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Cryptocurrencies, Digital Money and Regulatory Damage

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Introduction

When discussing FinTech, a sense that someone must invariably be referring to cryptocurrencies, digital or virtual money, or crypto-assets, can be a stubborn misconception to shake. Nonetheless, there are profound legal questions which persistently surround cryptocurrencies and variations of digital money. The risk is that perennial doubts about the legal and regulatory status of cryptocurrencies could have tainting effects on analyses of other ongoing and significant developments in FinTech.

Issues regarding cryptocurrencies are even more manifest recently through certain cryptocurrencies' usage and valuations. The changing nature of stablecoins, and the progress being made towards central bank digital currencies (CBDCs), generate new challenges for regulatory authorities. Technologies are expanding towards increasingly layered applications, notably for decentralised finance (DeFi).

Against this backdrop, it can be argued that regulatory ambiguities relating to Bitcoin and other cryptocurrencies have not only remained intact, but that these concerns are permeating across discourse about other burgeoning innovations. Trust in the ability of regulators in Europe, and jurisdictions internationally, to respond to fresh issues arising from FinTech could be crucially determined by regulators' ability to mitigate the risks, speculative practices, and shady connotations of the cryptocurrency craze.

This article begins by outlining how cryptocurrencies' core features continue to cause difficulties for regulators, especially in light of the seeming revival in the fortunes of highly volatile types of cryptocurrencies. The article proceeds to evaluate how failures to regulate cryptocurrencies can overshadow the search for legal clarity about stablecoins (including the prospect of global stablecoins) and the trialling of CBDCs. By focusing on the European Union's response, the article considers the potential role of the European Commission's

Markets in Crypto-Assets (MiCA) Regulation proposal [1] in thoroughly bringing cryptocurrencies within a regulatory framework. The article questions how effective legislative initiatives could be in aiming to 'confront' cryptocurrencies, particularly when attempting to distinguish between examples of crypto-assets. The regulatory task becomes even more complex when there are vivid signs of evolution in how technologies underlying cryptocurrencies are being used for other aspects of financial services.

The continuing traits and continuing difficulties of cryptocurrencies

To a significant degree, concerns over cryptocurrencies with the largest market capitalisation are explicable by the features of the underlying technologies. As a reflection of the libertarian ambitions of cryptographers and programmers, the decentralised and peer-to-peer characteristics of the technologies prompt regulatory concerns. Mercurial price volatility and opaque market practices (even when purely speculative, illegal, or a mixture of both) tend to raise even more trepidation. The concerns highlight a suspicion that cryptocurrencies simply lack the economic 'fundamentals' to be treated as legally-defined money. Developments since the outbreak of the COVID-19 pandemic have heightened awareness of the expanding – and diffuse – nature of cryptocurrencies.

Money as we know it?

It is not a cliché to suggest that cryptocurrencies lack characteristics of true money. As recognised by economists since Smith, money has three distinctive features. While it is improbable that cryptocurrencies could fully satisfy the two criteria of being means of exchange and being units of account, it is emphatically clear in recent years that cryptocurrencies cannot represent reliable stores of value. [2] Although the meaning of a cryptocurrency can comprise several complex aspects, a primary characteristic is that cryptography should be utilised in a peer-to-peer manner by which transactions are validated

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[1] Proposal for a Regulation of the European Parliament and of the Council on markets in crypto-assets, and amending Directive 2019/1937, COM(2020) 593 final.

[2] Other than the classic work of Adam Smith (*The Wealth of Nations* (1776)), considerably more recent assessments of digitalisation's effects on how legal tender is conventionally characterised are provided by M. Brunnermeier, H. James, and J.-P. Landau, 'The Digitalisation of Money' (BIS Working Paper No. 941) (2021) and in BIS, 'Cryptocurrencies: Looking Beyond the Hype', special chapter in *Annual Economic Report 2018*.

and executed. [3] These encryption techniques apply within decentralised networks, which lack the single points of authority associated with *fiat*, or real-world, currency. [4] By cryptographical hashing, algorithms distinguish one unit from another within a chain, or ledger, of verifiably recorded transactions. For a cryptocurrency such as Bitcoin, 'miners' are responsible for adding further blocks through algorithmic 'proof-of-work', [5] while transactions should be approved by connected network participants or nodes. [6]

As the basic technology, blockchain epitomises the decentralisation vision of 'trustless trust', articulated in Satoshi Nakamoto's 2008 white paper which proposed Bitcoin as a virtual currency. [7] As expressed by commentators such as Angela Walch, the somewhat romantic, but inherently fuzzy, concept of decentralised peer-to-peer consensus does not make it conducive for legal and regulatory intervention. [8] Without any centrally issued source and without the stabilisation mechanisms that are at the disposal of central banking authorities, there are no reins on the prices of a cryptocurrency such as Bitcoin (subject to the cap of 21 million bitcoins permitted to be mined and circulated [9]). The sheer volatility of Bitcoin's pricing reveals fluctuation patterns which outstrip historical economic bubbles. [10] As identified by Iris Chiu, the lack of governance arrangements within decentralisation and the 'commoditisation'

[3] See G. Dimitropoulos, 'Global Currencies and Domestic Regulation. Embedding through Enabling?' in P. Hacker, I. Lianos, G. Dimitropoulos and S. Eich (eds.), *Regulating Blockchain. Techno-Social and Legal Challenges* (Oxford: Oxford University Press, 2019).

[4] See B. Geva, 'Cryptocurrencies and the Evolution of Banking, Money and Payments' in C. Brummer (ed.), *Crypto-Assets. Legal, Regulatory and Monetary Perspectives* (Oxford: Oxford University Press, 2019). For an interpretation of the broader term of 'crypto-assets' as relating to "a new type of asset recorded in digital form and enabled by the use of cryptography", see ECB Crypto-Assets Task Force, 'Crypto-Assets: Implications for Financial Stability, Monetary Policy, and Payments and Markets Infrastructures' (Occasional Paper No. 223) (2019).

[5] See further R. Bohme, N. Christin, B. Edelman, and T. Moore, 'Bitcoin: Economics, Technology and Governance' (2015) 29(2) *Journal of Economic Perspectives* 213.

[6] As the efforts needed to record proof-of-work escalate, the energy costs of mining have reached astounding levels, amounting to the approximate electricity consumption of Switzerland and countries of equivalent size: see BIS, 'Cryptocurrencies: Looking Beyond the Hype' (2018).

[7] The paper released by what is likely to have been a group of cryptographers using the Nakamoto pseudonym is available at: https://bitcoin.org/en/bitcoin-paper (date accessed: 20 April 2022). Even though it was to be Bitcoin's foundational technology, the term 'blockchain' is never expressly used in the paper.

[8] A. Walch, 'Deconstructing "Decentralization". Exploring the Core Claim of Crypto Systems', in Brummer (ed.), *Crypto-Assets. Legal, Regulatory and Monetary Perspectives* (2019).

[9] For the purposes of this article, 'Bitcoin' is capitalised when referring to the cryptocurrency, while a lower-case 'bitcoin' is used to refer to units of the cryptocurrency.

[10] See ECB Crypto-Assets Task Force, 'Crypto-Assets: Implications for Financial Stability, Monetary Policy, and Payments and Markets Infrastructures' (2019), Chart 5, in which the nearest comparison is found to be the Mississippi bubble of 1720.

associated with cryptocurrencies are two factors which diminish cryptocurrencies' suitability as legally defined money. [11]

For researchers such as Hanna Halaburda, Guillaume Haeringer, Joshua Gans and Neil Gandal, Bitcoin has firmly transitioned towards a speculative phase. [12] Accusations of Bitcoin being nothing more than an elaborate Ponzi scheme for the digital age have been thoroughly ventilated prior to now. [13] Although there are a wide variety of other cryptocurrencies in existence, the links to illicit activities remain palpable. As acknowledged in International Monetary Fund (IMF) research, published in March 2022, empirical investigation of the use of cryptocurrencies, and of crypto-assets generally, is in its infancy, due to persisting limitations in the availability of reliable data. [14] Nonetheless, by reference to a sample of respondents in 55 countries, the research concluded that 'crypto-adoption' is connected to countries with weaker controls on corruption and with higher restrictions on capital flows. [15]

There is equally a dearth of empirical data on cryptocurrency transactions and trades through exchanges. Nonetheless, as highlighted in European Central Bank (ECB) research, there is evidence of significant levels of wash trading and tumbling. These practices contribute to price fluctuations, as well as serving to hide individuals' transaction histories. [16] In a Bitcoin context, wash trading is when bitcoins are transferred between node addresses belonging to the same owner. Tumbling is where the owner of a holding of bitcoins transfers coins to a specialist provider for a fee, before the bitcoins are returned to a different address of the same owner.

Even since the 2013 closure of the Silk Road dark web marketplace, the ties with illegality can taint perceptions of Bitcoin and other cryptocurrencies. On the grounds of findings produced

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[11] I. Chiu, 'Building Out the Crypto Economy in Europe: A Proposal for Central Bank Digital Euros' (2021) 46(4) *European Law Review* 435, 440.
[12] H. Halaburda, G. Haeringer, J. Gans, and N. Gandal, 'The Microeconomics of Cryptocurrencies' (Centre for Economic Policy Research Discussion Paper No. 14972) (2021).
[13] See the observations of the former Chairman of the US Federal Reserve, Alan Greenspan, at: https://www.cnbc.com/2017/12/06/greenspan-compares-bitcoin-to-colonial-america-currency-that-eventually-became-worthless.html (date accessed: 20 April 2022). See the perspective expressed by JPMorgan Chase CEO and chairman, Jamie Dimon, on cryptocurrencies generally, while the bank launched its own form of digital currency: https://www.cnbc.com/2021/10/11/jpmorgan-chase-ceo-jamie-dimon-says-bitcoin-is-worthless.html (date accessed: 20 April 2022).
[14] IMF Working Paper (M. Alnasaa, N. Gueorguiev, J. Honda, E. Imamoglu, P. Mauro, K. Primus, and D. Rozhkov), 'Crypto, Corruption and Capital Controls: Cross-Country Correlations' (WP/22/60) (2022).
[15] The sample was drawn from Statista's Global Consumer Survey and involved 2,000 to 12,000 respondents in each of the sampled countries.
[16] M.T. Chimienti, U. Kochanska, and A. Pinna, 'Understanding the Crypto-Asset Phenomenon, Its Risks and Measurement Issues', in ECB *Economic Bulletin* (Issue No. 5/2019).

by Sean Foley, Jonathan Karlsen and Talis Putnins, up to 46% of Bitcoin transactions relate to illegal activity, which spans up to a quarter of all Bitcoin users and is estimated at $76 billion per year. [17] The extent of illegal activity linked to Bitcoin transactions is questioned in subsequent studies which indicate much smaller proportions of illegality. [18] Irrespective of the percentages, illegal activity patently remains an aspect of cryptocurrency transactions through money laundering, ransom payments, and dark web scam payments. [19] For instance, it is reported that North American cryptocurrency users transferred some $131 million to ransomware attackers between July 2020 and June 2021. [20]

A focus should be maintained on promoting consumer protection, financial literacy and public awareness of cryptocurrencies' obvious risks. [21] In addition to community and school initiatives, this entails improving the understanding of the impact of external factors – or 'noise', as termed in empirical research – on cryptocurrency prices. Studies demonstrate connections between price increases and trends of media reporting, social media-generated hype around certain cryptocurrencies (often part of 'pump-and-dump' schemes to bring about further price rises), and Internet search engine results. [22] The influence of social media is also revealed in the collapse of high-profile crypto-investment schemes. [23]

As assessed by commentators such as Peter Yeo, there is growing appreciation among policymakers and regulators of the benefits of technological innovations which enable cryptocurrencies to scale, even when the appreciation is coupled with apprehension about the

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[17] S. Foley, J. Karlsen, and T. Putnins, 'Sex, Drugs, and Bitcoin: How Much Illegal Activity is Financed through Cryptocurrencies?' (2019) 32(5) *Review of Financial Studies* 1798.

[18] In I. Makarov and A. Schoar, 'Blockchain Analysis of the Bitcoin Market' (National Bureau of Economic Research Working Paper No. 29396) (2021), it is estimated that 90% of Bitcoin transaction volume is directed towards 'non-economically meaningful activities', which are speculative, but not necessarily illegal. Although the data does not encompass unreported individual cases, Chimienti, Kochanska, and Pinna, 'Understanding the Crypto-Asset Phenomenon, Its Risks and Measurement Issues' (ECB, 2019) consider that theft, cybercrime and criminal activities affect an estimated 6% of total Bitcoin supply.

[19] See the figures presented for 2020 in the findings of Makarov and Schoar, 'Blockchain Analysis of the Bitcoin Market' (2021), providing categorisations of payments to addresses which are identified as scams, of identified ransom payments, and of dark web payments and services.

[20] Chainalysis, *2021 Geography of Cryptocurrency Report* (October 2021), p. 31; available at: https://go.chainalysis.com/2021-geography-of-crypto.html (date accessed: 20 April 2022)

[21] See C. Cuervo, A. Morozova, and N. Sugimoto, 'Regulation of Crypto Assets' (IMF FinTech Note 19/03) (2019), p.12, and J. McCarthy 'FinTech, Digital Finance and the EU's Regulatory Choices' (2020) 35(11) *Journal of International Banking Law and Regulation* 464, 470.

[22] As well as the summary in Halaburda, Haeringer, Gans, and Gandal, 'The Microeconomics of Cryptocurrencies' (2021), see B. Biais, C. Bisiere, M. Bouvard, C. Casamatta, and A. Menkveld, 'Equilibrium Bitcoin Pricing' (2021); available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3261063 (date accessed: 20 April 2022).

[23] A notable example being the Finiko scam: https://news.bitcoin.com/crypto-pyramid-busted-in-russia-losses-exceed-10-million/ (date accessed: 20 April 2022).

risks. [24] The notion of trust is ultimately central to whether cryptocurrencies can be recognised as close to anything resembling legitimate money. There are also repercussions for trust in regulators if risks to consumers, vulnerable persons and investors are not substantively addressed. From a banking outlook, Agustín Carstens of the Bank for International Settlements (BIS), when contemplating digital currencies' status, has expressed that "[m]oney is a societal convention. People accept money today with the expectation that everyone else will accept it tomorrow." [25] Although it is extremely unlikely that cryptocurrencies have arrived at this stage, evident changes are occurring.

Since the pandemic

In the time of the COVID-19 pandemic, the use of digital platforms for financial services is not as futuristic a phenomenon as it once may have seemed. Cryptocurrencies have maintained growth, which can be attributed to different reasons. The speculation involved in Bitcoin investments can now be distinguished from other functions of cryptocurrencies, including capital-raising. Although speculation is an intrinsic element of much cryptocurrency activity, decentralised platforms and trading exchanges are being directed towards more intricate purposes, entailing new variations of digital money and technological protocols. While these developments may appear innovatively sophisticated, the additional layering of an already complicated cryptocurrencies landscape is accumulating risk and the potential for damage to regulation.

During the pandemic, the rise in e-commerce and the frequency of online sales has been accompanied by growth in FinTech-based funding channels, including through cryptocurrency platforms for accessing venture capital. [26] However, it is tough to dismiss the feeling that cryptocurrency markets have been here before. The proliferation of Initial Coin Offerings (ICOs) around 2018 enabled the granting of tokens in proposed ventures and projects in return for cryptocurrency investments. In what was a further reputational blow to cryptocurrency

[24] P. Yeo, 'Crypto-Assets: Regulators' Dilemma', (2020) 4 *Journal of Business Law* 265, 286.
[25] A. Carstens, 'Digital Currencies and the Soul of Money', (Goethe University Institute for Law and Finance, 18 January 2022); available at: https://www.bis.org/speeches/sp220118.htm (date accessed: 20 April 2022).
[26] See FSB, 'FinTech and Market Structure in the COVID-19 Pandemic. Implications for Financial Stability' (March 2022), p. 3.

investment, ICOs soon became undermined by the prevalence of scams, fraud and the absence of transparency. [27]

There is scant evidence of cryptocurrency speculation being on the wane. Over the course of the pandemic, Bitcoin users have shown little indication of curtailing their speculative proclivities. During the period of restrictions internationally, a crescendo was reached in the market price towards the end of 2020 after hurtling increases during the year. [28] Bitcoin prices climbed dramatically until April 2021, before recording an all-time high in November 2021. The drastic volatility of cryptocurrency markets is evinced most recently by the sharp falls recorded in prices during the first half of 2022. At the time of writing, one bitcoin is the equivalent of over €19,000, a significant reduction from the record peak of just under €64,000. [29] The volatility of Bitcoin is made even more startling considering that the rapid price increases materialised on either side of a staggering decline in May 2021, following China's announcement of stringent regulatory measures.

Previously, the bulk of Bitcoin mining activities was undertaken in China. [30] After the Chinese cryptocurrency crackdown, the Bitcoin hashrate declined by more than 50%. [31] Moreover, the Chinese regulatory intervention has contributed to a re-orientation of global cryptocurrency markets. From a European vantage, cryptocurrency platform activity was quite restrained. ECB research estimated that European platforms (not only those located in EU Member States) accounted for 24 per cent of all trading. [32] These trends are undergoing noticeable changes, heavily instigated by emergent DeFi platforms.

Accurately ascertaining national rates of cryptocurrency adoption is notoriously hampered by the use of VPNs (virtual private networks) and other products. [33] Yet, according to Chainalysis

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[27] See especially A. Gurrea-Martínez and N. Remolina León, 'The Law and Finance of Initial Coin Offerings' in Brummer (ed.), *Crypto-Assets. Legal, Regulatory and Monetary Perspectives* (2019), and D. Zetzsche, R. Buckley, D. Arner and L. Fohr, 'The ICO Gold Rush: It's a Scam, It's a Bubble, It's a Super Challenge for Regulators' (2019) 60(2) *Harvard International Law Journal* 267.

[28] See generally the CoinMarketCap data available at: https://coinmarketcap.com/currencies/bitcoin/ (date accessed: 20 April 2022).

[29] See https://www.coinbase.com/price/bitcoin/eur (last accessed: 28 June 2022).

[30] It was estimated as being between 60 to 80% by Makarov and Schoar, 'Blockchain Analysis of the Bitcoin Market' (2021).

[31] Chainalysis, *2021 Geography of Cryptocurrency Report*, p. 90

[32] Chimienti, Kochanska, and Pinna, 'Understanding the Crypto-Asset Phenomenon, Its Risks and Measurement Issues' (ECB, 2019), p. 117.

[33] An obstacle to empirical studies which is acknowledged in IMF Working Paper, 'Crypto, Corruption and Capital Controls: Cross-Country Correlations' (2022).

findings for 2021, global adoption of cryptocurrencies increased several-fold. [34] In the report's ranking of 154 countries, Vietnam is first, followed by India in second, Pakistan third, Ukraine fourth, and Kenya in fifth. There are discernible dynamics behind regional variations. DeFi is an impetus for surges in usage in developed economies and in countries which already record substantial adoption. Peer-to-peer lending and VC platforms drive adoption in emerging economies. [35]

The findings describe the traditionally dominant US market (ranked eighth in the report) as becoming steadily 'professionalised'. [36] This observation corresponds to empirical studies of American samples which show that cryptocurrency ownership is more likely among young males with relatively high educational attainment. [37] Aside from a possible gender gap, this research also advances a profile of a cryptocurrency user who is not especially concerned about the monetary stability of fiat currency, about the state of cash or commercial banking services, or about the security of savings in financial institutions. By contrast, the proportions of Ukrainian and Russian [38] users of cryptocurrencies are summarised in the Chainalysis report in terms of a deep distrust in public institutions among qualified and skilled programmers who possess few economic opportunities. [39]

Since the publication of the rankings, issues arising from the war in Ukraine have depicted the Jekyll and Hyde complexion of cryptocurrencies. The positive side to the coverage shows how large amounts of charitable funding can be raised through DeFi applications, under the auspices of Decentralised Autonomous Organisations (DAOs). [40] Funds are made available more directly and verifiably (through blockchain ledgers) than otherwise could be possible in a warzone setting. On the other hand, crypto exchanges could be utilised by Russian users for siphoning funds in the wake of financial sanctions. [41] The threat has spurred proposals, as in

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[34] Chainalysis, *2021 Geography of Cryptocurrency Report*, p. 8, calculates that global adoption increased by some 2300% since Q3 2019.
[35] Chainalysis, *2021 Geography of Cryptocurrency Report*, p. 12.
[36] Chainalysis, *2021 Geography of Cryptocurrency Report*, p. 11.
[37] R. Auer and D. Tercero-Lucas, 'Distrust or Speculation? The Socioeconomic Drivers of US Cryptocurrency Investments' (Centre for Economic Policy Research Discussion Paper No. 16518) (2021).
[38] Russia is ranked eighteenth in the Chainalysis findings.
[39] Chainalysis, *2021 Geography of Cryptocurrency Report*, p. 62.
[40] E. Mack, 'How the Influence of Crypto in Ukraine's Resistance Goes Beyond Money' (Forbes, 7 April 2022); available at: https://www.forbes.com/sites/ericmack/2022/04/07/how-the-influence-of-crypto-in-ukraines-resistance-goes-beyond-money/?sh=6a0752871beb (date accessed: 20 April 2022)
[41] V. Walt, 'Crypto's Complicated Role in Ukraine: 'Literally Saving Lives', But Also Helping Oligarchs' (Fortune, 8 April 2022); available at: https://fortune.com/2022/04/08/crypto-ukraine-saving-lives-helping-oligarchs-sanctions-binance/ (date accessed: 20 April 2022).

the US Congress, to allow for sanctions on foreign cryptocurrency exchanges. [42] This curious scenario places platforms and exchanges in the invidious position where there are international calls for accounts of all Russian users to be frozen. [43] Ironically, it marks a step towards treating these fora by the same standards as would be expected of 'mainstream' financial institutions. A rather ideological defence is articulated by platforms, such as Coinbase, Binance and Kraken, when asserting that a suspension of all Russian clients would be contrary to the values by which the exchanges have always operated. [44]

The most strident of cryptocurrency sceptics would stress that the likes of Bitcoin are too blatantly problematic to ever be regarded as valid currency. As credible an argument as it may be – and Bitcoin is the pre-eminent crypto-asset when adjudged by market capitalisation – Bitcoin is currently only one of about 17,000 forms of crypto-assets. [45] The concept of digital money is gradually being re-moulded by DeFi. Decentralised applications (dApps) are altering the uses for stablecoins particularly, as disclosed by exponentially increased valuations of leading stablecoins. Furthermore, DeFi proffers glimpses of how CBDCs could conceivably be used in decentralised protocols. If there is plenty which remains shadowy about Bitcoin and other cryptocurrencies, it could be intimated that the features of stablecoins and CBDCs should be relatively more familiar. Yet, this could prove to be a fallacy in light of ongoing legal uncertainty and failures to ensure regulatory clarity.

The unknown knowns

There are salient developments in stablecoins and CBDCs, but regulatory questions revolve around two issues: design features and legal status. Decentralised platforms display possibilities for the interaction of stablecoins and CBDCs. However, shortcomings in appropriately regulating for cryptocurrencies can have tainting consequences for regulation of stablecoins and CBDCs. The scale of regulatory uncertainty is especially exemplified by the

[42] H. Lang, 'US Democrats Introduce Bill to Curb Russian Crypto Use Amid Ukraine Crisis' (Reuters, 17 March 2022); available at: https://www.reuters.com/world/us-democrats-introduce-bill-curb-russian-crypto-use-amid-ukraine-crisis-2022-03-17/ (date accessed: 20 April 2022).
[43] See particularly J. Danielsson, 'Cryptocurrencies and the War in Ukraine' (VoxEU blog, 11 March 2022); available at: https://voxeu.org/article/cryptocurrencies-and-war-ukraine (date accessed: 20 April 2022).
[44] However, platforms have blocked the wallets of certain Russian users. See M. Quiroz-Gutierrez, 'Coinbase Blocks 25,000 Crypto Wallets Tied to Russians Suspected of Illicit Activity' (7 March 2022); available at: https://fortune.com/2022/03/07/coinbase-blocks-25000-crypto-wallets-russians-sanctions/ (date accessed: 20 April 2022).
[45] ESAs, 'Warning to Consumers on Risks of Crypto-Assets' (ESA 2022 15) (17 March 2022).

doubts created by Big Tech proposals for a global stablecoin and by endeavours to determine the most effective, but secure, systems for introducing CBDCs.

Stablecoins in a post-Libra world

By being tied to fiat reserves, stablecoins are essentially envisaged as an antidote to the cryptocurrencies' innate volatility. As construed by the Financial Stability Board (FSB), a stablecoin is "a crypto-asset that aims to maintain a stable value relative to a specified asset, or a pool or basket of assets." The tidy definition is undercut by the FSB's concession that there is no universally agreed meaning of a stablecoin. [46] Despite lacking "a common taxonomy and unambiguous terminology", [47] the objective of stablecoins is to (partially, at least) dispel anxieties over speculative practices and drastic fluctuations in value, while enabling stablecoins' use for payments.

Perhaps ironically, stablecoin valuations have swollen to the point that the major stablecoins in circulation were valued at almost $120 billion by late 2021. [48] In a year, the total market capitalisation of stablecoins experienced an almost 500% increase. [49] DeFi is a principal catalyst for the upturn in stablecoins. Within a DeFi model, a user's crypto-assets are held by a DeFi protocol in exchange for stablecoins (DAI). These specific stablecoins are used as security for the trading of tokens on decentralised exchanges (DEXs). Although stablecoin valuations were modest prior to DeFi's emergence, the extent of the stablecoin stimulus can be grasped from the change in Tether's market capitalisation within a year. [50] Since its introduction in 2014, Tether constitutes the archetypal stablecoin in being pegged to the US dollar, based on the Ethereum blockchain, and retaining the highest market capitalisation among stablecoins.

As Tether-like stablecoins are pegged to real currency and DAI stablecoins act as collateral for DEX trading, certain 'algorithmic' stablecoins are proposed as alternative stabilisation

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[46] FSB, *Regulation, Supervision and Oversight of "Global Stablecoin" Arrangements. Final Report and High-Level Recommendations* (2020), p. 9.
[47] ECB Crypto-Assets Task Force 'Stablecoins: Implications for Monetary Policy, Financial Stability, Market Infrastructure and Payments, and Banking Supervision in the Euro Area' (Occasional Paper No. 247) (2020).
[48] S. Aramonte, W. Huang, and A. Schrimpf, 'DeFi Risks and the Decentralisation Illusion', special feature in BIS *Quarterly Review* (December 2021), p. 25
[49] OECD, *Why Decentralised Finance (DeFi) Matters and the Policy Implications* (2022).
[50] Tether's market capitalisation is still less than 10 per cent of that of Bitcoin, as reflected in CoinMarketCap statistics at the time of writing: https://coinmarketcap.com/ (date accessed: 20 April 2022).

mechanisms. Basis was an ill-fated past example, but Ampleforth is an existing example which seeks to algorithmically adjust its circulation supply. Relative to other stablecoins and cryptocurrencies, the pricing and market capitalisation figures for algorithmic stablecoins are unspectacular. The subdued uptake attests to how these stablecoin versions are inevitably severely susceptible to investor distrust, given how little could objectively be known about algorithmic stabilisation techniques. [51]

Even if stablecoins are portrayed as a feasible counterbalance to cryptocurrencies and are currently being carried on the crest of a DeFi wave, there is not much that can be assured when dealing with any crypto-assets. Stablecoins are not immune from market turbulence, depending on the investment rate. Requests for redemption of underlying funds can result in 'runs' on reserves in times of declining confidence. [52] Clarity as to the exact scope of users' redemption rights cannot always be expected from providers. Risks can be quickly transmitted to financial institutions that are exposed to redemption calls from stablecoin investors.

Regulatory authorities' comprehension of possibilities for amplified systemic risk was enhanced after the proposed Facebook-led Libra initiative in 2019. Anticipation of one of the most potent Big Tech platforms unveiling a truly global stablecoin for its users sparked predictions – and fears – over the implications for monetary policy, financial stability and consumer protection. [53] As it transpired, the withdrawal of eBay, Mastercard, PayPal and Visa ended the venture's momentum. Yet, regulators realised that stablecoins could no longer be seen as the exclusive preserve of lightweight operators in trading exchanges. A renewal of the initiative as 'Diem', within the wider re-branding of the Meta business model, was also extinguished. However, the idea for digital money of some kind for the metaverse platform has held, particularly within a battle to compete with other social media platforms that have gained appeal during the pandemic. [54]

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[51] D. Bullman, D. Klemm, and A. Pinna, 'In Search of Stability in Crypto-Assets: Are Stablecoins the Solution?' (ECB Occasional Paper No. 230) (2019), 2.3. and 3.3.

[52] See D. Arner, R. Auer, and J. Frost, 'Stablecoins: Risks, Potential and Regulation' (BIS Working Paper No. 905) (2020), p. 8.

[53] See D. Zetzsche, R. Buckley, and D. Arner, 'Regulating Libra' (2021) 41(1) *Oxford Journal of Legal Studies* 80.

[54] For example, see N. Gordon, ''Zuck Bucks' are the Latest Digital Currency Scheme Brewing at Meta, after Facebook's Cryptocurrency Diem Collapsed' (Fortune, 7 April 2022); available at: https://fortune.com/2022/04/07/meta-facebook-crypto-zuck-bucks-metaverse-digital-currency/ (date accessed: 20 April 2022)

The magnitude of the international regulatory shock, and eventual reaction, was evinced through a succession of reports from the G7, [55] the International Organisation of Securities Commissions (IOSCO), [56] and the Financial Action Task Force (FATF). [57] Of the regulatory responses, the FSB's ten High Level Recommendations serve as a cohesive template, [58] but there is scarce specific guidance contained therein on how jurisdictions such as the EU could implement applicable standards. As argued in work produced by other international bodies, it is questionable as to whether recommendations couched in intentionally generalised terms can ever be sufficient. [59]

In view of the prompt responses of international authorities, it is worth asking what the fuss was all about. Rather than being treated like typical cryptocurrencies, could global stablecoins not be welcomed as another sign of relentless and inexorable innovations in financial and payment services, which can only be to the benefit of users? In economic circles, the merits and disadvantages of full currency competition are 'known', at any rate, in the context of the fierce debate initiated by Friedrich Hayek [60] and vociferously contributed to by Milton Friedman, Alan Schwartz (both in opposition to Hayek) and John Maynard Keynes (favouring Hayek's arguments of eroding government monopolies over national currencies through the establishment of an international reserve). [61]

It would be almost frivolous to compare a Diem-like global stablecoin with historical precursors like the 'greenback' private currencies of Civil War-era America. Aside from diminishing the monetary independence (and stabilising influence) of central banking authorities, a stablecoin which is driven by a powerful social media platform undoubtedly possesses its own unique systemic risks. [62] Meta has over 6.8 billion active users per month across its family of apps as a potential user base for a stablecoin. Meta could also have the

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[55] G7 Working Group on Stablecoins, 'Investigating the Impact of Global Stablecoins' (2019).
[56] IOSCO, 'Global Stablecoin Initiatives. Public Report' (2020)
[57] FATF, 'Money Laundering Risks from "Stablecoins" and Other Emerging Assets' (2019); available at: http://www.fatf-gafi.org/publications/fatfgeneral/documents/statement-virtual-assets-global-stablecoins.html (last accessed: 20 April 2022).
[58] FSB, *Regulation, Supervision and Oversight of "Global Stablecoin" Arrangements. Final Report and High-Level Recommendations* (2020).
[59] See IMF Policy Paper 2020/050, 'Digital Money Across Borders – Macro-Financial Implications', para. 74.
[60] F. Hayek, *The Denationalisation of Money* (London: Institute of Economic Affairs, 1976).
[61] The debate is considered from a contemporary perspective of digital payments and virtual currencies by Brunnermeier, James, and Landau, 'The Digitalisation of Money' (BIS, 2021), and by IMF Staff Discussion Note 16/03, 'Virtual Currencies and Beyond: Initial Considerations' (2016).
[62] As pinpointed in the oft-quoted statement of the former Governor of the Bank of England, Mark Carney, that Libra "would instantly become systemic": https://www.ft.com/content/189c1c66-91dd-11e9-aea1-2b1d33ac3271 (date accessed: 20 April 2022).

wherewithal to include bundling services, through wallet provision for users, and thereby accentuating the risk of anti-competitive practices. [63] Unlike Hayek's vision of traditional currency competition, the vast digital network externalities afforded to a big tech global stablecoin would allow for seamless conversion from one currency to another, the capacity to transcend international borders, and detrimental repercussions for monetary stability and users' data ownership rights. [64]

There might be some distance to travel before a global stablecoin is technically feasible and before a big tech platform has the necessary confidence to test the waters. For all of the previous worry among central bankers, a Diem-like initiative could learn much more from the launch of a CBDC, rather than *vice versa* in what a CBDC could learn from a Big Tech stablecoin. [65] Moreover, if stablecoins are benefiting from a contemporary efflorescence of DeFi and dApps, it logically leads to the suggestion that CBDCs could be a more reliable substitute, especially if regulatory uncertainty continues to envelop stablecoins.

Progress on CBDCs

The trialled integration of CBDCs within DeFi platforms is posited by academic commentators such as Chiu. [66] In theory, a CBDC should instil greater credibility and stability in protocols and networks which are shaped by the same speculative behaviour of cryptocurrency exchanges. In practice, CBDCs would need to be able to integrate within cross-border settlement systems which are interoperable and guided by uniform technical standards. There are pioneering efforts being undertaken through the BIS Innovation Hub which are instructive as to the viability of cross-border multiple-CBDC (mCBDC) platforms. [67] As a strand of blockchain technology, distributed ledger technology (DLT) can be applied to enable 'atomic'

[63] G. Claeys, and M. Demertzis, 'The Next Generation of Digital Currencies: In Search of Stability (European Parliament Monetary Dialogue Paper, Policy Department for Economic, Scientific and Quality of Life Policies, Directorate-General for Internal Policies) (2019), 2.1.
[64] Brunnermeier, James, and Landau, 'The Digitalisation of Money' (BIS, 2021). Network effects for currencies are also described in IMF Policy Paper 2020/050, 'Digital Money Across Borders – Macro-Financial Implications', para. 16 (p. 13), as occurring "when the private value of using a service or product increases with the number of other users" and that the internationalised use of a currency increases the likelihood of others adopting that currency.
[65] An argument which resonates with the views expressed by A. Fatás, 'The Conflict Between CBDC Goals and Design Choices' (VoxEU blog, 3 May 2021); available at: https://voxeu.org/article/conflict-between-cbdc-goals-and-design-choices (date accessed: 20 April 2022).
[66] Chiu, 'Building Out the Crypto Economy in Europe: A Proposal for Central Bank Digital Euros' (2021) 46(4) *European Law Review* 435.
[67] See BIS Innovation Hub website at: https://www.bis.org/about/bisih/about.htm (date accessed: 20 April 2022).

settlement finality in executing both legs of an exchange transaction instantaneously. Prominent examples of international collaboration on coordinated standards include Project Jura, involving Banque de France and the Swiss National Bank, whereby tokenised financial instruments (in essence, stablecoins) were settled through a common 'corridor network' (or mCBDC bridge) to Corda, a permissioned DLT system. [68] Project Jura built on the results from Project Helvetia, involving the Swiss National Bank and the SIX digital exchange, which facilitated conversion of real-time gross settlement balances (in Swiss franc) to CBDC on a DLT platform. [69] A current Innovation Hub mCBDC project is Project Dunbar which combines the expertise of Reserve Bank of Australia, Central Bank of Malaysia, Monetary Authority of Singapore, and South African Reserve Bank. [70]

For central banks to gain trust when postulating models of digital money, there would have to be tangible examples of the largest of central banks introducing CBDCs. As of yet, there are very limited examples. [71] As shown by piloting and testing, the hurdles for CBDCs are largely related to design and the avoidance of cryptocurrencies' pitfalls. Aside from the well-publicised Chinese digital yuan project, one of the most ambitious instances of CBDC trialling is the ECB's digital euro, commenced through the establishment of a Eurosystem High Level Task Force in September 2020. [72] Outside of the eurozone and the EU, the Bank of England has not committed to the launch of a CBDC, but, in April 2021, a joint Taskforce was created, prior to the release of a June 2021 discussion paper on digital money. [73]

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[68] https://www.bis.org/about/bisih/topics/cbdc/jura.htm (date accessed: 20 April 2022)
[69] https://www.bis.org/about/bisih/topics/cbdc/helvetia.htm (date accessed: 20 April 2022)
[70] https://www.bis.org/about/bisih/topics/cbdc/dunbar.htm (date accessed: 20 April 2022)
[71] According to R. Auer, C. Boar, G. Cornelli, J. Frost, H. Holden, and A. Wehrli, 'CBDCs Beyond Borders: Results from a Survey of Central Banks' (BIS Paper No. 116) (2021), only two CBDCs were live at the stage of their research being published: the Bahamas Sand Dollar and the Eastern Caribbean DCash. Projects which were underway included the Chinese digital yuan (or e-CNY) and the Swedish e-krona. It was subsequently reported that, as of mid-July 2021, 56 central banks have published work on CBDCs, mostly proposing retail CBDCs rather than wholesale CBDCs: R. Auer, J. Frost, L. Gambacorta, C. Monnet, T. Rice, and H. Song Shin, 'Central Bank Digital Currencies: Motives, Economic Implications and the Research Frontier' (BIS Working Paper No. 976) (2021).
[72] See ECB website at: https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html (date accessed: 18 April 2022).
[73] See Bank of England, 'Discussion Paper: New Forms of Digital Money' (2021) and the previous Bank of England, 'Discussion Paper: Central Bank Digital Currency. Opportunities, Challenges and Design' (2020). The Bank of England is currently engaged in collaborative research on CBDCs with Massachusetts Institute of Technology: https://www.bankofengland.co.uk/news/2022/march/boe-and-massachusetts-institute-of-technology-joint-cbdc-collaboration (date accessed: 20 April 2022).

As of July 2021, several "key learnings" are presented by the ECB, all of which convey the very nascent phase at which testing is occurring. [74] The ECB report outlines how blockchain- and DLT-based platforms are being considered for intermediaries and customers, instead of a centralised, or top-down, issuance of digital currency by the ECB. This decentralised model could plausibly suit a wholesale CBDC for institutional clients of a central bank (mainly the regulated financial institutions within a jurisdiction). There is an assortment of doubts regarding a decentralised model's operability for a retail CBDC, which could be issued to domestic customers and businesses, and used for cross-border payments. [75]

As some mitigation, the ECB affirms that a digital euro should enjoy the status of legal tender for the purposes of Articles 127 and 128 of the Treaty on the Functioning of the European Union (TFEU). Although account-based spending caps are considered by the ECB report, attracting an adequate array of retailers, who are prepared to participate in a digital euro trial, is an important practical obstacle to be surpassed before even attempting to implement account limits.

If a decentralised format were to be adopted – even within a 'hybrid' structure of central bank and intermediaries – there could be minimal safeguards for data anonymity for online transactions. As a hallmark of DLT systems, immutability precludes the removal or rectification of recorded data. [76] Decentralised systems can be perennially vulnerable to cyber-threats. Should worst come to worst and should funds be accessed through a cyberattack, there are constant ambiguities over users' proprietary rights, if any, on DLT networks. [77] Even when referring to features of technologies which underpin cryptocurrencies, the task is made more arduous for central banks (particularly in convincing the general public), as "[d]rawing inspiration from Bitcoin, a technology designed to circumvent authority, is clearly not the best blueprint for a public good provided by a central authority." [78] The unsavoury reputation of some cryptocurrencies can affect the depth of trust and popular thinking on CBDCs. It could

[74] ECB, 'Digital Euro Experimentation: Scope and Key Learnings' (2021).
[75] On interoperability issues for domestic and cross-border payments, see further L. Demmou and Q. Sagot, 'Central Bank Digital Currencies and Payments: A Review of Domestic and International Implications' (OECD Economics Department Working Paper No. 1655) (2021).
[76] See C. Millard, 'Blockchain and Law: Incompatible Codes?' (2018) 34 *Computer Law & Security Review* 843.
[77] See IMF Working Paper 20/104, 'A Survey of Research on Central Bank Digital Currency' (2020) and IMF Working Paper 20/254, 'Legal Aspects of Central Bank Digital Currency: Central Bank and Monetary Law Considerations' (2020).
[78] R. Auer, and R. Bohme, 'Central Bank Digital Currency: The Quest for Minimally Invasive Technology' (BIS Working Paper No. 948) (2021).

lead to the false impression that CBDCs are founded on the same kinds of principles. Public trust becomes more important when there are concerns over personal data. [79] Suspicions about state surveillance can also impair trust in CBDCs. [80]

Some commentary likens CBDC experimentation to the prisoner's dilemma of game theory, especially since China's announcements on its progress towards a digital yuan. It has been forecast that CBDCs could propel a multi-jurisdictional global race to the bottom. [81] However, an instinct towards gaining first mover advantages within an accelerated currency competition is not borne out by the evidence. From the outcomes of central bank surveys, domestic motivations in ensuring payments efficiency and robustness are prevailing over any competitive incentives. [82]

For emerging market economies and for Latin American and Caribbean countries, boosting financial inclusion is a paramount motive for trialling retail CBDCs. [83] In certain jurisdictions, remote rural communities are served by mobile phone and Internet infrastructure than by the presence of bricks-and-mortar banking premises. [84] CBDCs can also be used to erode shadow retail economies and thereby improve tax receipts. [85] Especially amidst the pandemic, a general decline in cash usage and an increase in card- and phone-based payments are frequently singled out as the major changes in payments. [86] However, even amidst increased digitalisation of

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[79] See Auer, Frost, Gambacorta, Monnet, Rice, and Song Shin, 'Central Bank Digital Currencies: Motives, Economic Implications and the Research Frontier' (BIS, 2021), p. 15.

[80] See synopsis of the reasons for the cessation of the Central Bank of Ecuador's CBDC in V. Afonso, S. Kamin and F. Zampolli, 'Central Bank Digital Currencies (CBDCs) in Latin America and the Caribbean' (BIS Working Paper No. 989) (2022), p. 33; and the discussion of the launch of China's digital yuan in Chainalysis, *2021 Geography of Cryptocurrency Report*, pp. 94–97.

[81] As but one example, these arguments are cogently made by S. Cecchetti and K. Schoenholtz, 'Central Bank Digital Currency: The Battle for the Soul of the Financial System' (VoxEU blog, 8 July 2021); available at: https://voxeu.org/article/central-bank-digital-currency-battle-soul-financial-system (date accessed: 20 April 2022).

[82] See C. Barontini, and H. Holden, 'Proceeding with Caution – A Survey on Central Bank Digital Currency' (BIS Paper No. 101) (2019); C. Boar, H. Holden, and A. Wadsworth, 'Impending Arrival – A Sequel to the Survey on Central Bank Digital Currency' (BIS Paper No. 107) (2020); and Auer, Frost, Gambacorta, Monnet, Rice, and Song Shin, 'Central Bank Digital Currencies: Motives, Economic Implications and the Research Frontier' (BIS, 2021).

[83] Afonso, Kamin and Zampolli, 'Central Bank Digital Currencies (CBDCs) in Latin America and the Caribbean' (BIS, 2022); and BIS Paper No. 123, 'CBDCs in Emerging Market Economies' (2022).

[84] The success of M-Pesa in Kenya being a foremost example of how payment services can thrive in these circumstances. As stated in BIS, 'CBDCs in Emerging Market Economies' (2022), p. 2, almost a third of adults worldwide in 2017 did not have a bank account, which correlates to over a half of African adults and approximately 40% of adults in Latin America and the Caribbean.

[85] Afonso, Kamin and Zampolli, 'Central Bank Digital Currencies (CBDCs) in Latin America and the Caribbean' (BIS, 2022), p. 17.

[86] However, this can vary, as shown in a European context by a finding that cash was used in 70 per cent of total transactions in Germany from 2006 to 2016, in contrast to 10 per cent of total transactions in Norway for the same

payments, an understandable reluctance – and even conservatism [87] – can be witnessed about CBDCs.

The transition to a more digitalised payments world supports the message which is consistently expressed by the ECB's Fabio Panetta (head of the Eurosystem High Level Task Force for a digital euro) that a digital euro could end up being 'too successful'. [88] However, to get to that success, a CBDC would need to find its place in the world by differentiating itself from cryptocurrencies and the multitude of crypto-assets. Preservation of trust in such innovations as CBDCs requires satisfactorily confronting the examples of crypto-assets which should be regulated. It also requires consideration of how CBDCs can interact with an evolving environment of digital platforms.

Confronting what should be confronted?

By focusing on the EU's regulatory stance in formulating a legislative response towards crypto-assets, this article argues that the proposed MiCA Regulation could be limited in its ability to adhere to the 'same activity, same risks, same rules' philosophy advocated by the Commission and EU policy-makers in respect of FinTech. The MiCA proposal has been the subject of commentary and appraisal, including from this author. [89] Of the various initiatives contained

period: Demmou and Sagot, 'Central Bank Digital Currencies and Payments: A Review of Domestic and International Implications' (OECD, 2021), Figure 5, para. 30, based on findings from T. Khiaonarong and D. Humphrey, 'Cash Use Across Countries and the Demand for Central Bank Digital Currency' (IMF Working Paper No. 19/46) (2019).

[87] An example of this inertia, but specifically in relation to customer hesitancy in switching bank accounts, is provided in Bank of England, 'Discussion Paper: New Forms of Digital Money' (2021), p. 31, which cites findings (from a 2020 Financial Conduct Authority 'Financial Lives' survey) showing how two-thirds of UK households held the same main current account for 10 or more years, and how only 9 per cent of UK households switched from their main accounts in the three years prior to the study.

[88] Speeches by F. Panetta, 'More Than an Intellectual Game: Exploring the Monetary Policy and Financial Stability Implications of Central Bank Digital Currencies' (Frankfurt am Main, 8 April 2022); available at: https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220408~980e39957b.en.html (date accessed: 20 April 2022); and 'Designing a Digital Euro for the Retail Payments Landscape of Tomorrow' (Brussels, 18 November 2021); available at: https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211118~b36013b7c5.en.html (date accessed: 20 April 2022).

[89] As examples: D. Zetzsche, F. Annunziata, D. Arner, and R. Buckley, 'The Markets in Crypto-Assets Regulation (MICA) and the EU Digital Finance Strategy' (2021) 16(2) *Capital Markets Law Journal* 203; E. Noble, 'Crypto-Assets – Overcoming Impediments to Scaling' (2020); available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3748343 (date accessed: 20 April 2022); J. McCarthy, J. (2021), 'Evaluating the EU's Digital Finance Strategy: Ambitious Glimpses of Future Regulation?', 36(9) *Journal of International Banking Law and Regulation* 379; and G. Ferrarini and P. Giudici, 'Digital Offerings and Mandatory Disclosure: A Market-Based Critique of MiCA' (European Corporate Governance Institute – Law Working Paper No. 605/2021); available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3914768 (date accessed: 20 April 2022).

within the Commission's Digital Finance Strategy, [90] MiCA is arguably the most daring in resolving to address one of the most contentious facets of FinTech regulation. Crypto-assets – and technological innovations in finance broadly – evolve in a fluid and multi-faceted manner. Sustained transformations in the nature and functions of crypto-assets signify that a legislative intervention could risk being obsolete, practically ineffective, or overly restricted to the EU jurisdiction. The growth in DeFi, and in altered forms of cryptocurrencies, infers that the dilemmas concerning regulatory arbitrage and systemic risk may not simply vanish following implementation of measures such as the MiCA proposal.

EU legislative response: the role of the MiCA proposal

The MiCA proposal is not strictly confined to what could conventionally be understood as cryptocurrencies. Even the definition accorded to a 'crypto-asset' within its provisions reflects the breadth of legal issues which the proposal is striving to clarify in one fell swoop. A crypto-asset is regarded as a "digital representation of value or rights which may be transferred and stored electronically, using distributed ledger technology or similar technology." [91] It is noteworthy that DLT is specified within what is an extremely concise attempt to define what is, in reality, a very expansive scope of "value or rights." It has been proposed that such "a wide, catch-all definition" would benefit not only from further clarification, [92] but also by distinguishing central bank money, whether it is issued on DLT or in digital form, from the crypto-asset definition. [93] A mention of cryptography could have necessitated inclusion within any form of definition.

Cryptocurrencies are within the ambit of the categories of crypto-assets set out in the proposal. The difficulty is in determining precisely which of the categories – if not all of them – should cryptocurrencies be deemed to fall within. Albeit lengthy, the classification of crypto-assets in the initial proposal is surprisingly neat. It probably should be less pristine if the proposal is to functionally capture the convoluted and overlapping parameters of different crypto-assets.

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[90] See Commission website at: https://ec.europa.eu/info/publications/200924-digital-finance-proposals_en (date accessed: 20 April 2022).
[91] MiCA Regulation proposal, Article 3(1)(2).
[92] ECB Opinion on a Proposal for a Regulation on Markets in Crypto-Assets, and amending Directive (EU) 2019/1937, CON/2021/4 (19 February 2021), para. 1.4.
[93] ECB Opinion on a Proposal for a Regulation on Markets in Crypto-Assets, and amending Directive (EU) 2019/1937, CON/2021/4 (19 February 2021), para. 1.3.

Title II of the MiCA proposal is on "crypto-assets other than asset-referenced tokens and e-money tokens." 'Utility tokens' are a principal example of Title II crypto-assets. A utility token is defined in the proposals as intending "to provide digital access to a good or service, available on DLT, and is only accepted by the issuer of that token." [94] Aside from specifically stating DLT rather than cryptography broadly, the access to goods and services (including software and games) is one of the tell-tale attributes of a cryptocurrency. However, it is not the only attribute.

It is debateable as to how utility tokens could be contrasted in all circumstances from Title III's classification of 'asset-referenced' tokens. Taken as it is presented in the proposal, asset-referenced tokens correspond to stablecoins. An asset-referenced token "purports to maintain a stable value by referring to the value of several fiat currencies that are legal tender, one or several commodities or one or several crypto-assets, or a combination of such assets." [95] To accommodate larger stablecoin arrangements, 'significant' asset-referenced tokens are classified through the criteria in Chapter 5 of Title III. [96] Title IV concentrates on electronic money tokens, as well as 'significant' e-money tokens, where these tokens are issued by an institution by virtue of Article 2(2) of the second E-Money Directive. [97] The vague boundaries with the features of stablecoins are underscored by the proposal's definition of an e-money token as "a type of crypto-asset the main purpose of which is to be used as a means of exchange and that purports to maintain a stable value by referring to the value of a fiat currency that is legal tender." [98]

Crypto-asset issuers must conform with disclosure obligations when making a public offer of crypto-assets in the EU or when seeking admission of crypto-assets to trading on a crypto-assets platform. [99] If informational requirements of crypto-asset white papers are aimed at

[94] MiCA Regulation proposal, Article 3(1)(5).
[95] MiCA Regulation proposal, Article 3(1)(3).
[96] By Article 39, the EBA may classify significant asset-referenced tokens by reference to at least three criteria from: customer base, value of tokens, number and value of transactions, reserve assets, the significance of cross-border activities, and interconnectedness with the financial system. Delegated legislation can be adopted to further specify the thresholds, subject to the customer base being no lower than two million natural/legal persons, the market capitalisation being no less than €1 billion, transactions being no lower than 500,000 per day or €100 million per day respectively, reserve assets being no lower than €1 billion, and the number of EU Member States where the tokens are used being no lower than seven.
[97] Directive 2009/110/EC of the European Parliament and of the Council on the taking up, pursuit and prudential supervision of the business of electronic money institutions amending Directives 2005/60/EC and 2006/48/EC and repealing Directive 2000/46/EC, (16 September 2009) OJ L 267/7.
[98] MiCA Regulation proposal, Article 3(1)(4).
[99] MiCA Regulation proposal, Recital (14), Article 4, Article 17 and Article 46.

promoting much-needed transparency in crypto-asset services, the benefit is diluted by the express provision that competent authorities will not require prior approval of a white paper, or of related marketing communications, before publication. [100]

Authorisation and operating conditions for crypto-asset service providers are listed within Title V. Prudential requirements (based on minimum capital and reviews of fixed overheads, including applicable insurance policies) are to be imposed. [101] There are organisational requirements, whereby members of a management body must have "the necessary good repute and competence, in terms of qualifications, experience and skills to perform their duties", as well as committing sufficient time to effectively carrying out their functions. [102] "Adequate arrangements" must be in place for safeguarding clients' crypto-assets and funds, [103] in conjunction with "effective and transparent" complaints-handling procedures. [104] Service providers are also to maintain and operate policies to prevent, identify, manage and disclose conflicts of interest. [105] The proposal specifies rules for the operation of trading platforms for crypto-assets, [106] and, arguably, the more radical steps are in Title VI's application of what could be viewed as 'normal' rules on the prevention of market abuse to crypto-assets trading. These are exemplified by requirements on disclosure of insider information, [107] and prohibitions on insider dealing [108] and market manipulation. [109]

The interventionist approach of the proposal is exemplified through the powers granted to competent authorities within Title VII. Competent authorities are empowered to, *inter alia*, require provision of information and documents, suspend, prohibit, or order immediate cessation of services, publicise compliance failures, and to carry out on-site inspections or investigations (other than at private residences). [110] In accordance with national laws, these powers are supplemented by supervisory and investigatory powers, whereby discovery and access requirements may be imposed in relation to information, documents and data, powers

[100] See MiCA Regulation proposal, Article 7(1). Notified crypto-asset white papers are communicated to the European Securities and Markets Authority (ESMA) for maintenance in a publicly available register (Article 57).
[101] MiCA Regulation proposal, Article 60.
[102] MiCA Regulation proposal, Article 61(1). This includes a prohibition on persons who have been convicted of offences related to money laundering, terrorist financing or other financial crimes: Article 61(3).
[103] MiCA Regulation proposal, Article 63.
[104] MiCA Regulation proposal, Article 64.
[105] MiCA Regulation proposal, Article 65.
[106] MiCA Regulation proposal, Article 68.
[107] MiCA Regulation proposal, Articles 77 and 79.
[108] MiCA Regulation proposal, Article 78.
[109] MiCA Regulation proposal, Article 80.
[110] MiCA Regulation proposal, Article 82(1).

of entry to premises can be granted, matters may be referred for criminal investigation, and assets may be frozen. [111] Cooperation agreements with third countries outside of the EU can also be facilitated and coordinated by ESMA in close cooperation with the EBA. [112] Within Chapter 2 of Title VII, details are provided of extensive administrative measures and sanctions for infringements which competent authorities may impose.

The rigour by which enforcement powers are stated in the proposal illustrates how seriously regulatory deficiencies are being taken. How far can the approach of imposing standard enforcement procedures be pursued? Is there a risk of a folly-in-waiting when attempting to treat cryptocurrency exchanges, trading platforms and wallet provision services by the usual measures that apply to corporate activities? Gauging from the warnings produced by the ESAs (European supervisory authorities of the EBA, ESMA and EIOPA), crypto-assets are not suitable for most retail consumers as investments or as means of payment and exchange. Following ESA warnings in 2013, 2018 and 2021 (directed towards investors in crypto-assets), the 2022 warning to consumers describes risks emanating from: extreme price movements; misleading information from social media influencers; absence of protection or recourse; complexity of crypto-asset products; fraudulent and malicious activities; market manipulation with opaque pricing and low liquidity; and hacks, operational risks and security issues. [113]

The Commission has avowedly maintained its commitment to the 'same activity, same risks, same rules' philosophy through the MiCA proposal and through the overall Digital Finance Package. [114] However, it could be contended that the principle is too simplistic when regulating crypto-assets. A cryptocurrency cannot be characterised as a utility token in every setting. If there are real-world reserves of value, a cryptocurrency can constitute a stablecoin or asset-referenced token, used for payment as well as being a utility token. Moreover, it could even represent an investment or a financial instrument, which would be tradeable as a security. Yet, the MiCA proposal refrains from substantively clarifying how overlapping features can be either identified or addressed. [115] Underwhelmingly, it is stated plainly that crypto-assets which

[111] MiCA Regulation proposal, Article 82(2).
[112] MiCA Regulation proposal, Article 90.
[113] ESAs, 'Warning to Consumers on Risks of Crypto-Assets' (ESA 2022 15) (17 March 2022).
[114] See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a Digital Finance Strategy for the EU, COM(2020) 591 final.
[115] It is a weakness recognised by the European Economic and Social Committee's Opinion on the proposal, (2021/C 155/05), para. 3.7., in recommending that "a greater degree of clarity could be achieved by developing more detailed specifications on the various sub-categories of crypto-assets and their scope."

qualify as financial instruments under the second Markets in Financial Instruments Directive (MiFID 2) [116] should remain regulated under existing EU legislation. There is no bid to devise principles or a test (akin to the US Supreme Court's *Howey* test in characterising securities [117]) to be applied on a case-by-case basis to differentiate between similar varieties of crypto-assets.

Crypto-evolution?: Regulatory concerns over decentralised finance

FinTech innovations and the decentralisation of financial services do seem to create new possibilities. The introduction of legal frameworks for open banking and for consensual third-party access to bank customer accounts has encouraged further consideration as to the future of digital finance platforms. By disintermediating lending through the use of DLT-based platforms, enhanced financial inclusion may well be achieved by the participation of increased numbers of customers and a broader range of services providers (assisted also by APIs (application programming interfaces)). The optimism engenders aspirations that decentralised platforms could be dedicated to sustainable finance, consumer credit, or provision of credit to those who would otherwise have difficulties in accessing finance from incumbent institutions. [118] Decentralisation could thereby be viewed as bolstering a financial 'democratisation', even if there is the counterargument that it could amount to anarchy. [119]

As emphasised by authorities such as the European Banking Authority (EBA), the challenges relating to platforms can moderate such idealistic expectations. [120] The incursion of Big Tech into financial services can cause spider-in-the-web, or winner-takes-all, network effects when services become concentrated around certain platforms. [121] Discussions around the impact of decentralised platforms on open finance are set to gather pace and, for now, are beyond this article's focus. DeFi is not quite the vista articulated by the most enthusiastic proponents of decentralised finance. Rather than conceptions of open banking, DeFi is rooted in activities

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[116] Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU (recast) OL L 173/349, Article 4(1)(15).
[117] *Securities and Exchange Commission v. W.J. Howey Co.*, 328 US 293 (1946).
[118] See E. Avgouleas and A. Kiayias, 'The Architecture of Decentralised Finance Platforms: A New Open Finance Paradigm' (University of Edinburgh Law Research Paper 2020/16); available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3666029 (date accessed: 20 April 2022)
[119] D. Zetzsche, D. Arner and R. Buckley, 'Decentralized Finance' (2020) 6 *Journal of Financial Regulation* 172.
[120] EBA, *Report on the Use of Digital Platforms in the EU Banking and Payments Sector* (EBA/REP/2021/26) (September 2021).
[121] D. Zetzsche, W. Birdthistle, D. Arner and R. Buckley, 'Digital Finance Platforms: Towards a New Regulatory Paradigm' (2020) 23(1) *University of Pennsylvania Journal of Business Law* 273.

which are customary to cryptocurrency trading, except with ostensibly more sophisticated layering.

The stacked layering of DeFi protocols creates regulatory quandaries, especially when crypto-assets are locked into, and held by, platforms. [122] As stablecoin is pledged as collateral for trading other crypto-assets, the resulting transaction fees (through Ethereum gas fees) are drawing over-collateralisation and ever larger frequencies of trading, which deters trading of minor amounts. The price increases for stablecoins and the growth of DEX exchanges such as Uniswap, Compound and dYdX are the consequences of the DeFi exuberance. [123] European markets have acquired a leading position for DeFi globally. [124] However, similar to the ICO bubbles of past years, the potential for fraud, scams, theft and hacking is never distant. [125]

As with any cryptocurrency exchange, there can be market manipulation and price distortions caused by 'whale trading' of concentrated users. Investors can engage in yield 'farming' by staking crypto-asset holdings as borrowings in return for interest fees or tokens. Price disparities can be exploited across exchanges, which especially incentivises the practice of uncollateralised 'flash loans' between users. Arbitrage opportunities are clearly also aided by the borderless expansion of DeFi. The lack of transparency around exchanges with augmented layers of trading, collateralisation and transaction fees [126] is exacerbated by the fact that many DeFi networks may not actually be permissionless. These protocols can be effectively controlled by the veto of a central core of users, which magnifies the risks of market manipulation. [127]

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[122] F. Schär, 'Decentralized Finance: On Blockchain- and Smart Contract-Based Financial Markets' (2021) 103(2) *Federal Reserve Bank of St. Louis Review* 153.

[123] On the bearing which DeFi is having on rates of global adoption of cryptocurrencies, see especially Chainalysis, *2021 Geography of Cryptocurrency Report*. According to findings cited in OECD, *Why Decentralised Finance (DeFi) Matters and the Policy Implications* (2022), pp. 9–10, crypto-assets held in Ethereum dApps were valued at $100 billion in November 2021, having been worth less than $2 billion in July 2020.

[124] See Chainalysis, *2021 Geography of Cryptocurrency Report.*

[125] For example, see R. Browne, 'Criminals have made off with over $10 billion in 'DeFi' scams and thefts this year' (19 November 2021); available at: https://www.cnbc.com/2021/11/19/over-10-billion-lost-to-defi-scams-and-thefts-in-2021.html (date accessed: 20 April 2022). See also L. Anker-Sorensen and D. Zetzsche, 'From Centralized to Decentralized Finance: The Issue of 'Fake-DeFi' (2021); available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3978815 (date accessed: 20 April 2022).

[126] For a summary of limitations to decentralised finance, including transparency concerns, see Y. Chen and C. Bellavitis, 'Blockchain Disruption and Decentralized Finance: The Rise of Decentralized Business Models' (2020) 13 *Journal of Business Venturing Insights* e00151.

[127] On the governance ambiguities of protocols, see especially OECD, *Why Decentralised Finance (DeFi) Matters and the Policy Implications* (2022). On observed patterns and risks of DeFi, see Aramonte, Huang, and Schrimpf, 'DeFi Risks and the Decentralisation Illusion' (BIS, 2021).

As crypto-assets evolve, there is also uncertainty about the kinds of crypto-assets and tokens which are traded. The issuance of non-fungible tokens (NFTs) is another cause for rising transaction fees on Ethereum. [128] As digital records of ownership of items such as art and collectibles, NFTs elude straightforward categorisation as crypto-assets. Since an NFT is supposed to be unique to a specific item, the property notionally should not be transferable for other crypto-assets, unless the copyright or licence over the items is also transferable. It is a matter of conjecture as to whether an NFT – as merely a record of ownership – could itself be classified as a security or investment, tradeable as a financial instrument. If an NFT is to be used for utility or payment purposes, it could, at best, be described as a hybrid. As explicated by Michael Huertas and Aylin Hikl, NFTs could necessitate a specialised EU Regulation as the MiCA proposal is unable to delineate the status of NFTs. [129]

With the fragmentation of emerging forms of crypto-assets and the absence of formal risk absorption mechanisms in DeFi (guarantee funds or any lender of last resort), tactful or specialised regulation may be needed sooner rather than later. 'Embedded supervision' is one method of ensuring regulation from within decentralised networks. [130] This approach would essentially require the network DAOs to conduct supervision and arrange for compliance with any applicable legislative requirements. In view of the opaque features of DeFi protocols, external oversight – involving auditing functions – would be the preferable option. [131] Notwithstanding the need for impartial supervision so as to mitigate risks to consumers and to financial stability generally, there should still be a measured attitude. As noted in OECD and BIS findings, active DeFi addresses constitute a tiny fraction of overall Ethereum addresses (less than 2%). [132] Furthermore, there are minimal proportions of bank equity held in crypto-related investments. [133]

The evolving traits of crypto-assets, as exemplified by DeFi and by NFTs, do vindicate the maintenance of robust, coordinated, but flexible, regulation. Stablecoins are already integral to

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[128] OECD, *Why Decentralised Finance (DeFi) Matters and the Policy Implications* (2022), Box 2.3 (p. 24).
[129] M. Huertas and A. Hikl, 'Non-Fungible Tokens (NFTs) – New Opportunities but Do They Need an EU Regulation?' (2022) 37(4) *Journal of International Banking Law and Regulation* 132.
[130] R. Auer, 'Embedded Supervision: How to Build Regulation into Blockchain Finance' (BIS Working Paper No. 811) (September 2019). The proposal was also considered in a DeFi context by Zetzsche, Arner and Buckley, 'Decentralized Finance' (2020) 6 *Journal of Financial Regulation* 172.
[131] As accepted by Zetzsche, Arner and Buckley, 'Decentralized Finance' (2020) 6 *Journal of Financial Regulation* 172, 202.
[132] OECD, *Why Decentralised Finance (DeFi) Matters and the Policy Implications* (2022), p. 26.
[133] Aramonte, Huang, and Schrimpf, 'DeFi Risks and the Decentralisation Illusion' (BIS, 2021), p. 31.

DeFi but the pegging of tokens to fiat reserves cannot alone reduce the risks of speculation. The wait for any trial of a CBDC within a DeFi protocol is likely to go on for the foreseeable future. Immediate difficulties stem from how best to implement practicable disclosure obligations and authorisation conditions for cryptocurrency platforms. As shown through the proposed MiCA provisions, placing a disclosure onus on issuers, platforms and exchanges means that competent authorities will be reliant on the information being furnished. Errors, inaccuracies and omissions – whether deliberate or not – cannot be entirely prevented within this regulatory model.

The disclosure approach could encourage regulatory complacency, particularly when there is negligible information about crypto-asset services. By the same measure, there could be suspicions about the veracity of information being disclosed to authorities, which may, accordingly, motivate unduly harsh manoeuvres against platforms and exchanges. As alluded to for the potential uses for open banking, there are genuinely innovative ideas at the foundations of DeFi. These elements of true innovation could be stifled by disproportionate regulatory intervention. Rather than being fixated on notifications of white papers, what could really impede regulators from adapting to cryptocurrencies' evolution is, firstly, the absence of dedicated centralised registers for ex ante disclosure (rather than ex post notification of published papers and standards), and, secondly, any limitations to authorities' enforcement powers (including for auditing) when investigating multi-layered staking and trading practices within decentralised platforms.

Conclusion

In the regulation of cryptocurrencies, there is as much at issue for the integrity of regulation as there is for cryptocurrency platforms, trading exchanges and service providers. If a regulatory framework is dependent on information being disclosed by issuers (not even in advance of white papers or other documents being published), a regulatory framework could have the semblance of a light-touch regime. At one level, authorities may not be as knowledgeable as necessary of market developments, such as DeFi. At another level, regulators could be so perpetually paranoid about risks and arbitrage to such a degree that there is little informed awareness of what may actually be happening within platforms and exchanges.

What make cryptocurrencies inimitably frustrating is how they can seem to "live in their own digital, nationless realm and can largely function in isolation from existing institutional environments or other infrastructure." The result of being shorn of a formal legal domicile is that cryptocurrencies might be regulated "only indirectly". [134] Excessive attention and interference could be disastrously counter-productive. Contrary to legislative aims, further frenzies of speculation could be prompted if there is a perception that all cryptocurrencies are being completely legitimised.

Yet, despite the risks, crude efforts to eliminate cryptocurrencies could stifle the benefits of technologies, such as blockchain and DLT, for key aspects of financial services, with CBDCs being just one innovative example. As described in this article, cryptocurrencies are progressively less 'isolated' now. There is now a plethora of interactions with other technologies, with variations of crypto-assets, and with areas of financial services.

The EU's MiCA Regulation proposal is a courageous move to regulate a strikingly complicated aspect of FinTech. The corollary is that legislation could be ensnared and suspended in time if it strains to address a present-day state of crypto-assets by attempting a straightforward categorisation of crypto-assets and by imposing standard enforcement rules. Single pieces of legislation, which may try to streamline nuanced and intricate innovations towards express rules, are rarely as comprehensive as they could be. The shortcomings could be particularly revealed by DeFi and NFTs. It emphasises the need for clear procedures of registration, advance disclosure and enforcement powers. If the urgency in guaranteeing that regulation can extend to evolving forms of crypto-assets is unconvincing, the danger is that it will be the consequent damage to regulatory frameworks which authorities will instead have to credibly confront and repair.

[134] BIS, 'Cryptocurrencies: Looking Beyond the Hype' (2018), p. 107.