

THE CONCEPT OF MONEY IN THE 4TH INDUSTRIAL REVOLUTION—A LEGAL AND ECONOMIC ANALYSIS

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This article explores some of the changes that the 4th Industrial Revolution brings to our understanding of money. Our analysis does not suggest that the only valid form of money is that provided or backed by the state. We rather argue that it is unlikely that money-like means of payment will prove sustainable in the long-term if not perceived as being vested with some form of legality. Still, mere legality will not prove to be sufficient for the new payment instruments to qualify as money. They must also prove to be able to serve as means of exchange/payment. A sharp reduction in value will diminish the credibility of the payment promise and thus user confidence/trust. Like acceptance of payment on sight, the use of money as a common measure of value is one of the most important properties of fiat (and metallic) money. Retention of value in times of stress is fundamental as regards the new assets' ability to act as a measure of value and its ability to fit with common perceptions of money. The requisite enquiry should be based on empirical studies of the intertemporal behaviour of the instrument. We suggest that fiat money aside, instruments that could eventually qualify as “money” ought to pass the dual test of legality and relative retention of value. This approach does not suggest a return to the metallic rule, which would limit free circulation of money. It is rather a pragmatic reformulation of the characteristics that means of payment, which do not enjoy the backing (will) of the state, must exhibit to enjoy quasi-money or money-like status. Assets that display high volatility are, thus, unlikely to fulfil the functions of “money” and should instead be dealt under the law of investments if they qualify as such.

I. INTRODUCTION

The origin of money is mired in history and there is no indication that money was invented in any one place. It seems that in “many societies, this origin is related to the acceptance of silver (or other commodities) as money”.¹ Silver was used as a medium of exchange, unit of account and store of value since the 3rd millennium

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¹ RJ van der Spek & Bas van Leeuwen, “Money and Trust” in RJ van der Spek & Bas van Leeuwen, eds, *Money, Currency and Crisis: In Search of Trust, 2000 BC to AD 2000* (UK: Routledge Exploration in Economic History, 2018) 1.

BC in Mesopotamia”.² In pure economic terms, the use of money was spurred by the fact that it could serve as an easy way to calculate the measure of value (unit of account).³ As such, it could speed up exchange and commerce, given that barter was ridden with frictions. Thus, money also became the key medium of exchange/means of payment, not just for the purchase of goods and services, but also for the extinction or repayment of debt obligations. In recent times and for the most part of the post-1945 era, the term “money” became synonymous with fiat money. The latter is a form of money that is not backed by metal, but rather has the approval (charter) of the sovereign state forming the express will (fiat) of the state with respect to its choice of token that it uses to collect its taxes.⁴

Fiat money is widely perceived to perform all three classic functions of money: unit of account, store of value, and means of exchange or payment. This does not mean though that all fiat is chartal money, since bank deposits are included in the M1, which is the narrowest measure of money in circulation.⁵ Deposits are either the result of bank loans or are used to generate bank loans based on the fractional reserve principle which is inextricably linked with so-called private money creation.⁶

Another, less formalistic, approach to money holds that money is premised on trust, which can be the essential ingredient for the proper functioning of a society. Under this approach, money can be seen as a form of communication akin to a letter, a text message, or a neolithic cave painting, albeit it being a communication of a specialised kind. Essentially, this approach accentuates another aspect of money: social acceptance.

Recent advancements in computing power, digital transactions, data storage, decentralisation of decision-making, and algorithmic processing of big data (together called the 4th Industrial Revolution), have added a radically new dimension to our idea of how money is delivered. This is especially the case in connection with the

² *Ibid.* For an excellent account of the history of money development see Christine Desan, *Making Money: Coin, Currency, and the Coming of Capitalism* (UK : Oxford University Press, 2014).

³ On this point, see Feng Zhu, “Money and Finance in the Digital Age: Some New Developments” in Marlene Amstad *et al*, eds, *Central Bank Digital Currency and Fintech in Asia* (Asian Development Bank Institute, 2019, e-book) at 126.

⁴ Georg Friedrich Knapp, the key proponent of the Chartalist approach to money, argued that: “Money always signifies a Chartal means of payment. Every means of payment we call money. The definition of money is therefore a Chartal means of payment”. Georg Friedrich Knapp, *Die Staatliche Theorie des Geldes (The State Theory of Money)*, abridged and translated by Lucas & Sanger (London: Macmillan & Company, 1924) at 38 [*Knapp*]. The leading works on the distinction between the metallic rule and the Chartalist approach to money are by distinguished London School of Economics economist Charles Goodhart: Charles A E Goodhart, *Money, Information and Uncertainty* (Cambridge, Mass: MIT Press, 1989) [*Goodhart*]; Charles A E Goodhart, “The Two Concepts of Money: Implications for the Analysis of Optimal Currency areas” (1998) 14:3 *European Journal of Political Economy* 407.

⁵ The M1 includes the most liquid portions of the money supply because it contains currency and assets that either are or can be quickly converted to cash. It is composed of physical currency and coin, demand deposits, travellers’ checks, other checkable deposits, and negotiable order of withdrawal accounts. It does not include financial assets, such as savings accounts and bonds. “Near money” such as savings deposits, money market securities, mutual funds, and other time deposits are included in the broader M2 indicator and “near near money” items such as certificates of deposit (CDs), are included in the M3.

⁶ See Michael McLeay, Amar Radia & Ryland Thomas, “Money creation in the modern economy” (2014) 1 Bank of England Quarterly Bulletin 14, online: Bank of England <<https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2014/money-creation-in-the-modern-economy.pdf?la=en&hash=9A8788FD44A62D8BB927123544205CE476E01654>>.

class of digital assets (cryptoassets)⁷ called cryptocurrencies. Cryptocurrencies do not constitute an acknowledgment of debt nor do they incorporate any promise of payment, nonetheless, they could still be used as a means of exchange based on custom and acceptance. But has the new technology changed the legal nature of money and its uses, or has it simply repackaged its delivery?⁸ Technology-based assets (tokens) like cryptocurrencies and planned forms of payment like Facebook's Libra claim to possess the same utilities as money. These instruments seem to be weaving a thick web of complex challenges. These challenges range from a potential (partial) displacement of fiat money in the sphere of payments, especially in international retail payments such as remittances, to a predicted future challenge over governments' right to monetary monopoly. Even more fundamentally, the flood of data attached to the new forms of payment gives rise to a number of issues as to its protection, misuse and possibility of harm,⁹ which have never been associated with money in the same way before.

A large-scale shift away from cash (or fiat) can also lead to new forms of social and political control, since even central bank digital money can be subject to controls that are unknown to holders of cash. Other examples of how things can go wrong with these new means of payment include financial stability risks that may be attached to any future bank stable-coins or Libra-like tokens and the risk of fraud.

This article explores the changes that the 4th Industrial Revolution brings to our understanding of money. We focus solely on the new digital means of payment in the broader sense. These new means of payment include the emerging classes of Bitcoin-type cryptoassets that are classified as exchange tokens and planned exchange instruments, such as Libra and bank stablecoins. Libra and bank stablecoins share the same technological infrastructure with cryptoassets but they are not cryptocurrencies per se.¹⁰

⁷ A summary of the most common characteristics of cryptoassets would define them as: (a) digital (intangible) archives, which, (b) can be controlled and transferred by means of cryptographic authentication (key), and (c) are "created", stored, and transferred through the use of a distributed ledger technology; (d) they can be decentralised whereby no central authority is responsible for maintaining the ledger; and (e) they are subject to governing rules established by the consensus of participants. The rules are enforced by key parts of community/circuit/system called nodes.

⁸ It has been said that "these new forms of currency are new in relation to the technology on which they are based but not so new when one considers their underlying legal-conceptual framework". Andreas Rahmatian, "Electronic Money and Cryptocurrencies (Bitcoin): Suggestions for Definitions" (2019) 34:3 *Journal of International Banking Law and Regulation* 115. See also Andreas Rahmatian, *Credit and Creed: A Critical Legal Theory of Money*, 1st ed (London: Routledge, 2019).

⁹ Lord Hodge, *The Potential and Perils of Financial Technology: Can the Law Adapt to Cope?*, online: United Kingdom Supreme Court <<https://www.supremecourt.uk/docs/speech-190314.pdf>>.

¹⁰ US regulators treat the bulk of these instruments as securities under the *Howey* test that takes a broad and functional rather than formalistic approach to what is an investment. For example, a recent Securities and Exchange Commission ("SEC") paper notes: "The so-called "*Howey* test" applies to any contract, scheme, or transaction, regardless of whether it has any of the characteristics of typical securities. The focus of the *Howey* analysis is not only on the form and terms of the instrument itself...but also on the circumstances surrounding the digital asset and the manner in which it is offered, sold, or resold (which includes secondary market sales)" (notes omitted). See SEC, *Framework for 'Investment Contract' Analysis of Digital Assets*, *Public Statement of the Strategic Hub for Innovation and Financial Technology*, at 1, online: SEC <<https://www.sec.gov/files/dlt-framework.pdf>>. This approach is not fully adopted by continental regulators where the legal nature of securities is inextricably attached with company law and contractual rights that securities incorporate offering governance or financial entitlements to shareholders and bond investors, and

The transformation that technology brings in the way that money is “packaged” and delivered extends also to fiat money which may soon be represented by an electronic token by way of so-called central bank digital coins (“CBDC”). These are predicted to be “money” recognised by statute and a durable means of payment, depending of course on the issuer’s standing and fiscal credibility. Similarly, the use of technology in the “packaging” and delivery of money-like instruments could extend to the creation of tokens that might have a role in global (wholesale) payments, challenging the grip that the USD has on global payment systems. The most characteristic idea in this context is Mark Carney’s concept of a “synthetic hegemonic currency”,¹¹ though the implementation of this idea could face several critical challenges.

Electronic money and the use of digital payment systems for the settlement of transactions is long established, although systems like Visa and Alipay use for settlement digital representations of fiat. Similarly, the use of non-state money has been tried in past free-banking episodes.¹² Hayek (and other libertarians) have also been talking about non-state-controlled money since the mid-1970s.¹³

Still, it is rather doubtful whether the emerging instruments can really prove durable, namely as trusted means of exchange/payment in times of crisis, without those properties being respected by law and in law. Aristotle made this point in the 4th century BCE, saying in an oft-quoted and remarkably prescient passage, “... money has been introduced by convention as a kind of substitute for need or demand; and this is why we call it *νμισμα*,¹⁴ because its value is derived, not from nature, but from law (*νομος*),¹⁵ and can be altered or abolished at will”.¹⁶ Aristotle was referring

even less so by United Kingdom’s (“UK”) Financial Conduct Authority (“FCA”), even though it accepts that there are overlaps between investment, exchange (money-like), and utility cryptoassets, and nevertheless recognises the existence of three distinct classes. See also Autorité des Marchés Financiers, *Discussion Paper on Initial Coin Offerings (ICOs)*, online: Autorité des Marchés Financiers <http://www.amf-france.org/en_US/Actualites/Communique-de-presse/AMF/annee-2017?docId=workspace%3A%2F%2FSpacesStore%2F5097c770-e3f7-40bb-81ce-db2c95e7bdae>; Financial Conduct Authority, “Guidance on Cryptoassets” (January 2019) UK Financial Conduct Authority Consultation Paper CP19/3, online: UKFCA <<https://www.fca.org.uk/publication/consultation/cp19-03.pdf>>.

¹¹ Mark Carney, *The Growing Challenges for Monetary Policy in the current International Monetary and Financial System*, online: Bank of England <<https://www.bankofengland.co.uk/-/media/boe/files/speech/2019/the-growing-challenges-for-monetary-policy-speech-by-mark-carney.pdf?la=en&hash=01A18270247C456901D4043F59D4B79F09B6BFBC>> [Carney].

¹² A free banking system does not have a lender of last resort and the supply of banknotes and deposits is determined by market forces supported by cash reserves or a commodity (such as gold). There have been several free banking episodes in Sweden. Also some identify as free banking the operation of state banks in the US until the Civil War. The longest free banking episode, however, marking over 100 years of relative stability, was in 18th and 19th century Scotland with three commercial banks enjoying the privilege to issue banknotes. See Sheila C Dow & John Smithin, “Free Banking in Scotland 1695-1845” (1992) 39 *Scottish Journal of Political Economy* 374 and Lawrence White, *Free Banking in Britain: Theory, Experience and Debate, 1800–1845*, 2d ed (London: The Institute of Economic Affairs, 1995), online: Institute of Economic Affairs <<http://www.iea.org.uk/sites/default/files/publications/files/upldbook115pdf.pdf>>.

¹³ FA Hayek, *Choice in Currency: A Way to Stop Inflation* (London: The Institute of Economic Affairs, 1976); FA Hayek, *Denationalisation of Money: The Argument Refined* (London: Institute of Economic Affairs, 1978).

¹⁴ *Ie*, money.

¹⁵ Law or custom.

¹⁶ Aristotle, *The Nicomachean Ethics of Aristotle*, translated by FH Peters, M A, 5th ed (London: Kegan Paul, Trench, Truebner & Co, 1893) at ch V.

to the more recent (to his time) invention of coinage rather than money generally and had in mind custom and practice as well as what we would now consider to be law stricto sensu. The French intellectual Bodin went a step further to hold that: “the right of coinage, it is contained within the law-making power, for only he who can make law can regulate currency”¹⁷ and the purpose of that was to preserve “the value, and the weight of the coinage”.¹⁸ Written at a time when France was torn apart by religious wars, no doubt Bodin viewed money as a unifying element within the state. The advent of fiat money has, however, altered the principles proposed by Bodin.

Today, money recognised in law and by law means more or less the following. First, fiat money issued under the law of the issuing state that is backed by the economic might of that state (with the notable exception of reserve currencies which are considered in section II below). Second, three possible outcomes arise from the duty of state bodies and the courts to protect users from false (fraudulent) representations of value: (a) some instruments will be held to be legal means of exchange/payment and thus valid money-like instruments whose promise is recognised by law, even if the promise is not state-backed, under what could be called “affirmed legality”; (b) some instruments will be held not to be illegal as not violating any present provision of the law under what could be called “negative clearance” type of legality;¹⁹ (c) some instruments will be recognised as evidently illegal in their economic function or substance (eg, fraudulent instruments) and holders cannot be protected in asserting their rights to the instrument, even if such rights can otherwise be protected under property law.

Fiat money is of course recognised as such by statute (see section IV below). Our analysis does not suggest, however, that the only valid form of money is that provided or backed by the state. We rather argue that it is unlikely that money-like means of payment will prove sustainable in the long-term if not perceived as being vested with some form of legality, even if such instruments are never banned or declared illegal. Naturally any legal analysis will not be static as the legal status of the instruments could be changed by legislation in the future. At the same time, for the broad mass of users, what matters is the perception of instrument legality, which in times of stress may also have some impact on instrument popularity/acceptance. Hence, we use the term “perceived” legality.

We further argue that mere legality will not prove to be a sufficient test for these new payment instruments to qualify as money. They must also prove to be able to serve as means of exchange/payment at all times. This is a very important distinction because most cryptocurrencies and other similar assets do not incorporate a debt promise, which for several commentators is an inextricable property of money.²⁰

¹⁷ Jean Bodin, *Les Six livres de la République (Six Books of the Commonwealth)*, abridged and translated by MJ Tooley (Oxford: Basil Blackwell, 1976) at 47.

¹⁸ *Ibid.*

¹⁹ The term “negative clearance” was frequently used in EU Competition Law to indicate that a specific commercial practice did not breach EU Antitrust Law. In the case of instruments that are the subject of “negative clearance” there is, of course, uncertainty as to whether they may be declared illegal in the future or be subjected to a legal and regulatory regime that is much more burdensome than at present.

²⁰ See Andreas Rahmatian, “Money as a Legally Enforceable Debt” (2018) 29:2 European Business Law Review 205 at 213 (“Money is an obligation or, from a debtor’s perspective, a form of debt”).

Thus, unless they exhibit other characteristics, such as being a reliable measure of value,²¹ it would be easier to dismiss their claim to being “money”.

The fact that most of the new exchange instruments, planned bank stablecoins aside, do not incorporate a debt claim and thus an obligation of repayment, or any other item of intrinsic value, makes the valuation of these assets firmly based on acceptance/user popularity. It follows that when, for psycho-social (market panics)²² or other reasons, some of these instruments experience reduced levels of usage/acceptance in times of stress, their value will diminish due to the way they are built/structured and priced. But a sharp reduction in value will, in turn, diminish the credibility of the payment promise and thus user confidence. This may be the outcome for the majority of unbacked instruments whose value is a representation of market prices or pegs on fiat on the basis of an algorithmic mechanism that regulates token circulation²³ rather than any actual or sufficient reserves.

This finding means that some of these instruments would not be able to fulfil the functions of “money” even if they did qualify as property under the law of certain jurisdictions and at common law. Like acceptance of payment on sight, the use of money as a common measure of value is one of the most important properties of fiat (and metallic) money. The new instruments whose popularity today is either due to irrational exuberance and heightened speculation or because they are a manifestation of social (relational) preferences that create positive network externalities must also prove their durability. Retention of value in times of stress is fundamental as regards the new assets’ ability to act as a measure of value and thus ability to fit with common perceptions of money. This is especially true with respect to one of the most critical properties of money, namely, the use of money as a record of value/“memory”.²⁴ The requisite test would be based on empirical studies of the intertemporal behaviour of the instrument.

We have already experienced this situation with cryptocurrencies like “Tether”, which eventually burned its insufficient reserves and became untethered.²⁵ The same

²¹ As it has also been noted by a recent Asian Development Bank report: “Money has a numeric or mathematical reasoning and technology will not change this basic function and any means of payment that claims to serve as money should perform this function at all times.” See Yuksel Gormez, “Central Bank Digital Currency: A Historical Perspective” in Marlene Amstad *et al*, eds, *Central Bank Digital Currency and Fintech in Asia* (Asian Development Bank Institute, 2019, e-book) at 245.

²² On the impact of irrational herding and panics on market prices, see DS Scharfstein and J Stein, “Herd Behavior and Investment” (1990) 80 *American Economic Review* 465 and David Hirshleifer, “Investor Psychology and Asset Pricing” (2001) 56 *Journal of Finance* 1533. For the downwards impact of herding due to panic impacts on stock prices when short sales are allowed see Emiliou Avgouleas, “A New Framework for the Global Regulation of Short Sales” (2010) 15 *Stanford Journal of Law, Business & Finance* 376 at section II.A.2.

²³ For a full explanation of how these mechanisms work, see section III.A (below) and note 55 (*infra*).

²⁴ The theory that money might serve as memory, namely as a short-circuited system of recording value, was in modern times posited by Narayana Kocherlakota an economist who served as President of the Minneapolis Federal Reserve Bank between 2009-2015. See N Kocherlakota, “Money is Memory” (1996) Federal Reserve Bank of Minneapolis Research Department Staff Report 218 and N Kocherlakota, “Money is Memory” (1998) 81:2 *Journal of Economic Theory* 232. Another way to express the same function of money is to classify it as a means of processing and storing private information about value. See Donato Masciandaro, “Comparing Traditional and New Money: Economics and Experiments” (2020) [unpublished, archived at Bocconi University].

²⁵ This is in fact what happened with the cryptocurrency “Tether”. Tether was initially pegged to the USD but in 2018, due to “concerns around the validity of Tether’s reserves of fiat currency corresponding

can happen to all similar instruments if the reserves set aside to back the parity prove to be insufficient to support redemptions and thus the parity, something that the Primary Fund,²⁶ a well-known money market fund, experienced in 2008 when it “broke the buck”.

Thus, we postulate here that instruments that could eventually qualify as “money” ought to pass a dual test: legality and relative retention of value at all times. This does not suggest a return to the metallic rule, which would limit free circulation. It is rather a pragmatic reformulation of the characteristics that private means of payment that do not enjoy the backing (will) of the state must exhibit to enjoy money-like status. And while intrinsic value may be important, the main reference here is to market price stability which enables the instrument to act as a reliable measure of value. In plain terms, this would mean that assets that display high volatility would be unlikely to fulfil the functions of “money”. Further evidence in favour of this hypothesis has been offered by events surrounding the COVID-19 crisis. For example, Bitcoin, which is the most liquid of cryptocurrencies, crashed by 48% on 12 March 2020 and rose by 20% by 24 March 2020 in line with the rest of the financial market, a 60% overall rate of volatility in the space of just 10 working days. On the other hand, even the most volatile emerging market currencies fell against the USD by less than 12% during the same period. This is a clear indication that cryptocurrencies (though not so much stablecoins) behave like any other financial investment and do not track patterns in money markets.²⁷ This is not to say that scarce digital assets are not likely to be used as safe assets during the COVID-19 pandemic, especially if the massive Central bank liquidity programmes to combat the economic impact of the COVID-19 pandemic result in a wave of competitive devaluations between the world’s principal currencies. But even then it will be in the form of commodity investments like fine metals rather than that of means of payment.

Any form of currency faces the theoretical risk of extinction, by break-up of the issuing State, or by some catastrophic event, or in times of universal crisis such as the 2020 COVID-19 pandemic. But to count as “money”, new forms of instrument

to the circulating amount of tokens”, dipped below the \$1 mark amid a wave of negative sentiment. See Gareth Jenkinson, “Untethered: The History of Stablecoin Tether and How It Has Lost Its \$1 Peg” *CoinTelegraph* (17 October 2018), online: CoinTelegraph <<https://cointelegraph.com/news/untethered-the-history-of-stablecoin-tether-and-how-it-has-lost-its-1-peg>>. Subsequently, Tether Ltd, the issuer of the cryptocurrency, announced that buyers of Tethers have no contractual right, other legal claims, or guarantee that their tokens will be redeemed or exchanged for dollars, and that Tether is a “fractional reserve stable-coin”. See Olga Kharif, “Tether Says Stablecoin Is Only Backed 74% by Cash, Securities” *Bloomberg* (30 April 2019), online: Bloomberg <<https://www.bloomberg.com/news/articles/2019-04-30/tether-says-stablecoin-is-only-backed-74-by-cash-securities>>.

²⁶ The \$62.6 billion Reserve Primary Fund “broke the buck” in September 2008 when its net asset value (“NAV”) fell to 97 cents per share. It was one of the first times in the history of investing that a retail money market fund had failed to maintain a \$1 per share NAV which money market funds use as a benchmark. See Kimberly Amadeo, *Reserve Primary Fund, How It Broke the Buck Causing a Money Market Run*, online: The Balance <<https://www.thebalance.com/reserve-primary-fund-3305671>>.

²⁷ See Billy Bambrough, “The Real Reason Behind Bitcoin And Crypto’s Massive \$50 Billion Crash?”, *Forbes* (12 March 2020), online: Forbes <<https://www.forbes.com/sites/billybambrough/2020/03/12/the-real-reason-behind-bitcoin-ethereum-ripples-xrp-and-litecoins-50-billion-crash/#6dd8504869b5>>; Billy Bambrough, “Coronavirus COVID-19 Will Go Down In History As The Social Media And Bitcoin Pandemic”, *Forbes* (23 March 2020), online: Forbes <<https://www.forbes.com/sites/billybambrough/2020/03/23/coronavirus-covid-19-will-go-down-in-history-as-the-social-media-and-bitcoin-pandemic/#53282ac63c10>>.

must show robustness through the vagaries of economic life, and not be what we have called elsewhere in this paper “fair weather” money. Without that, the instruments will not be suitable as a means of payment and above all as a measure of value.

It is sometimes claimed that legality does not matter in the crypto-space. It is correct that in a globalised world, the laws of individual jurisdiction are less relevant to the day-to-day use and storage of digital tokens in electronic wallets, especially if these tokens are held as a form of investment or a means to conduct payments within a closed-circuit environment. Still, any instrument that leaves the closed community of users or the closed-circuit system of payments to be used as a means of payment for the purchase of even basic real goods, such as a car or a chocolate bar and services, such as house cleaning, or real assets, such as a house, will be subject to some form of contractual or regulatory law. Leaving aside statutory and regulatory legal restrictions on money laundering, which are jurisdiction specific, some contracts performed by means of payment of monetised value contain an explicit or implicit choice of law clause (see section IV below). Similarly, such transactions tend to have other *de facto* links to a given jurisdiction, for example, because the contract or the payment involves a consumer in that jurisdiction.

There is also a view that only fiat currencies which enjoy *de jure* legality (and legitimacy) as constituted by law and which enjoy the institutional backing of an independent central bank can create the necessary trust. In September 2019, Yves Mensch, a member of the European Central Bank (“ECB”) Governing Council, signalling the ECB’s concerns with the emerging means of payment, especially Facebook’s Libra, stated the following:

Private currencies have little or no prospect of establishing themselves as viable alternatives to centrally-issued legal tender. Only an independent central bank can give money the institutional backing needed to make it reliable and able to win public trust ... I sincerely hope that the people of Europe will not be tempted to leave behind the safety and soundness of established payment solutions and channels in favor of the beguiling but treacherous promises of Facebook’s siren call.

This statement may be compared with an International Monetary Fund (“IMF”) note of July 2019 authored by two distinguished economists who adopt a much more nuanced position:²⁸

Economists beware! Payments are not just the act of extinguishing a debt. They are an exchange, an interaction between people—a fundamentally social experience. If two people use the same payment method, a third is more likely to join.

In a way, the gap between the two approaches could not be wider. This article suggests that the interplay of perceived legality and market use in times of stress will be of

²⁸ Tobias Adrian & Tommaso Mancini Griffoli, *The Rise of Digital Money*, online: International Monetary Fund <<https://www.imf.org/en/Publications/fintech-notes/Issues/2019/07/12/The-Rise-of-Digital-Money-47097>> at 8 [Adrian & Griffoli]. The same authors had noted that: “Cryptocurrency is by far the riskier...The standard deviation of day-on-day changes in Bitcoin prices is approximately 10 times higher than in most G7 currency pairs, and even a little higher than in the Venezuelan Bolivar to U.S. dollar exchange rate” (Adrian & Griffoli at 6).

fundamental importance in the establishment of new instruments as credible means of payment at all times, resolving, *de facto*, some of these dilemmas.

Several of the new means of payment/instruments that are the subject matter of this article, whether they belong to the instrument class that is called cryptoassets or not (*eg*, bank stablecoins or Libra), may still qualify as property and certainly as securities.²⁹ So if they are issued under the relevant securities regimes and comply with requisite disclosure requirements, they would be vested with (affirmed) legality. While the distinction between money and securities may not be as important as in the past when it comes to asset transfers, since the same principles of tokenisation that apply to most of these novel means of payment can also apply to the transfer of debt instruments, the key test here is not frictionless transfer over a blockchain environment. It is rather market willingness to accept an instrument as payment or treat it as a measure of value.

In this context, the article critically examines which new forms of payment (in a generic form) could fit the existing legal framework—especially in a common law context, as this is the most popular choice of legal system in most international commercial transactions—without major amendments. Realistically speaking, major amendments are unlikely since governments and the courts, even where they take a strong position in fostering innovation, rarely have very strong incentives to legitimise forms of payment (or currency) that compete with their own or are thought to be susceptible to fraud. This tension is set to intensify once several of the world’s biggest central banks make the leap to digitisation by offering their own electronic currency-like tokens.³⁰ As mentioned earlier, US regulators have already suggested that apart from fully decentralised tokens such as Bitcoin and Ethereum, the rest are subject to the statutory framework governing security investments.³¹

²⁹ This is certainly the approach of US regulators for the bulk of these instruments which seem to qualify as securities under the *Howey* test that takes a broad and functional rather than formalistic approach to what is an investment. See *supra* note 10.

³⁰ See William Suberg, “China’s Central Bank to Lead Real-World Pilot of Digital Yuan: Report”, *CoinTelegraph* (9 December 2019), online: CoinTelegraph <<https://cointelegraph.com/news/chinas-central-bank-to-lead-real-world-pilot-of-digital-yuan-report>>. It is reported that China has devoted five years of research and system development work to its forthcoming central bank digital currency (“CBDC”) and proceeded to conduct its first real-world pilot of the currency in December 2019. As reported by CoinTelegraph in English, reproducing an item from *Caijing*, China was planning to conduct the first real-world test of its CBDC in Shenzhen before the end of 2019 and such tests would possibly also include Suzhou. Specifically, under the auspices of the People’s Bank of China (“PBoC”), four major banks and major economic participants such as China Telecom would test digital currency payments. *Caijing* reported that in Shenzhen, the PBoC was encouraging a “horse race”, with each bank managing the digital currency differently, competing against each other in order to secure its model’s wider adoption in the future. See PBoC, 2020年中国人民银行工作会议在京召开 (The Conference of the People’s Bank of China 2020 held in Beijing), online: PBoC <<http://www.pbc.gov.cn/goutongjiaoliu/113456/113469/3955023/index.html>> [translated by author]. On 5 January 2020, the PBoC made a brief statement on its progress with the digital yuan stating that: “The research on digital fiat currency proceeded smoothly.”

³¹ Remarks by William Hinman, *Digital Asset Transactions: When Howey Met Gary (Plastic)*, online: SEC <<https://www.sec.gov/news/speech/speech-hinman-061418>> (“[A] digital asset transaction may no longer represent a security offering [if] the network on which the token or coin is to function is sufficiently decentralized ... [a]s a network becomes truly decentralized, the ability to identify an issuer or promoter to make the requisite disclosures becomes difficult, and less meaningful ... when I look at Bitcoin today, I do not see a central third party whose efforts are a key determining factor in the

The article is in five sections, including this introduction. Section II explains the evolution of fiat money as the key form of money and issues relating to its function as a store of value. Section III examines the key functions of some of the emerging means of payment. Section IV examines the legal framework governing money using the English and other common law systems as reference. Section V provides the conclusions.

II. FIAT MONEY AS STORE OF VALUE

A. Introduction

In the context of money and payments, one of the fundamental questions of our times is whether the new means of payment will be able to mount a credible challenge to fiat money. In the view of the authors, the answer to this question will not hinge on which theory of money will prevail but rather on which form of “money” will retain user confidence/trust at all times. Provided that the new instruments enjoy legal recognition, the answer to the question is inextricably linked with the retention by each type of “money” of its value as a means of exchange/means of payment and thus a valid record of value. As this approach is not linked to any notion of intrinsic value, fiat money should not be entirely excluded from this analysis. While fiat is firmly recognised as “money” by statute, still, in a world, where new means of payment claim to have the ability to displace fiat money, a discussion about user trust in fiat retains a central place. In the following paragraphs, we briefly discuss the evolution of fiat and the conditions that make fiat money a credible measure means of exchange/measure of value.

B. The Nature of Fiat Money

Fiat money is understood here to mean central bank or government money that is not backed by any metal or other commodity and is circulating in the economy through the banking system and by means of the performance of state functions like collection of taxes and public spending. Government backed paper money and banknotes have been in circulation for a long time: in the case of China, use can be traced to the 12th and 13th centuries,³² and to the 17th and 18th in the case of the West,³³ but this can primarily be seen as a development of the post-war period culminating in the

enterprise ... applying the disclosure regime ... to the offer and resale of Bitcoin would seem to add little value. And ... based on my understanding of the present state of Ether, the Ethereum network and its decentralised structure, current offers and sales of Ether are not securities transactions ...”)

³² See William N Goetzmann & Elisabeth Köll, “Paying in Paper – a Government Voucher from the Southern Song”, in Goetzmann & K Geert Rouwenhorst, eds, *The Origins of Value: The Financial Innovations that Created Modern Capital Markets* (London: Oxford University Press, 2005) ch 5 at 101-102.

³³ The florin, a fiat money, was managed by an early form of central bank, the Bank of Amsterdam. Stephen Quinn & William Roberds, “Death of a Reserve Currency” (2016) 12:4 *International Journal of Central Banking* 63.

1971 decision of the United States (“US”) to suspend the dollar’s convertibility into gold.

Freely transferrable instruments that incorporated debt claims such as promissory notes or banknotes and banker’s drafts were in wider circulation and were used to conduct payments without the transfer of coins since at least the Italian renaissance. Yet, nobody equated them with private creation of government (fiat) money. Bagehot wrote *Lombard Street* to explain the role of the banking system in creating liquidity for the economy and the duty of the central bank in supporting that function as the lender of last resort.³⁴ But he did not equate the discounted commercial paper that he accurately held to be a major source of funding for the British economy at the time with private money.

Moreover, the two known examples of major governments parting with metal (either the Gold Standard³⁵ or a bimetallic rule) were, first, the US government recognising paper money as legal tender alongside silver coins during the US civil war³⁶ and during the Great War in Great Britain due to government needs to fund the war effort. They were both short-lived episodes and after their conclusion, United Kingdom (“UK”) and US governments returned to the Gold standard.³⁷ In the post-1945 period, the gold standard was partly replaced by the fixed exchange rates regime of Bretton Woods.³⁸

It is, therefore, right to say that fiat money acquired its present prominence after the abolition of the Bretton Woods fixed exchange rates in 1971. Criticism merely focused on the issue of inflation that affected the use of money as store of value. Inflation was tamed by central banks—starting first with the late Paul Volcker’s Federal Reserve raising interest rates without any regard to the attendant political costs and subsequently through the 1990s Jackson Hole consensus on the value of price stability, the so-called *Great Moderation*.³⁹ The latter has also underpinned central bank independence for the past 25 years.

³⁴ Walter Bagehot, *Lombard Street: A Description of the Money Market* (London: Hyperion Press, 1873).

³⁵ “The gold standard broke down during World War I, as major belligerents resorted to inflationary finance, and was briefly reinstated from 1925 to 1931 as the Gold Exchange Standard. Under this standard, countries could hold gold or dollars or pounds as reserves, except for the US and the UK, which held reserves only in gold. This version broke down in 1931 following Britain’s departure from gold in the face of massive gold and capital outflows ... Between 1946 and 1971, countries operated under the Bretton Woods system ... [a] modification of the gold standard, most countries settled their international balances in US dollars, but the US government promised to redeem other central banks’ holdings of dollars for gold at a fixed rate of thirty-five dollars per ounce. Persistent US balance-of-payments deficits steadily reduced US gold reserves... [O]n August 15, 1971, President Richard M Nixon announced that the US would no longer redeem currency for gold.” See Michael Bordo, *The Gold Standard*, online: The Library of Economics and Liberty <<https://www.econlib.org/library/Enc/GoldStandard.html>> [Bordo].

³⁶ See *Legal Tender Act*, c 33, 12 Stat 345 (1862).

³⁷ Bordo, *supra* note 35. (“The gold standard was a commitment by participating countries to fix the prices of their domestic currencies in terms of a specified amount of gold. National money and other forms of money (bank deposits and notes) were freely converted into gold at the fixed price ... The period from 1880 to 1914 is known as the classical gold standard.”)

³⁸ See, *inter alia*, Barry Eichengreen & Mark Flandreau, “Editors’ introduction” in Eichengreen & Flandreau, eds, *The Gold Standard in Theory and History*, 2d ed (New York: Routledge, 1997) at 1.

³⁹ For an overview of the principles of the “Great Moderation” and the (partial) impact on it of monetary policy, see Ben S Bernanke, *The Great Moderation*, online: The Federal Reserve Board <<https://www.federalreserve.gov/BOARDDOCS/SPEECHES/2004/20040220/default.htm>>.

The monetary hegemony of the USD in the era after the second world war⁴⁰ was followed by a continuous widening of the US deficit and thus issuance of new US government debt. This was coupled by the rapid advancement of capital markets and financial innovation within the USA that has led to the creation of an economy that was funded largely independently of bank lending through very deep and open capital markets. As a result, the overseas holdings of USD mostly held by energy exporters to the USA in the 1970s, which were much recycled through the (offshore) international lending markets in USD (so called euro-markets), were followed by massive overseas holdings of both US government and private USD denominated assets.⁴¹ With the nearly global abolition of capital controls during the 1980s and the 1990s, the US economy became the principal destination of overseas investment and in turn, overseas private and state actors became major holders of US assets. With the expansion (explosion) of global financial markets and especially derivatives markets in the 1990s onwards, the USD graduated from being the predominant currency of international trade and thus government borrowing (to pay for imports) to being the currency in which the most liquid international financial assets are denominated. These assets are used today for the settlement of transactions in global financial markets, further reinforcing the grip of the USD.

In order to complete their economic and political integration, but also spurred by the US global monetary hegemony, the continental members of the rising European Union (“EU”) created their own common currency, the Euro, in the 1990s, which was, however, based on an incomplete architecture. Furthermore, China, as the rising economic power of the 21st century has also tried to internationalise its currency the RMB, although the effort has been hampered by trade surpluses, capital controls, access restrictions for foreign investors, and relatively shallow bond markets.

But this ominous and unabated battle of currencies has now been overshadowed, to some extent, by three important developments that today inform all discussions about a forthcoming challenge to the dominance of fiat money and of the USD. The first development was the near collapse of the western financial system during the Global Financial Crisis (“GFC”), which has raised questions about the banks’ privilege to create money through fractional reserve lending, prompting some commentators to call for the introduction of full reserve banking.⁴² Others asked for a return to the Gold Standard or for subtle forms of controlling money circulation through the banking system.⁴³

⁴⁰ The US monetary hegemony has led the former governor of the Bank of England, Mark Carney, to endorse the view that the global financial cycle is the dollar cycle. Carney, *supra* note 11 at 7. See also Helene Rey, *Dilemma Not Trilemma: The Global Cycle and Monetary Policy Independence*, The National Bureau of Economic Research Working Paper No. 21162 (2013), online: The National Bureau of Economic Research <<http://www.nber.org/papers/w21162>>.

⁴¹ See, *inter alia*, Thomas Costigan, Drew Cottle & Angela Keys “The US Dollar as the Global Reserve Currency: Implications for US Hegemony” (2017) 8 *World Review of Political Economy* 104. For the historical development of the USD’s hegemony and a yet unfulfilled prediction that the USD’s dominance in the global economy will decline see Barry Eichengreen, *Exorbitant Privilege: The Rise and Fall of the Dollar* (Oxford: Oxford University Press, 2011).

⁴² Laurence J Kotlikoff, *Jimmy Stewart Is Dead: Ending the World’s Ongoing Financial Plague with Limited Purpose Banking* (US: John Wiley & Sons, 2010).

⁴³ On the latter, see Morgan Ricks, “A More Detailed Blueprint” in Morgan Ricks, *Money Problem: Rethinking Financial Regulation* (US: Chicago University Press, 2016) 223.

The second development has been the fact that the prolonged use of quantitative easing (“QE”) programmes and the retention of very low to negative interest rates by the ECB, the US Federal Reserve and the central banks of other developed economies such as Japan, has caused a softening of exchange (“FX”) rates to the point that they were dubbed by developing countries as currency manipulation, leading to accusations about the revival of “beggar thy neighbour policies”. Extraordinary monetary policies have heightened doubts as to whether governments could hold the value of fiat money stable, enabling it to serve as a store of value. They have also stroked simmering discontent with the USD’s global dominance, giving fresh energy to the de-dollarisation debate. So far, the predominance of the dollar has not been challenged, despite of the call by Mark Carney, the former Governor of the Bank of England, for the creation of a synthetic hegemonic currency to be used as a new reserve asset.⁴⁴ Yet, the publicly announced plans of the People’s Bank of China to fully digitalise the RMB may be the true game-changer in this context.

The third and equally critical development relates to breakthroughs to the use of contemporary computing technology, mostly the strand of Distributed Ledger Technology (“DLT”) called blockchain, that can be used to create means of payment (and to some extent investment) that are neither fiat money nor e-money (*ie*, digital representations of fiat money) such as credit card, PayPal and Alipay payments. These new payment instruments may be premised on social/relational concepts of trust and value with no further anchoring to real economy assets, beyond the laws of supply and demand.

C. Fiat Money as Store of Value

Central banks hold that fiat is a store of value because it is backed by the economic might of the state. This, first, relates to the ability of the state to “back” the currency through payment of taxes.⁴⁵ We have also explained that the measure of strong money backing should also relate to price stability. Financial stability, namely the preservation of the ability of a country’s banking system to perform its economic role, should be taken to also play a role. Other indicators include a country’s taxable wealth and income, productivity rates and infrastructure investment or public spending to improve the lives of the less well-off.⁴⁶ On the other hand, budget deficits and, to some extent trade deficits, which invariably indicate loss of competitiveness, could mean an erosion of the value of state backing of fiat.

There are, however, a number of currencies, the predominant of which is the USD, whose value is not directly linked to the fundamentals of the national economy, the so-called reserve currencies. These are predominantly the currencies used in international payments, but they may also act as a store of value, “safe asset”, in the

⁴⁴ In an oft-reported speech at Jackson Hole in late August 2019 Mark Carney highlighted the perils for the stability of the global economy flowing from the hegemony of the USD and offered a blueprint for a new global currency. Carney’s proposal combines elements of the new technology and especially of tokens like Libra and the principles on which the IMF’s SDRs were built. See *Carney, supra* note 11.

⁴⁵ An excellent analysis of this point can be found in *Goodhart, supra* note 4 at 36.

⁴⁶ Especially well-functioning and well-funded education and public health and health insurance systems are regarded as major productivity boosts for any economy.

event of a crisis. The USD, especially, has enjoyed an “exorbitant” privilege because of its central position in post-war international payments.⁴⁷

The “Mercury approach/hypothesis” emphasises the importance of currency safety, liquidity, network effects, trade links, and financial connections in determining a currency’s role as reserve currency. The hypothesis explains why some currencies are used disproportionately as a medium of exchange, store of value, and unit of account by governments and private entities engaged in international trade and cross-border financial transactions.⁴⁸

The “Mars approach/hypothesis” is mainly applied to the choice of reserve currency or currencies. It emphasises strategic, diplomatic, and military power (together defined here as geopolitical power). If a country has such geopolitical power, foreign governments will see it to be in their national interest to conduct their cross-border transactions using its currency.⁴⁹ The leading power for its part will possess political leverage with which to encourage the practice. This hypothesis helps to explain some otherwise perplexing aspects of the currency composition of international reserves.

These findings mean that fiat money which does not represent a reserve currency retains value only when the fundamentals of a given national economy are sound, including inflation. A weak economy that runs trade deficits (when exports exceed imports) can debase the role of its currency as a store of value through competitive devaluations to boost exports. The practice of competitive devaluation (so-called “beggar thy neighbour”) has a negative impact on the role of state money as a store of value and was widely followed in the inter-war years. “Beggar thy neighbour” devaluations are still observed during episodes of economic turbulence.⁵⁰

Debasing the value of local fiat money may also happen through an expansion of the monetary base by means of direct central bank purchases of public (and in some cases, private debt) which affects the value of the national currency and thus of exchange rates while boosting the value of foreign currency.⁵¹ It was under these conditions that the term “currency wars” resurfaced in 2010, for the first time since the era of the Great Depression, gaining particular prominence when the Brazilian Finance Minister Guido Mantega used it to characterise the impact of US monetary policies on the trading parity of the US dollar.⁵²

⁴⁷ See also Barry Eichengreen, Arnaud Mehl & Livia Chitu, *How Global Currencies Work: Past, Present, and Future* (Princeton NJ: Princeton University Press, 2017).

⁴⁸ See Menzie Chinn & Jeffrey Frankel, “Why the Euro Will Rival the Dollar” (2008) 11 *International Finance* 49.

⁴⁹ See, *inter alia*, B Cohen, *The Geography of Money* (Ithaca NY: Cornell University Press, 1998); Benjamin J Cohen, *Currency Power: Understanding Monetary* (Princeton NJ: Princeton University Press, 2015); Steven Liao & Daniel E McDowell, “No Reservations: International Order and Demand for the Renminbi as a Reserve Currency” (2016) 60 *International Studies Quarterly* 272.

⁵⁰ *Eg.*, the present and past US administrations often make this claim against their main trade partners and chiefly the PRC and the Eurozone economies.

⁵¹ See C Fred Bergsten & Joseph E Gannon, *Currency Manipulation, the US Economy, and the Global Economic Order*, online: Peterson Institute Policy Brief <<https://www.piie.com/sites/default/files/publications/pb/pb12-25.pdf>>.

⁵² See Jonathan Wheatley & Peter Garnham, “Brazil in ‘currency war’ alert” *Financial Times* (28 September 2010), online: *Financial Times* <<https://www.ft.com/content/33ff9624-ca48-11df-a860-00144feab49a>>.

Thus, emerging means of payment, whether anchored in actual holdings of major reserve currency and short-term government securities (eg, Libra), or linked to certifiable commodity reserves (eg, a petro-coin), may compete with weak local fiat for day-to-day payments. But whether or not the token is used outside the black market will also depend on perceived legality. It follows that payment instruments that combine legality and retention of value at all times could prove to be a sustainable competitor to fiat money.

III. EMERGING MEANS OF PAYMENT: NATURE AND TAXONOMY UPDATE

A. *The Nature of New Means of Payment*

An influential IMF paper has classified contemporary means of payment as being five-fold:⁵³ (a) central bank money; (b) crypto-currency; (c) b-money, which currently is issued by banks; (d) electronic money, or e-money, offered by new private sector providers; and (e) i-money, short for investment money, issued by private investment funds. It has also categorised the new means of payment into three distinct categories according to their mechanics and economic function avoiding any legal classifications. It has thus divided them into: (a) unmanaged (or decentralised) cryptocurrencies (Bitcoin, etc), also called “public coins”; (b) stablecoins which incorporate a mechanism that maintains the coin’s parity with a reference value, which could be the USD or a basket of currencies; and (c) “managed” coins (stablecoins).

The only bank that has so far used blockchain technology to issue stablecoins has been JP Morgan and that is also only within a limited circle of clients. The JPM coin is not a cryptocurrency—as it cannot be mined outside the bank.⁵⁴ It is a permissioned payment token with a parity with fiat: in principle 1pSTC=1USD. Large banks can back the par with their balance sheet, but not infinitely, as their reserves are not unlimited. Moreover, the nature of stablecoins is bound to become a matter of controversy if they become anything more than a token for the settlement of internal transactions and payments within the bank and between the bank and its clients. Potential risks are also very substantial. Possibly for this reason, no bank stablecoin have been placed into wider circulation so far.

The first risk is legal. A bank stablecoin is *prima facie* a debt contract and may be one of two things: a mini-bond or a deposit, even if there is no provision for payment of interest. If it is the former, the issuing bank needs to publish a prospectus and follow all the disclosure and other investor protection safeguards prescribed by securities regulation in the country of the buyer of the stablecoin. On the other hand, if it is a deposit-like instrument, then its legality will be linked to the willingness of the home country’s deposit guarantee scheme to offer cover/protection to stable-coin buyers up to the national limit for insured deposits. A third route, treating stablecoins as stakes in money market funds, will much depend on the kind of licence that the

⁵³ Adrian & Griffoli, *supra* note 28 at 3.

⁵⁴ Strictly speaking, bank stablecoins would not qualify as certificates of deposit unless they bear some interest and they are transferable/negotiable between users outside the issuing bank’s network.

bank issuing the instrument holds. A money market fund stake would also present an instant differentiation from demand deposits as money market funds can gate redemptions at a time of high demand for repayments.

Another issue of equal importance for the viability of possible future bank stable-coins is whether the central bank acting as a lender of last resort would be willing to support this activity. Even in the event that stablecoins in USD or any other currency are issued against the receipt of fiat in the pegged currency, bank reserves have never been sufficient to cover all bank creditor claims in the event of a run. If the central bank does not offer such backing, a not unlikely scenario, then the 1prSTC=1USD parity may not prove to be unbreakable. Since the instrument will be based on a private contract and not a sovereign central bank's issuing power, the parties' rights will depend on the governing contractual arrangements.

The third class of so-called "managed" coins⁵⁵ also raises a host of questions. First, "managed" tokens that have the characteristics of cryptocurrencies, the parity being managed partly through reserves in the currencies covered and partly through ingenious stabilisation mechanisms to retain value/market price in good times, are vulnerable to runs. The ingenious part of the parity stabilisation formula is normally based on the stable expansion or contraction of the tokens' circulation (quantity)—namely the algorithmic formula tells the system when to mint or burn tokens on the basis of certain circulation thresholds. However, these tokens will fail to maintain any utility as store or measure of value (and thus as a means of exchange) in the event of massive redemptions. Furthermore, it is certain that these anxieties will be heightened if the function of the tokens has largely been based on doubtful approaches as regards their legality and regulatory compliance.

Some of these concerns could also apply to Libra-type instruments, although the latter plans to support the peg through a full reserve system.⁵⁶ Libra is neither a cryptocurrency nor fiat. Its value does not rise and fall purely on the basis of whatever value investors choose to give it. Rather, its sponsors maintain that it will be backed according to a specific ratio by five major fiat currencies (US dollars, euros, yen, sterling, and Swiss francs). The user can pay for or redeem Libra in those currencies or whichever other currency he or she chooses, be it Mexican pesos or South Korean won (as long as that currency is fully convertible). But the value of Libra will always be determined by the weighted value of the aforementioned

⁵⁵ *Adrian and Griffoli, supra* note 28 at 4. (The IMF notes about these "managed" instruments: "the algorithm underlying the creation of cryptocurrency attempts to stabilise its value relative to fiat currency by issuing more currency when its price is high and withdrawing currency from circulation when its price is low. We refer to these systems as 'managed coins' (some also call these 'algorithmically stabilised value coins').") Also see *Adrian & Griffoli, supra* note 28 at 6. (The IMF adds: "Managed coins exhibit lower price volatility by design. However, these use some variation of a simple system to stabilise value, which is not always credible. Issuers purchase coins when their value is low using another asset, and they sell coins when their value is high ... managed coins resemble managed exchange rates [t]heir outstanding stock is supposed to keep the exchange rate with fiat currency within tight bands. However, we know too well the common fate of pegs ... Providers of managed coins can also run out of assets to support the price of their coins, especially because they may stand on shaky fundamentals—use determining value, and value encouraging use.")

⁵⁶ Libra Association, *Libra White Paper: The Libra Currency and Reserve*, online: Libra Association <<https://libra.org/en-US/white-paper/#the-libra-currency-and-reserve>> [*Libra White Paper*].

five currencies. In principle the reserves will be invested in interest-bearing notes, certificates of deposit and bills of exchange, with the Libra Association retaining interest in lieu of payment of fees, since the tokens will not pay any interest to the holders.

The Libra Association intends for the total value of outstanding Libra to always be equal to the total (market) value of currencies it would hold in reserve.⁵⁷ That value will be enforced by the ability of holders to redeem their Libra at any time. This would automatically reduce both the amount of fiat held in reserve and the amount of Libra tokens in circulation. Thus, the system would, in principle, remain viable on the basis of money in-and money out.

But this principle would also give the Libra Association flexibility not to operate a full reserve system, especially if Libra proves a strong store of value by ending up in the day-to-day use for the purchase of real goods and assets, making redemptions unnecessary. In this case, would the Libra Association feel constrained not to invest the reserves into more lucrative but also more volatile, or sometimes even less liquid, securities market instruments? This approach would spell trouble if Libra is ever faced with a wave of redemptions, which central banks with an issuing privilege never face. In such a scenario, Libra would either have to sell reserves at discount, creating market turbulence, or find a way to cover any excess redemption calls through the support of a central bank, turning Libra into the latest too-big-to-fail institution.

To avoid this scenario, licensing regulators could require the Libra Association to adopt robust reserve management and monitoring requirements and issue any essential license to operate as a money changer. Alternatively, since reputation would be very important in this context, the Libra Association may consider, even if with some reluctance due to current low yields, to invest its reserves only in ultra-liquid (and low-yielding) government T-bills, lowering the risk of illiquidity in the event of a run, however unlikely that may prove to be.⁵⁸

The question of Libra's legal character faces the challenge of a lack of precedent. Nonetheless, as discussed in section IV below, the common law is rather flexible in its approach to "money". Therefore, this problem is more in relation to hostility by central banks across the globe. The reason for this hostility is that Libra-type currencies may compete head-to-head with local fiat money as a means of payment with the extra liquidity, possibly having an impact on domestic price-levels. If domestic monetary authorities find themselves unable to control the (inflationary) price impact by raising interest rates, they will thus experience some loss of monetary sovereignty added to the loss of monitoring and handling of domestic payments. The latter can be a valuable source of information about different aspects of the economy as well as information that may be of value to law enforcement authorities.

⁵⁷ *Libra White Paper*; *supra* note 56.

⁵⁸ In any case, currently the *Libra White Paper (ibid)*, states that its reserves will comprise: "[A] collection of low-volatility assets, such as bank deposits and short-term government securities in currencies from stable and reputable central banks." For a comprehensive discussion of the consequences of Libra trading when it goes live, see Dirk A Zetsche, Ross P Buckley & Douglas W Arner, "Regulating LIBRA: The Transformative Potential of Facebook's Cryptocurrency and Possible Regulatory Responses" [2019] University of New South Wales Faculty of Law Research Series 47.

In addition, Facebook's record in handling customer privacy has justly heightened the political antagonism against Libra tokens. In the same context, the possibility of other major technology companies such as Google to enter the space and offer users payment and other financial services may no longer be discounted, giving rise to major concerns about governance and user protection.

Questions about legality would not be in themselves major given the obstacles enumerated above if the nature of the product/contract was easy to define, but this is not the case. Legal characterisation will vary on a jurisdiction by jurisdiction basis and several legal and regulatory formulations may be applicable at the same time. For example, assuming that the Libra Association is not licensed as a bank, the instrument may not be characterised as a deposit since in most jurisdictions, deposit taking is restricted to specially licensed credit institutions.

On the other hand, Mark Carney's concept of a "synthetic hegemonic currency ... provided ... perhaps through a network of central bank digital currencies" to "dampen the domineering influence of the US dollar on global trade"⁵⁹ is not to use it as a mere unit of account, as was the ECU in the 1980s and 1990s, or a tradeable index,⁶⁰ but rather as a reserve asset. However, a reserve asset in an electronic form would likely be used in international payments even if that was not the original design, because it could make international payments cheaper and smoother. If such a token were to be used in international payments, it would pose a strong competitor to local fiat, due to design stability and presumed backing by major central banks. But the difficulties of building such a token are significant. There is no clarity as to which countries would back such an initiative, what the share of each constituent currency/participant central bank would be, nor who would be the issuer and manager of the currency reaping also the benefits of seigniorage. Nonetheless, this counts as a major conceptual contribution to the subject under discussion.

Another development involving central bank currencies is presently more important. While central bank digital money is not a new means of payment but a new mode to deliver fiat,⁶¹ it could still present a paradigm shift in several ways. First, it will be the first time that the transfer for cash-equivalent of fiat would be subject to continuous government monitoring,⁶² raising the surveillance of citizen behaviour, *eg*, spending habits, consumer preferences, and so forth, to intolerable levels. Second, if citizens have the ability to keep their savings in an electronic wallet that is directly connected with a payments system operated by the central bank, they would have no need to keep on demand (very low interest bearing) deposits with commercial

⁵⁹ Carney, *supra* note 11 at 15.

⁶⁰ For the latter, see Emiliós Avgouleas, "The Incomplete Financial Order and Spillovers from Instability in Trade and Currency Regimes" in Emiliós Avgouleas & David C Donald, eds, *The Political Economy of Financial Regulation* (UK: Cambridge University Press, 2019) 281.

⁶¹ As already mentioned, the only known plan for a CBDC which could be put in circulation in the near future is that of the PBoC. However, Singapore, Canada and Switzerland have also done advanced trials. See Yuan Yang & Hudson Lockett, "What is China's digital currency plan" *Financial Times* (25 November 2019), online: Financial Times <<https://www.ft.com/content/e3f9c3c2-0aaf-11ea-bb52-34c8d9dc6d84>>.

⁶² See Paul Pichler, Alexander Schierlinger-Brandmayr & Martin Summer, *Digital Money*, online: Oesterreichische National Bank (Austrian Central Bank) <<https://ideas.repec.org/a/onb/oenbmp/y2018iq3-18b2.html>>.

banks.⁶³ This move could inflict a major blow to the viability of the checking business of commercial banks, both undermining their profitability and lending capacity and, ultimately, the viability of their present business models. Third, if the issuing central bank does not subject the tokens to any export restrictions and other forms of exchange controls, which in this case would be in the form of blocking access to the tokens (money) in the account, their portability and capacity to be carried in tiny electronic wallets would mean that where the foreign token is the expression of a more credible currency than local fiat, there is a strong possibility that it would displace local fiat in consumer and other payments.

B. A Critical Assessment of the Perceived Advantages of New Means of Payment

IMF analysis suggests that the new digital means of payment present six complementary properties that could make them at least as popular as conventional fiat.⁶⁴ These are: (a) convenience, (b) ubiquity, (c) complementarity, (d) transaction costs, (e) trust, and (f) network effects. As regards *convenience*, the IMF paper rightly suggests that e-money is better integrated into our digital lives relative to bank money or central bank money. As suggested in our earlier essay on digital money, alongside safety of transactions, this is an element of great importance since access to money and its use is as simple as the use of a smartphone.⁶⁵ Thus, in certain countries where access to bank cash is fraught with danger and its transport unsafe, digital means of payment, indeed, enjoys an advantage over cash. It is, however, unclear why cryptocurrencies or other forms of payment are as convenient in their use as digital representations of fiat, such as AliPay in China or M-Pesa in Kenya. They probably are not.

⁶³ This is certainly one of the features of the Chinese plan. Based on an August report of a PBoC senior officer this is what we know for the PBoC plan: First, it would “provide for a “two-tier system” for issuance and redemptions. On the first layer, the PBoC would issue and redeem China’s CBDC via commercial banks. On the second layer, commercial banks would be responsible for re-distributing China’s CBDC to retail market participants.” On this second layer, the use of blockchain remains undecided with blockchain referred to “as an option”. Furthermore, it seems China’s CBDC would adopt a “loosely-coupled” design, which would allow fund transfers without the need for a bank account. The PBoC views the adoption of the two-tier system as the way to achieve its goal of replacing paper money without subverting the existing monetary issuance and circulation system. There would be a 1:1 pegging mechanism of the digital currency, and its interest-bearing characteristics. By putatively replacing China’s M0 money supply with its CBDC, the PBOC would anticipate improvements in the portability of retail payments, in Interbank clearing, where a distributed inter-bank ledger system would make clearing more efficient, and in Cross-border payments, where the CBDC would enable increased speed and lower costs for cross-border payment, ultimately promoting the internationalization of the renminbi. See Mu Changchun, 央行数字货币呼之欲出, 设计理念和技术架构首次曝光 (The Practice of Central Bank Legal Digital Currency) *ChainNews* (12 August 2019), online: ChainNews <<https://www.chainnews.com/articles/761536251153.htm>>. For a summary of the report in Chinese and of another description of the PBoC plan, see Jinze & Etienne, *First Look: China’s Central Bank Digital Currency*, online: Binance Research <<https://research.binance.com/analysis/china-cbdc>>.

⁶⁴ Adrian & Griffoli, *supra* note 28 at 8.

⁶⁵ William Blair & Emilius Avgouleas, “Opinion: A New Era of Global Payments Is Coming” *Caixin* (28 August 2019), online: Caixin <<https://www.caixinglobal.com/2019-08-28/opinion-a-new-era-of-global-payments-is-coming-101456077.html>>.

As regards *ubiquity*, the fact that cross-border transfers of digital money may be faster and cheaper than cash and bank deposits is a manifestation of market failure rather than a structural advantage. Payment service providers' failure to adjust downwards the costs of cross-border transfers in the digital era is offering a great disservice to their customers. The same applies to the elimination of *transaction costs*, since "transfers in e-money are nearly costless and immediate", making them more attractive than card payments or bank-to-bank transfers across borders. Again, this is a failure of the highly oligopolistic global payments industry to adapt to the demands of the digital era for instant transfers of funds and settlements of transactions rather than an intrinsic/structural advantage of the new means of payment.

A similar observation applies to the point about *complementarity*. While it may be true, as the IMF suggests, that payments for/settlements of transactions involving assets like stocks and bonds would become seamless and automated if these were moved to blockchains eliminating manual back-office tasks, this does not merely hold for new means of payments, especially cryptocurrencies. The same could be the function of digital representations of fiat, especially central bank digital currencies, perhaps moving on blockchain in the specific context.

Again, while *network effects*⁶⁶—better called positive network externalities, which means that "[i]f two people use the same payment method, a third is more likely to join"—rightly gives full value to the relational/sociological approach to "money", it does not connote any structural competitive advantage for some of the new means of payment, which are ridden with frictions and are much less scalable than fiat. It is conceivable that big supermarket chains or big internet retailers could one day develop their own tokens/means of payment that would be exchanged for value, hence building a massive payments network, given their size, consumer base, huge supplier chains and scale of sales. Social network platforms are equally likely to leverage on their user base to get a chunk of global payments, such as Facebook's attempt via Libra.

It remains unclear, however, how long it might take for hard to scale cryptocurrencies that lack any backing to build networks that can rival today's biggest payments systems. In addition, if such large payment networks are built one day, would they be as fast and reliable as legacy systems? This is going to be even more the case if major central banks digitise their (reserve) currencies and allow them to be put in global circulation via the use of digital wallets. There is no clear explanation as to why the bulk of unsophisticated consumers, at least those with no distinct libertarian ideology, would opt to transact in un-backed cryptocurrencies instead of foreign digitised money?

Of the IMF's six fundamental properties of new means of payment, the last one, *trust*, is in our view the most important. As the IMF states: "In some countries where e-money is taking off, users trust telecommunications and social media companies

⁶⁶ *Adrian & Griffoli, supra* note 28 at 8. The IMF explains very well what this means: "If merchants and peers also use e-money, its value to prospective users is all the greater. And as new users join, the value to all participants—existing and prospective—grows. The power of network effects to spread the adoption of new services should not be underestimated. Payments are not just the act of extinguishing a debt. They are an exchange, an interaction between people—a fundamentally social experience. If two people use the same payment method, a third is more likely to join."

more than banks.”⁶⁷ Worse, in some of the same countries there is no trust in local fiat money as a store of value. For example, following hyperinflation in Zimbabwe, the State currency was demonetised between 2009 and 2019, and the US dollar and South African rand became effectively legal tender.

The person or persons who used the name Satoshi Nakamoto sought to solve what he regarded as the trust problem inherent in conventional currencies by using innovative cryptography in the creation of Bitcoin.⁶⁸ However, money must also possess other properties, including being a credible measure of value/recording system. Thus, in countries where the polity neither trusts the institutions of the government nor the local currency, barring the possibility of using foreign fiat money as legal means of payment either through a currency board or by “legalising” the black market, local consumers might feel that they have more trust in means of payment such as Libra or possible future bank stablecoins.

With Libra-type payment mechanisms, fiat currency is displaced by a basket of currencies, with downside risks, but also with the potential to iron out exchange risk and minimise the risk of hyperinflation. The consequence is that this type of instrument automatically becomes a credible measure of value. It is this property of planned payment systems like Libra that could make them attractive, not merely that they might be a better store of value than local fiat. Some “safe assets”, including fine metal items circulating in the black market, can be a safe store of value, but they can also be subject to various frictions which makes them less usable than synthetic “currencies” like Libra or stablecoins.

At the same time, even if the use of Libra or of a foreign digital currency was allowed to stabilise an unstable economy, this development would not be cost-free for the “importing” national economy. In such a case, the impact on developing market economies will be even more accentuated in terms of importing the economic and monetary cycle of the countries issuing the dominant currency.

IV. A SURVEY OF THE LEGAL INFRASTRUCTURE

A. Law Matters

One of the key arguments of this article is that instruments that are not perceived to enjoy the protection of private and/or public law will not be able to survive as durable means of exchange under conditions of stress. The matter is, therefore, not merely theoretical/philosophical, but is also one of practical importance for the use of the new instruments beyond retail payments, especially in commerce and investment, which make up the bulk of the modern economy.

Most of these instruments may enjoy user confidence in the beginning or during good times due to custom created by social preferences, *eg*, social preferences to transact and pay for essentials using forms of money/means of payment that are not issued by governments. But when a generic economic event, *ie*, one that is not

⁶⁷ *Ibid.*

⁶⁸ Satoshi Nakamoto, Bitcoin P2P e-cash paper, online: Satoshi Nakamoto Institute <<https://satoshi.nakamotoinstitute.org/emails/cryptography/1/>>; Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, online: Bitcoin <<https://bitcoin.org/bitcoin.pdf>>.

related to specific cryptoassets or other payment-like instruments, creates a crisis of confidence in the market, it is predictable that only assets that are perceived to enjoy legal recognition of their status as a means of payment will be seen as credible means of payment. Naturally, a widespread economic, political instability or a natural catastrophe may also undermine the position of fiat as a reliable measure of value. But as fiat is recognised as money by statute what happens in that case is outside the scope of this paper.

Money-like instruments created with the aid of new technology have, in some cases, blurred the boundaries between money and investment. The latter have been so far two distinct legal and, to some extent, economic concepts. Investment instruments such as securities have traditionally been subjected, since at least the introduction of US New Deal statutes,⁶⁹ to serious barriers to entry, due to a high disclosure burden and other investor protection controls. However, these are barriers/frictions that neither public nor privately created fiat money have ever experienced.

To offer some answers on the matter of the perceived legality of the new instruments, we explore in the following paragraphs the meaning of money both in statute and even more importantly in common law.

B. *Lex Monetae and Lex Contractus*

The well-known passage from Knapp's book that "[m]oney is a creature of law", and hence "[t]he soul of currency is not in the material of the pieces"—*ie*, not connected to metals via some intrinsic value—"but in the legal ordinances which regulate their use"⁷⁰ mainly meant that money is only state money. Today, this could be paraphrased to mean that only those means of payment that can be recognised as such by law can be considered as money. This formulation would acknowledge that there is no reason to exclude from the legal definition and understanding of money means of payment that are not fiat, provided that their role as means of payment is not restricted by law. To some extent, this would be a modification of the *lex monetae*,⁷¹ yet it would fit well with common law's flexible approach as to what is understood as "money".

We suggest that there is no reason why a broader definition/legal understanding of "money" should be seen as a challenge to the competence of the state to exercise the three exclusive rights underpinning the *lex monetae*: the right to issue currency, that is, coins and banknotes that are legal tender⁷² within its territory; the right to determine and change the value of that currency; and the right to regulate the use

⁶⁹ The US Supreme Court's *Howey* case and subsequent case law have found that an "investment contract" exists when there is: (a) the investment of money, (b) in a common enterprise, (c) that is premised on a reasonable expectation of profits, (d) which are to be derived from the efforts of others. See *SEC v WJ Howey Co.*, 328 US 293 (1946). See also *United Housing Found Inc v Forman*, 421 US 837 (1975); *Tcherepnin v Knight*, 389 US 332 (1967); *SEC v CM Joiner Leasing Corp.*, 320 US 344 (1943).

⁷⁰ *Knapp*, *supra* note 4 at 1.

⁷¹ *Lex monetae* is the body of law which concerns particular aspects of money, and particularly currency and legal tender. Its role is reflected in the international law doctrine of monetary sovereignty.

⁷² Legal tender or legal money means money recognised as such by the law of land. It is the money issued by a monetary authority or government which (subject to the parties' agreement) cannot be refused by any person in payment for transactions. The tender or payment in this money constitutes by law the sufficient discharge of debt.

of that currency, or any other currency, within its territory.⁷³ The adoption of the euro as the single currency of 19 member States of the EU has shown that monetary sovereignty can be pooled.⁷⁴ It has also shown that money can exist as a single “book currency” alongside banknotes in different national currencies, as happened between 1999 and 2001 when the European Central Bank issued the first euro notes.

There is an important distinction between the *lex monetae* and the *lex contractus*, *ie*, between the sovereign right of a state in respect of its currency, on one hand, and the contractual relationship between private parties governed by private law on the other. It is the *lex contractus* that governs questions, for example, as to the time of payment for the purposes of contractual provisions as to payment.⁷⁵ Thus, the choice of currency or similar means of payment should be deemed to be within the rights of the parties to the contract. Its legal effect does not depend on the law governing the contract being the law of the country whose currency is the chosen means of payment.⁷⁶ Namely, while the public law of a country can be exclusive as to what is the legal tender in a specific country, that should not affect the choice of other means of payment by the contractual parties.

The right to choose the means of payment in a contract is also consistent with the approach adopted by English courts that have consistently avoided offering an exclusive definition of money. Still, in most cases the English courts have assumed that “money” is something which is issued by, or with the authority of, a State,⁷⁷ and to that extent have tended to adopt the State theory of money.⁷⁸

The courts also accept the face value of the right expressed in money. In *Banco de Portugal v Waterlow & Sons Ltd*⁷⁹ the Portuguese central bank commissioned printers to produce Vasco da Gama 500-escudo notes. The printers were also fraudulently induced to deliver notes printed from the original plates and so not distinguishable from the original set. Consequently, the bank had to withdraw from circulation the entire issue and replace both the genuine and fraudulent notes. The court held that the bank could claim damages based on the face value of the notes and not just the cost of physically producing them.

C. Money under Statutory Law

The terms “money” and “currency” may be used interchangeably in legal sources, currency referring to the currency of a specific State. The term “legal tender”, though

⁷³ François Gianviti, *Current Legal Aspects of Monetary Sovereignty*, online: IMF <<https://www.imf.org/external/np/leg/sem/2004/cdmf/eng/gianvi.pdf>> at 2; Luc Thevenoz, “The Single Currency and Other Countries: the Swiss Point of View” (1997) 3 *International Business Law Journal* 275.

⁷⁴ Rosa Lastra, *International Financial and Monetary Law*, 2d ed (UK: Oxford University Press, 2015) at para 1.59.

⁷⁵ *Mardorf Peach & Co Ltd v Attica Sea Carriers Corporation of Liberia* [1977] AC 850 (HL); *Spar Shipping AS v Grand China Logistics (Group) Co Ltd* [2016] EWCA Civ 982.

⁷⁶ Norbert Horn, ed, *German Banking Law and Practice in International Perspective* (Berlin: De Gruyter, 1999) at 33.

⁷⁷ *Adelaide Electric Supply C. Ltd v Prudential Assurance Co Ltd* [1934] AC 122 (HL), *Bonython v Commonwealth of Australia* [1951] AC 201 (PC).

⁷⁸ FA Mann, *The Legal Aspect of Money*, 5th ed (UK: Oxford University Press, 1992) at 15.

⁷⁹ [1932] AC 452 (HL).

sometimes used as a synonym for money or currency, is a distinct concept referring to what (contractual agreement aside) a debtor is entitled to proffer in repayment of a debt—tender of the State’s currency operates in effect as a defence to an action in debt. The terms may be found in the same statute. For example, in section 13 of Singapore’s *Currency Act*,⁸⁰ the Monetary Authority of Singapore has “... the sole right to issue currency notes and coins in Singapore and only such notes and coins issued by the Authority shall be legal tender in Singapore”.⁸¹ Similarly, in section 3 of the *Reserve Bank of India Act, 1934*,⁸² the Reserve Bank of India has responsibility to manage the currency, section 22 states that “the sole right to issue bank notes in India”, and section 26 states that “every bank note shall be legal tender at any place in India in payment, or on account for the amount expressed therein”. However, the development of modern payment systems has meant that the concept of legal tender has been of diminishing importance for quite some time.⁸³

The state theory of money is endorsed by the *Uniform Commercial Code* (“UCC”) of the US (which was mainly drafted in the 1940s and 1950s and is by enactment part of US State law). In its general definitions, the UCC states that “Money” means a medium of exchange “currently authorized or adopted by a domestic or foreign government”.⁸⁴ The key test is that “sanction of government, whether by authorization before issue or adoption afterward, which recognizes the circulating medium as a part of the official currency of that government” is required. But the UCC does not reflect the narrow view that money is limited to legal tender, although the existence of legal tender presupposes a state monetary system. The definition continues stating that, “[t]he term includes a monetary unit of account established by an intergovernmental organization or by agreement between two or more countries”. This is broad enough to extend to the euro, but not to Libra. It could seemingly extend to the IMF’s Special Drawing Right (“SDR”), but the IMF itself does not favour such an approach, saying that the “SDR is neither a currency nor a claim on the IMF. Rather, it is a potential claim on the freely usable currencies of IMF members. SDRs can be exchanged for these currencies”.⁸⁵

According to Article L.111-1 of the *French Monetary and Financial Code*,⁸⁶ “The currency of France is the euro”. This is therefore the only currency with legal tender status in France. Thus, crypto-assets cannot be qualified as legal tender in France. Consequently, they can be refused as payment without violating the provisions of Article R.642-3 of the *French Penal Code*,⁸⁷ under which it is an offence to refuse payment in banknotes and coins denominated in euro with legal tender status.

⁸⁰ Cap 69, 2002 Rev Ed Sing.

⁸¹ Up to a limit of 20 coins per denomination for each transaction to minimise inconvenience to vendors and their waiting customers should a customer wish to tender a large quantity of coins for payment.

⁸² Act No 2 of 1934.

⁸³ The US jurist Herman Oliphant had noted in 1920: “The narrower definition of money is inconvenient in practice ... [T]he greater part of our circulating medium is not legal tender.” See Oliphant, “The Theory of Money in the Law of Commercial Instruments” (1920) 29 Yale Law Journal 606 at 617.

⁸⁴ UCC §1-201(b)(24) (1952).

⁸⁵ IMF, “Factsheet: Special Drawing Rights”, online: IMF <<https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/14/51/Special-Drawing-Right-SDR>>.

⁸⁶ *Code Monétaire et Financier* art 111-1 CMF (*French Monetary and Financial Code*).

⁸⁷ *Code pénal* art 642-3 C pén (*French Penal Code*).

Article 1, section 10 of the *Constitution of the United States* prohibits States from making anything other than gold or silver coins legal tender, but it does not prohibit the Federal government from doing so. This was the seminal ruling of the US Supreme Court in 1871,⁸⁸ upholding (by a five-to-four majority) the constitutionality of the *Legal Tender Act 1862*,⁸⁹ enacted to enable the Federal government to issue paper money (greenbacks) to fund the civil war without raising additional taxes.

Crypto-assets are not “electronic money” under EU law, in that they are not issued on receipt of funds.⁹⁰ Therefore, and unlike electronic money, cryptoassets do not benefit from an EU guarantee to be reimbursed at face value in the event of an unauthorised payment. This does not necessarily mean that EU law is grounded in a narrow approach. The Fifth EU Anti-Money Laundering Directive (“5MLD”)⁹¹ has a legal definition of cryptocurrency, or virtual currency as it is called:

“[V]irtual currencies” means a digital representation of value that is not issued or guaranteed by a central bank or a public authority, is not necessarily attached to a legally established currency and does not possess a legal status of currency or money, but is accepted by natural or legal persons as a means of exchange and which can be transferred, stored and traded electronically.⁹²

This somewhat opaque definition is clearly intended to distinguish a “virtual currency” from the currency issued by a State, and therefore by inference, a virtual currency does not possess the legal status of money.

The 5MLD definition appears to leave open the possibility that a “stablecoin” which is “necessarily attached” to a “legally established currency” should be treated as “money”. In fact, the Court of Justice of the EU has ruled that the services of a Bitcoin exchange in exchanging Bitcoin for a traditional currency is exempt from VAT on the basis of the “currency” exemption (*Skatteverket v David Hedqvist*, Case C-264/14⁹³), but this decision should be taken as limited to the particular context.

⁸⁸ *Knox v Lee, Parker v Davis*, 79 US 457 (1871).

⁸⁹ c 33, 12 Stat 345 (1862).

⁹⁰ See European Commission, “Directive 2009/110/EC of 16 September 2009 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” [2009] OJ L 167/7 [*Directive 2009/110/EC*], Art 2(2).

⁹¹ European Commission, “Directive (EU) 2018/843 of 30 May 2018 amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing and amending Directives 2009/138/EC and 2013/36/EU” [2018] OJ L 156/43. [*Directive (EU) 2018/843*].

⁹² Directive (EU) 2018/843 amended Directive (EU) 2015/849 by adding a new Art 3(18). Again, virtual currencies should not to be confused with electronic money as defined in Art 2(2) of Directive 2009/110/EC.

⁹³ See Georgios Dimitropoulos, “Global Currencies and Domestic Regulation: Embedding through Enabling?”, in Philipp Hacker *et al*, eds, *Regulating Blockchain, Techno-social and Legal Challenges* (Oxford: Oxford University Press, 2019) 112.

D. Money at Common Law

1. Money at Common Law: A commercial rather than doctrinal approach

The common law has tended to avoid overarching definitions of money.⁹⁴ Classically, and in keeping with its character as a system developed by judges over time, the common law has considered legal questions as to the nature of money in the context in which they arise⁹⁵—and such questions arise particularly in relation to payment.⁹⁶

In a plethora of cases, English courts have been careful not to define money in a determinative or restrictive way, taking a broadly pragmatic commercial approach that may be seen as consistent with “societal/relational” theory of money. The leading case of *Miller v Race*⁹⁷ was decided at a time when banknotes were becoming common for higher value payments. In its way, this was as fundamental a change as e-money is now, since the past link (albeit sometimes tenuous) between money and the intrinsic value of coinage was completely absent.

Citing the needs of commerce, Lord Mansfield treated banknotes as negotiable, so that property passed to someone taking them in good faith. However, he placed them in a distinct category of property, saying that “... they are not goods, not securities, nor documents for debts, nor are so esteemed: but are treated as money, as cash, in the ordinary course and transaction of business, by the general consent of mankind; which gives them the credit and currency of money, to all intents and purposes”. The ratio of the decision is that, “[a] bank-note is constantly and universally, both at home and abroad, treated as money, as cash; and paid and received, as cash; and it is necessary, for the purposes of commerce, that their currency should be established and secured”.⁹⁸

This robustly commercial approach is not unique to money. It was also adopted by the courts to determine the negotiability of financial instruments generally. The leading case is *Goodwin v Robarts*⁹⁹ in which the court in reaching its decision took a deeply international as well as commercial approach,¹⁰⁰ having recourse to the law merchant, *lex mercatoria*, commercial custom and usage, the treatment of analogous instruments in 12th and 13th century Florence and Venice and textbooks from the US, Germany and France. This case is also notable for an early judicial recognition of what we now call (privately created) bank money at a time when the cheque was a novelty.¹⁰¹

The courts likewise have had no difficulty in distinguishing between money and commodities. In *Moss v Hancock*,¹⁰² the court ordered the return to the person, from whom it had been stolen of, a five-pound gold piece—the coin, though legal tender,

⁹⁴ There is no presumption in favour of any one meaning of the word “money”: *Perrin v Morgan* [1943] AC 399 (HL) (in the context of a will).

⁹⁵ Ewan McKendrick, *Goode on Commercial Law*, 5th ed (UK: Penguin, 2016) at para 17.05.

⁹⁶ See generally Victoria Dixon, ed, *Goode on Payment Obligations in Commercial and Financial Transactions*, 4th ed (London: Sweet & Maxwell, 2020, forthcoming).

⁹⁷ (1758) 1 Burrow 452 (HL).

⁹⁸ *Ibid* at 401.

⁹⁹ (1875) LR 10 Ex 337 (Exch), affirmed in *Goodwin v Robarts* (1876) 1 App Cas 476 (HL).

¹⁰⁰ William Blair, “Negotiability and Estoppel” (1988) 1 Journal of International Banking Law at 8.

¹⁰¹ *Goodwin v Roberts* (1875) LR 10 Ex 337, *Currie v Misa* (1875) LR 10 Ex 351.

¹⁰² [1899] 2 QB 111.

had a value greatly in excess of its face value. In effect the court treated the coin not as fungible money but as a commodity, on the grounds that this reflected the commercial transaction by which the defendant came to possess it.¹⁰³ Adopting the view of an economist of the day, the court defined money as “that which passes freely from hand to hand throughout the community in final discharge of debts and full payment for commodities...”.¹⁰⁴ Therefore, on the basis of this decision, it could be argued that any one of the new instruments, whether a cryptocurrency or a stablecoin that is regularly used for the discharge of debt obligations and is accepted for the purchase of goods and services, could qualify as “money” in common law.

As Joanna Perkins has suggested: “In principle, virtual currencies which have achieved status as a medium of exchange within a significant user community have a good claim to be regarded as money”.¹⁰⁵ This is an important test and sits squarely within the constituent analysis presented in this article. Only virtual means of payment that have a large user community and have continuous use as means of payment/measure of value, even in times of stress, would be regarded as money. The fact that such means of payment are not legal tender is not however in any way a restrictive element.

The courts’ pragmatism can also be found in the famous *Foley v Hill*¹⁰⁶ case which decided that that “the relation between banker and customer, as far as the pecuniary dealings are concerned, [is] that of debtor and creditor” with the money belonging to the bank, and not to the customer. This “historical breakthrough”¹⁰⁷ cleared the way for the legally acknowledged development of (privately created) bank money. As expressed by the US Supreme Court in 2016, “[w]hen a customer deposits funds, the bank ordinarily becomes the owner of the funds and consequently has the right to use the funds as a source of loans that help the bank earn profits (though the customer retains the right, for example, to withdraw funds)”.¹⁰⁸

Overall the case law shows that definitions are not static. As has been pointed out by Gleeson,¹⁰⁹ it does not follow that the question of whether a particular instrument is money or not should be a once-and-for-all determination. As he says: “[i]t seems clear that the question of what the law regards as money can only be answered by looking at what society itself regards as money.”¹¹⁰ In any case, the “enormous growth potential” for digital currencies “builds on the vision they provide for the disintermediation of payments between distant parties so as to result in increased speed, a decrease in costs, expansion of user bases, as well as enhanced security”.¹¹¹

¹⁰³ A similar view was adopted in the US authority of *Cordner v United States*, 671 F (2d) 367 (9th Cir 1982).

¹⁰⁴ [1899] 2 QB 111 at 116 (QBD).

¹⁰⁵ Joanna Perkins & Jennifer Enwezor, “The Legal Aspects of Virtual Currencies” (2016) 31:10 Journal of International Banking & Financial Law 569.

¹⁰⁶ (1848) 2 HLC 28 at 45 (HL).

¹⁰⁷ Ross Cranston, Emiliios Avgouleas *et al*, *Principles of Banking Law*, 3d ed (UK: Oxford University Press, 2017) at 190.

¹⁰⁸ *Shaw v United States*, 781 F (3d) 1130 (9th Cir 2015).

¹⁰⁹ Simon Gleeson, *The Legal Concept of Money* (UK: Oxford University Press, 2018) at 122 [Gleeson].

¹¹⁰ Gleeson, *ibid* at 4.

¹¹¹ Benjamin Geva, “Disintermediating electronic payments: Digital Cash and Virtual Currencies” (2016) 31:12 Journal of International Banking Law & Regulation 661.

On the other hand, it is the authors' view that Bitcoin operates more like a commodity, rather than money, and is both too unstable and insufficiently frictionless to be used generally as a medium of exchange.

2. Money as property

The view that money may also be a form of property is nothing new.¹¹² As Judge Richard Posner held in the case of *In re Oakley*,¹¹³ money is classified as a species of intangible personal property. The question arose in the context of different exemptions for tangible and intangible property under bankruptcy law, which is why the classification made a difference.¹¹⁴

As regards cryptocurrencies, an early legal decision is that of the Tokyo District Court in 2015, arising out of the collapse of the Tokyo based Mt Gox exchange, which again arose in a bankruptcy. The court held that Bitcoin lacked the necessary "corporeality" to be considered as property under the Civil Code.¹¹⁵ More recently, *B2C2 Ltd v Quoine Pte Ltd*,¹¹⁶ a decision of the Singapore International Commercial Court ("SICC"), applying contractual principles and trust law to a cryptocurrency trading case, held the opposite. The judge ruled that virtual currencies can be considered as property which are capable of being held on trust and analysed the doctrine of mistake in the context of contracts that are automatically entered into through algorithmic programming.

The judiciary has also contributed to the debate by means other than just case law. In November 2019, the UK Jurisdiction Taskforce¹¹⁷ (which is part of the UK LawTech Delivery Panel) published a Legal statement on Cryptoassets and Smart Contracts which reviewed the applicable English law principles and concluded that cryptoassets are to be treated in principle as property. This does not however equate so-called exchange tokens with money or money-like means of payment.

Applying this analysis, the London Commercial Court recently held that cryptocurrencies are a form of property capable of being the subject of a proprietary injunction. By granting injunctions against both the unknown persons who had extracted a ransom in Bitcoin and the crypto exchange to which the Bitcoin had been tracked, the court sought to maximise the possibilities of recovery and preventing the coin being exchanged into fiat.¹¹⁸

Even more important for the purposes of our analysis is a much older case decided by the late Elizabethan courts. In *Gilbert v Brett* ("Case of Mixt Monies"),¹¹⁹ the

¹¹² See generally JG Allen, "Property in Digital Coins" (2019) 8:1 European Property Law Journal 64.

¹¹³ 344 F (3d) 709 (7th Cir 2003).

¹¹⁴ As to money as personal property generally, see Michael Bridge *et al*, "Financing Devices Involving the Transfer or Retention of Title" in Michael Bridge *et al*, *The Law of Personal Property*, 3d ed (UK: Sweet & Maxwell, 2018).

¹¹⁵ Tokyo District Court, Tokyo, 5 August 2015, Case claiming the bitcoin transfer, etc (Mt Gox case), Heisei 26 (Year of 2014), (Wa)33320 (Japan).

¹¹⁶ [2019] SGHC(I) 03. Issues relating to mistake and breach of trust were then considered by the Singapore Court of Appeal in an important judgment at *Quoine Pte Ltd v B2C2 Ltd* [2020] SGCA(I) 02.

¹¹⁷ Chaired by Sir Geoffrey Vos, Chancellor of the High Court of England and Wales.

¹¹⁸ *Aa v Persons Unknown Who Demanded Bitcoin on 10th and 11th October 2019, Persons Unknown Who Own/Control Specified Bitcoin, iFINEX trading as Bitfinex, BFXWW Inc trading as Bitfinex* [2019] EWHC 3556 (Comm).

¹¹⁹ (1604) Davis 18, in English: (1605) 2 Howells State Trials 114.

court decided that money is tendered and received at nominal rates in discharge of debts without regard to any debasement that may have occurred to the physical coinage. The case confirmed the principle of monetary nominalism in the common law, which is taken as ruling out revalorisation on grounds of inflation (absent special terms such as gold clauses¹²⁰). This has been described as a fundamental principle of modern monetary law in all Western jurisdictions.¹²¹

As David Fox has commented,¹²² the case provided the foundation for the common law's use of nominal values to enforce monetary obligations, and so has remained important long after the demise of commodity money systems at issue in the case itself. Nominalism also offers support to the argument that only instruments that can serve as a reliable measure of value would prove to be sustainable as means of payment/exchange. It is hard to see how parties will accept to use in their contracts as a new method of payment an instrument that runs the risk of serious devaluation in full knowledge that the common law courts will not accept any revaluation.

3. Money and payment

Although money and payment are distinct concepts, they are linked, and in respect of payment in particular, there is a large body of law. The case law has tracked the development of money as it exists in commercial dealings—from metallic coins, to paper money, to bank money (deposits and transfers), to electronic money,¹²³ and recently as noted above, to cryptocurrency. In law, payment usually denotes the transfer of money or a money fund, or performance of some other act tendered and accepted in discharge of a money obligation.¹²⁴

The common law has developed a series of rules which have adapted as the monetary system develops through different forms. An example is the case of *Miliangos v George Frank Ltd*¹²⁵ where the court ruled that creditors under a contract are entitled to obtain judgment in a foreign currency where that is the money of account. In *Camdex International Ltd v Bank of Zambia*¹²⁶ it was made clear that any sum of money, whatever currency it is denominated in “retains its character as a medium of exchange”.¹²⁷ In procedural terms, up to enforcement, the foreign currency provides the link to measurement of interest rates rather than the domestic currency.

¹²⁰ Philip Wood, *Conflict of Laws and International Finance* (London: Sweet & Maxwell, 2019) at 9-014.

¹²¹ FA Mann, *The Legal Aspect of Money*, 1st ed (London: Oxford University Press, 1939) at 60-61, and for a full description see Charles Proctor, *Mann on the Legal Aspect of Money*, 7th ed (London: Oxford University Press, 2012) at para 9.10 *et seq.*

¹²² David Fox & Wolfgang Ernst, *Money in the Western Legal Tradition: Middle Ages to Bretton Woods* (London: Oxford University Press, 2016) at 243.

¹²³ Grace T Y Cheng, “E-money: Evolution or Revolution?” (2018) 33:2 *Journal of International Banking Law & Regulation* 57.

¹²⁴ Victoria Dixon & Charles Proctor, eds, *Goode on Payment Obligations in Commercial and Financial Transactions*, 3d ed (London: Sweet & Maxwell, 2016), at para 2-01. Professor Goode's analysis of the meaning of payment was accepted by the Federal Court of Australia in *Quality Publications Australia Pty Ltd v Commissioner of Taxation* [2012] 202 FCR 574 (FCA) at para 48.

¹²⁵ [1976] AC 443 (HL).

¹²⁶ [1997] EWCA Civ 798.

¹²⁷ As to payment in foreign currency, see *Libyan Arab Foreign Bank v Bankers Trust Co* [1989] QB 728 (QBD).

During the 19th century, the rise of commercial banks (and bodies offering similar services such as building societies, savings and loans, and credit unions) with reliable and accessible statements of account, and the development of reliable payment systems (such as cheque clearing) tended to blur the legal concept of money/currency/legal tender with rules as to payment. This remains true now with the availability of multiple methods of payment. The development of cryptocurrency, on the other hand, as has been explained, is not principally about payment.

Mobile payment applications, on the other hand, although hardly more than a decade old, have become ubiquitous at the consumer level. Once fiat money gets out of the bank account into a user's Alipay/WeChat Pay electronic purse, the system largely operates autonomously.¹²⁸ As far as users are concerned, the physical link with the fiat currency has disappeared—it is however the denomination in the fiat currency, and the financial infrastructure that comes with that,¹²⁹ that enables the systems to function. For users, “money” may seem like an increasingly remote concept, but nevertheless, it is the way money is articulated by the law, which underlies the whole process, that will matter the most in times of uncertainty.

Even if some of these instruments are not subject to the laws of default, in that they may or may not incorporate a promise of conversion to fiat, the value of most of these instruments is inextricably linked to the laws of supply and demand. Any fall in demand in time of stress affects their popularity and thus market price, which is in essence the only indication of their value. Therefore, in addition to other structural weaknesses, it is likely that a number of these novel payment instruments will not be able to serve as a common measure of value in times of crisis.

V. CONCLUSION

Electronic technologies developed in the context of the 4th Industrial Revolution can make it cheaper to access and easier to handle and exchange money. Arguably, the main paradigm shift the new technology brings about will be in the field of international payments, which could thus become safer, cheaper and more accessible. Overall renewed competition in the field of retail payments which can, for instance, greatly increase the value of remittances to consumers should be welcome. But would the new means of payment that the technological revolution brings with it, whether cryptocurrencies, stablecoins or other instruments, qualify as “money”?

Based on the preceding legal and economic analysis, this article has argued that a pluralistic approach to “money” that would extend its scope beyond fiat could be less problematic than is often predicted, provided that two conditions are fulfilled. First, the token itself or the right it incorporates must be recognised by law—and the position taken by common law is quite flexible on this point. Second, the token must

¹²⁸ Both Alipay and WeChat Pay are now trialling systems that allow customers to make payments in several retail chains in China by simply scanning their faces. Given the growing pace of facial recognition, how long will it realistically be before the human face takes the place of cash/card/phone? The risks here are not principally monetary, but go to data protection, illicit data linkages, and other potential abuses.

¹²⁹ Agustín Carstens, “The Future of Money and the Payment System: What Role for Central Banks?”, Lecture delivered at Princeton University (5 December 2019), online: Bank of International Settlements <<https://www.bis.org/speeches/sp191205.htm>>.

be able to retain its function as a measure of value at all times; if the token cannot perform this function at all times, user trust will be greatly undermined.

New means of payment should retain both properties, independent of any other utilities that cryptoassets possess, in closing the funding gap for start-ups or small issuers, or the socio-economic benefits that some instruments may eventually build, as is the case with so-called utility tokens. There is an ever-increasing overlap between the new means of payment and other classes of cryptoassets when it comes to reduction of transaction costs and of other frictions. But even with advancements in today's computing technology, it is hard to imagine investment-like instruments or utility tokens serving as a widely used and objective measure of value.

There are several reasons to justify regulators' desire to regulate the new instruments, including money laundering, heightened consumer protection concerns (fraud), and even financial stability issues if one of these new instruments, *eg*, Libra, builds scale. Nonetheless, the rationale to regulate/legislate should not include the assumption that the state is a monopoly supplier of credible money. Similarly, instruments whose value would collapse in times of stress would not be able to qualify as private or market-based money under any broad definition of money.

This should be seen in the context of payment. The inability to act as a safe measure of value seriously impacts on the function of any instrument to act as a means of exchange. Means of payment cannot only be credible in good times, namely as "fair weather" money. Therefore, any new instrument, which is not a digital representation of fiat, may not realistically be called "money" if it cannot be used as credible measure of value at all times.

The dual test this article presents for the classification of new instruments as "money" does not constitute a return to the metallic rule. It is broad enough to include new means of payment that contain rights recognised by law and which over a period of time are used in the economic and social process as a trusted measure of value. At the same time, the test is narrow enough to exclude instruments whose primary purpose is to act as investments rather than a means of payment used to measure value. This formulation inevitably excludes from our understanding of "money" in the 4th Industrial Revolution highly volatile instruments which users will not trust in times¹³⁰ of stress.

¹³⁰ In fact, as already noted in section I (above) and note 27 (*supra*) thereby, the market turmoil triggered by the COVID-19 pandemic, an event that should count as a major disturbance, has shown cryptocurrencies such as Bitcoin and Ethereum exhibiting many times higher levels of volatility than fiat currencies. Namely, the market price of these instruments has moved in a way that resembles stocks and other investments.