sweden consider this but focus far more on the impacts on the poor and on those living remotely of only having commercially provided payment mechanisms.

By February of 2020, China had publicly committed to proceed to develop the eCNY but, interestingly, the otherwise comprehensive Canadian report does not mention this development at all nor does the second Swedish report from February 2020. Given the

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<sup>196</sup> Bank of Canada, *Contingency Planning for a Central Bank Digital Currency* (Feb., 2020), at <https://www.bankofcanada.ca/2020/02/contingency-planning-central-bank-digital-currency>.

<sup>197</sup> *Id.*

<sup>198</sup> *Id.*

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

<sup>200</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* (Oct. 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>201</sup> Bank of Canada, *supra* note 196.



perspicacity of these analyses generally, this cannot be an oversight. This 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 dematerialised trade documents operating as smart contracts. The potential savings from the digitisation and dematerialisation of trade documentation are massive – the paperwork associated with international shipments is estimated to comprise about 20 per cent of the total cost of the shipment.<sup>202</sup>

In this 'third' 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.

#### *D. Major International Financial Centres: The UK, Singapore, Hong Kong SAR and Switzerland*

While the analyses of Canada and Sweden will be relevant to most countries around the world as they will 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 centres, particularly for FinTech and RegTech. Both have carefully focused on their positions and the role that CBDCs – particularly in the wholesale and trade contexts – could have going forward. Switzerland is focusing on interchanges between its currency and other currencies – in CBDC form – and blockchain systems. Indeed, all of these four jurisdictions are particularly focussed on their potential to be intermediaries between major digital currencies. This issue is central to Hong Kong's future, considering how it could emerge as the major point of exchange for transactions between the eCNY and the rest of the world.<sup>203</sup>

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<sup>202</sup> *The Digitisation of Trade's Paper Trail May Be at Hand*, THE ECONOMIST (Mar. 22, 2018), at <https://www.economist.com/finance-and-economics/2018/03/22/the-digitisation-of-trades-paper-trail-may-be-at-hand>.

<sup>203</sup> Andy Mukherjee, *Crypto Yuan Will Meet the Dollar — in Hong Kong*, BLOOMBERG (Aug. 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>.

VI. TECHNOLOGY, GEOPOLITICS AND THE FUTURE INTERNATIONAL MONETARY SYSTEM:  
THE MAJOR SCENARIOS

Russia's invasion of Ukraine has brought into highlighted the potential role today of money and payments in conflicts, and 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 effectuated. While money and finance have always been central to warfare, the digitization of the global monetary and payment system coupled to the central role of the US dollar as dominant global reserve, investment and payments currency has underpinned the 'weaponization of finance' as the central feature of international responses.

A. *The Russian Invasion of Ukraine, Western Sanctions and 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>204</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 default.<sup>205</sup> Yet, the decision to freeze some US\$300 billion of currency reserves held by the Central Bank of Russia is the most extraordinary.<sup>206</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>207</sup> While Russia has taken steps to insulate its economy from sanctions since the 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

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<sup>204</sup> See Minami Funakoshi, Hugh Lawson & Kannaki Deka, *Tracking Sanctions Against Russia*, REUTERS (May 31, 2022), at <https://graphics.reuters.com/UKRAINE-CRISIS/SANCTIONS/byvrjenzmve/>.

<sup>205</sup> Jeff Stein, *U.S. Pushes Russia Toward Default by Blocking Debt Payments*, WASH. POST (May 24, 2022), at <https://www.washingtonpost.com/us-policy/2022/05/24/treasury-russia-debt-default/>.

<sup>206</sup> REUTERS, *supra* note 4.

<sup>207</sup> See Laurence H. Tribe and Jeremy Lewin, *\$100 Billion. Russia's Treasure in the U.S. Should Be Turned Against Putin*, N. Y. TIMES (Apr. 15, 2022), at <https://www.nytimes.com/2022/04/15/opinion/russia-war-currency-reserves.html>.

freezing of its reserves was particularly audacious, and has undermined its ability to stabilize the rouble and recapitalize its sanctioned banks as they face the risk of bank runs.<sup>208</sup>

As the costs of Ukraine's defence and reconstruction grow, there are increasing calls to move from freezing to seizing Russia's currency reserves to finance these efforts.<sup>209</sup> In Europe, the Polish government, along with the governments of Estonia, Latvia, Lithuania and Slovakia, has advocated for this extra measure, and it has also received support from EU High Representative for Foreign Affairs and Security, Josep Borrell.<sup>210</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 and these are currently being studied.<sup>211</sup>

In the past, the taking of such steps would have been unthinkable. During the Crimean War of 1854-56, 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>212</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>213</sup> It is clear that customs have changed over time and the barriers between public war and

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<sup>208</sup> Robin Harding, *Toppling the Dollar as Reserve Currency Risks Harmful Fragmentation*, FIN. TIMES (Mar. 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 (Mar. 3, 2022), at <https://fortune.com/2022/03/03/russia-sanctions-central-bank-rouble-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 (Mar 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*, N. Y. 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>209</sup> In April 2022, the Ukrainian government estimated that the impact of the armed invasion could reach \$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>210</sup> Sam Fleming, James Shotter & Amy Kazmin, *EU Debates Tapping Sanctions-Hit Russian Assets to Pay For Rebuilding Ukraine*, FIN. TIMES (Apr. 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*, FIN. TIMES (May 9, 2022), at <https://www.ft.com/content/82b0444f-889a-4f3d-8dbc-1d04162807f3>.

<sup>211</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 & Lewin, *supra* note 207; Robert E. Litan, *Russia Can Be Made to Pay For Ukraine Damage Now*, BROOKINGS INSTITUTION (Mar. 17, 2022), at <https://www.brookings.edu/opinions/russia-can-be-made-to-pay-for-ukraine-damage-now/>; Rappeport and Sanger, *supra* note 208 (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>212</sup> NICHOLAS MULDER, *THE ECONOMIC WEAPON: THE RISE OF SANCTIONS AS A TOOL OF MODERN WAR* (2022)

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

private economic life which characterized the nineteenth century have eroded.<sup>214</sup> Global trade and finance now serve as key battlegrounds of modern warfare.

However, weaponizing the international monetary system in this way will have lasting repercussions for the world economy and the international monetary and payments systems. While it would seem fair that Russia pays for Ukraine's reconstruction, the freezing – and potential seizing – of Russia's reserves tramples upon 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, while at the same time 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>215</sup> Russia's reserves are made up of earnings from legitimate sales, mostly to the West, and are not illegally obtained.<sup>216</sup> While this step has undoubtedly been effective – Russia cannot access hundreds of billions of foreign dollars, euros and other currencies and investments it has accumulated to stabilize the rouble or fund its armed invasion of Ukraine – refusing to honour debt obligations and politicizing Western financial institutions will undermine their trustworthiness.<sup>217</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 of the United Nations Security Council.<sup>218</sup> As one Russian official said, '[a]nyone 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>219</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

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<sup>214</sup> *Id.*

<sup>215</sup> Joshua Kirschenbaum & 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/>.

<sup>216</sup> Wolfgang Münchau, *A BRIC, Impenetrable to Sanctions*, EURO INTELLIGENCE (Mar. 13, 2022), at <https://www.eurointelligence.com/column/a-bric-impenetrable-to-sanctions>.

<sup>217</sup> *Id.*

<sup>218</sup> Peter Martin, *Putin's Biggest Mistake of the Ukraine War? Trusting the Western Financial System*, THE CONVERSATION (Mar. 8, 2022), at <https://theconversation.com/putins-biggest-mistake-of-the-ukraine-war-trusting-the-western-financial-system-178635>.

<sup>219</sup> Robin Wigglesworth, Polina Ivanova & Colby Smith, *Financial Warfare: Will There be a Backlash Against the Dollar?*, FIN. TIMES (Apr. 7, 2022), at <https://www.ft.com/content/220db8f2-2980-410f-aab8-f471369ac3cf>.

‘credibly standing for a rules-based order is worth more’ than the short-term tactical advantages of freezing or appropriating Russia’s reserves.<sup>220</sup>

Second, and relatedly, these sanctions have undermined trust in the US dollar as the global reserve currency and potentially severely 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>221</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>222</sup> This could prove highly significant for global markets. Central bank reserves totalled a record US\$12.83 trillion in 2021,<sup>223</sup> and the US dollar accounted for 59 percent of these reserves and the euro around 20 percent.<sup>224</sup>

China will be particularly concerned about the precedent set by these measures, given it holds a massive US\$3.3 trillion in foreign currency reserves.<sup>225</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 without much disruption.<sup>226</sup> We may therefore see China instead attempt to stockpile commodities or take further steps to reduce its trade surplus by re-orienting its economy toward domestic consumption, although this has so far proven difficult.<sup>227</sup> Conversely China could appear to be an option for other states looking to move their reserves from the US or EU, though the yuan currently accounts for

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<sup>220</sup> Kirschenbaum and Véron, *supra* note 215.

<sup>221</sup> Münchau, *supra* note 216.

<sup>222</sup> Mattias Vermeiren, *Freezing Russia's Central Bank Reserves: Much Ado About Nothing?*, UNIV. OF GHENT (Mar. 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>223</sup> Dolan, *supra* note 208.

<sup>224</sup> Serkan Arslanalp, Barry Eichengreen & Chima Simpson-Bel, *The Stealth Erosion of Dollar Dominance*, IMF 5 (Working Paper No. 22/58, Mar., 2022).

<sup>225</sup> Vermeiren, *supra* note 222; Yu Yongding, *America Has Stopped Playing by the Monetary Rules*, PROJECT SYNDICATE (Apr. 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 (Apr. 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’).

<sup>226</sup> Kent Troutman, *A World of Known Unknowns: A Closer Look at the Allocation of China's Foreign Exchange Reserves*, PIIIE (Dec. 24, 2013), at <https://www.piie.com/blogs/china-economic-watch/world-known-unknowns-closer-look-allocation-chinas-foreign-exchange>.

<sup>227</sup> Jon Sindreu, *If Russian Currency Reserves Aren't Really Money, the World Is in for a Shock*, WALL STREET JOURNAL (Mar. 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).

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>228</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 to use as a war chest in times of conflict, disasters or balance of payments crises.<sup>229</sup> However, 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 therefore 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>230</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.

#### *B. End of Dollar Hegemony: The Rise of a new Monetary Hegemon?*

One fascinating development centres upon whether, and when, China allows the Digital Yuan to be used offshore. The potential of eCNY expanding overseas has already 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>231</sup> The challenge however - as we highlighted earlier - is that use of the Digital Yuan offshore and/or outside China's Great Firewall means a 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. However, 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 operating outside of the US dollar system. If the bubble of the Digital Yuan were to expand outside China over time, it

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<sup>228</sup> Barry Eichengreen, *The Monetary Consequences of Vladimir Putin*, PROJECT SYNDICATE (Mar. 10, 2022), at <https://www.project-syndicate.org/commentary/russia-financial-sanctions-will-change-currency-reserves-by-barry-eichengreen-2022-03>.

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

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

<sup>231</sup> *Proposal for a 'Lummis-Gillibrand Responsible Financial Innovation Act*, *supra* n 137, at §603.

could effectively underpin a 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 as 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 also its inclusion as part of the SDR basket.

From the standpoint of a store of value, during the 21<sup>st</sup> century, China has sought to maintain the stability of its currency and develop its financial markets. In particular the Chinese debt markets are now the world's second largest, with increasing foreign participation. As a result, there are now venues for finance and investment in RMB and the eCNY will likely facilitate these. At the same time, China continues to maintain capital controls, which impact on the attractiveness of its financial system internationally. If anything, 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 potential 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 the eCNY will grow, when it is allowed, particularly if the legal and institutional framework for the international use of the eCNY reduces concerns of 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. It has proven its effectiveness as a medium of exchange, means of payment and store of value, though 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 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, constraining liquidity, depth and scale particularly in comparison the US, and lack of an effective defence system. Both of these weaknesses now appear to be being addressed. 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 certainly seems much more likely if Donald Trump is ever re-elected in the United States.

Similar arguments could apply to other currencies as well. While each of these would reduce the dominance of the US dollar, none at present 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 instead 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 the various international CBDCs and stablecoins come to offer attractive alternatives to non-major currencies, this may well 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 largely unsuccessfully.

### *C. Development of a New International Monetary System: An IMF SDR CBDC?*

The best solution to these profound challenges from the standpoint of efficiency 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, there are a range of 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 including par values by 85 per cent 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, 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>232</sup>

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

#### *D. Evolution of the Existing International Monetary System? A Digital Dollar to Rule them all?*

When the US implements a Digital Dollar, an important aspect will be its usability internationally. In addition to the wide use of the dollar outside the US for transactions, finance and investment underpinned by domestic US dollar payment systems in particular CHIPS – the US also exports huge amounts of physical dollars as dollar bills are widely used outside the United States. A digital dollar could further this trend dramatically, if the US is able to manage adroitly the potential for the technology to monitor and restrict transactions.<sup>233</sup> In fact, an easily usable Digital Dollar could result in widespread currency substitution, a real risk for developing, and even developed, economies and 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 USD stablecoins, appropriately supervised and with potential

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<sup>232</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>233</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.

liquidity support from the central bank as is the case with certain systemically important FMIs. Clearly international usage will be a principal consideration underlying US digital dollar design and development.

### *E. Fragmentation: A New Multipolar Monetary System*

We are most likely moving towards increasingly multipolar international monetary arrangements, as new monetary and payments technologies make it easier to use a small number of major currencies with similar convenience to use of a single monetary hegemon in the past. 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 *geoeconomic fragmentation*.

A range of projects, particularly coordinated by the BIS Innovation Hub, are seeking to build the necessary networks and systems to promote effective integration. A recent successful cross-border CBDC experiment was Project Jura, undertaken in collaboration with the Banque de France and the Swiss National Bank.<sup>234</sup> It 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 optimise cross-currency and cross-border settlements, which are a key facet of international transactions’.<sup>235</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>236</sup> Though still in testing, this 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

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<sup>234</sup> Banque de France, Bank for International Settlements & Swiss National Bank, *Cross-Border Settlement Using Wholesale CBDC* (Report, Dec., 2021).

<sup>235</sup> *Id.* at 2, 4.

<sup>236</sup> Bank for International Settlements, *Nexus: A Blueprint for Instant Cross-Border Payments* (Report, July, 2021).

systems.<sup>237</sup> These projects exemplify how countries can work together to investigate using 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 further accelerated the development of a multipolar monetary system, but through fragmentation rather than integration. While the sanctions imposed by the US and Europe 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>238</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>239</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>240</sup>

If the US and Europe 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>241</sup> This will likely encourage the emergence of parallel, disjointed

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<sup>237</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>238</sup> *Why So Much of the World Won't Stand Up to Russia*, THE ECONOMIST (Apr. 16, 2022), at <https://www.economist.com/international/why-so-much-of-the-world-wont-stand-up-to-russia/21808737>.

<sup>239</sup> Chloe Cornish, *India Explores "Rupee-Rouble" Exchange Scheme to Beat Russia Sanctions*, FIN. TIMES (Mar. 17, 2022), at <https://www.ft.com/content/a5ee2d6b-693f-475d-80c6-0036c2657ef1>.

<sup>240</sup> Yew Lun Tian, *China Says Not Deliberately Circumventing Sanctions on Russia*, REUTERS (Apr. 2, 2022), at <https://www.reuters.com/world/china/china-says-not-deliberately-circumventing-sanctions-russia-2022-04-02/>; Mrugank Bhusari & Maia Nikoladze, *Russia and China: Partners in Dedollarization*, ATLANTIC COUNCIL (Feb. 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 (Mar 18, 2022), at <https://www.rferl.org/a/31760079.html>; Arshaluis Mgdesyanyan, *Armenia and Russia Working to Dedollarize Bilateral Trade*, EURASIANET (Apr. 21, 2022), at <https://eurasianet.org/armenia-and-russia-working-to-dedollarize-bilateral-trade>.

<sup>241</sup> Mihir Sharma, *Why India Is Losing Faith in the West*, BLOOMBERG (Mar. 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 (Apr. 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".)

payment systems to mitigate the risk of Western sanctions, resulting in the fragmentation of the international monetary system.<sup>242</sup>

Similarly, the push for alternatives within sanctioned countries has also increased the risk of fragmentation. As Russians seek to protect their assets and maintain liquidity as the value of the rouble declines, spending on Bitcoin and other cryptocurrencies has skyrocketed.<sup>243</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>244</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 Europe.<sup>245</sup>

The international monetary system trending toward multipolarity is being driven by efforts toward integration through joint technological development which make the use of a range of major currencies feasible, and geoeconomic fragmentation (through the application of sanctions and the development of alternative systems to circumvent their effects). Going forward, it is important countries collaborate with each other and with international organizations – including the IMF, FSB and BIS – to develop new financial infrastructure to connect and regulate various payment systems, thereby countering the risks of fragmentation in the international monetary system.<sup>246</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-border flow of capital, goods, services, ideas and technologies to the detriment of productivity and living standards in all countries.<sup>247</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

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<sup>242</sup> Georgieva, *supra* note 232.

<sup>243</sup> Andy Mukherjee, *Putin's War Could Make Central Banks a Crypto Battlefield*, BLOOMBERG (Mar. 18 2022), at <https://www.bloomberg.com/opinion/articles/2022-03-17/putin-s-war-will-put-central-bankers-on-the-cryptocurrency-frontlines>.

<sup>244</sup> *Id.*

<sup>245</sup> *Id.*

<sup>246</sup> Georgieva, *supra* note 232.

<sup>247</sup> *Id.*; Kristalina Georgieva, Gita Gopinath & Ceyla Pazarbasioglu, *Why We Must Resist Geoeconomic Fragmentation—And How*, IMF BLOG (May 22, 2022), at <https://blogs.imf.org/2022/05/22/why-we-must-resist-geoeconomic-fragmentation-and-how/>.

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.

## VII 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 provide a great impetus for payment systems to evolve dramatically, quite probably towards a multipolar system that will be markedly less efficient than what we have today. These developments also represent, for the US, 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 that flow to the US from the current 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>248</sup> or alternatively the redesign of

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<sup>248</sup> This is not the place for specifying details of such a convention or institutional design. Yet, it could entail for instance rules around interfering with a central bank's balance, an individual's private property, and sanctioning powers more generally.

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 rule-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.