

REGULATING DECENTRALIZED CRYPTOCURRENCIES UNDER
PAYMENT SERVICES LAW: LESSONS FROM EUROPEAN UNION
LAW

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ABSTRACT

Several years after the inception of the most dominant cryptocurrency, bitcoin, the European Central Bank in 2015 indicated the need for establishing legal clarity by relevant authorities through explaining how the current legal framework applies to cryptocurrencies. Three years later, no meaningful step has been taken by any of the European Union (EU) institutions including the parliament. By examining the EU's legal framework governing payments services, including the Single Euro Payment Area (SEPA) Regulation, the Electronic Money Directive, the Payment Services Directive and the proposed AML/CTF Directive, this article concludes that (a) because the existing payment services laws apply to payments effected in currencies (legal tenders) and cryptocurrencies are not defined as currencies under the EU law or the laws of member states, they do not cover cryptocurrencies. It also argues that it is impossible to design *sui generis* payments services law for cryptocurrencies without curbing their essential features, especially decentralization. Lastly, the article proposes centralization and the creation of state cryptocurrency as possible solutions moving forward and examines their strengths and challenges.

Keywords: Cryptocurrency, Bitcoin, Blockchain, Payment Services, Technical Deficiency, Decentralization, State Cryptocurrency

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INTRODUCTION

Not long ago, it was acceptable to define a cryptocurrency as digital peer-to-peer currency created by cryptography¹. But such a definition is no longer universally valid because despite the fact that the term currency appears in cryptocurrency, there is a strong argument that a cryptocurrency is not a currency² and today there are new kinds of tokens that indeed qualify clearly as security³, hence negating the notion that cryptocurrencies are peer-to-peer currencies, or at least casting doubt on it.

A further explanation of cryptocurrencies is likely to state that unlike traditional currencies issued by the central banks, a cryptocurrency has no central authority that controls its creation and circulation.⁴ Yet, the New Generation Cryptocurrencies (NGCs) created by initial coin offering provide counter-examples to the narrative of lack of central authority running a cryptocurrency⁵. Some of the NGCs are fairly centralized and there is an entity which has the upper hand in their creation and distribution⁶. Consequently, if there is one lesson to be learnt from the evolution of cryptocurrencies, it is that there is nothing constant in the definition of a cryptocurrency. The only constant is the fast evolution of cryptocurrencies and businesses centred on them and the lack of robust legal framework regulating them in many areas.

This article singles out the European Union's payment services law to analyse whether tailor-made payment services law for cryptocurrencies could be designed. A task of paramount importance for this article is exposing the

¹ See generally Timothy Bierer, *Hashing Out: The Problems and Solutions Concerning Cryptocurrency used as Article 9 Collateral*, 7 J. OF L., TECH., AND THE INTERNET 79 (2016) 81; Aaron Wright & Primavera De Filippi, *Decentralized Blockchain Technology, and the Rise of Lex Cryptographia*, (March 2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2580664.

² Mitchell Prentis, *Digital Metal: Regulating Bitcoin as a Commodity*, 66 CASE WESTERN L. REV. 609 (2015), 626.

³ See Arjya Majumdar, *A Regulatory Outlook on Initial Coin Offerings*, OXFORD BUS. L. BLOG (Aug 3, 2017), <https://www.law.ox.ac.uk/business-law-blog/blog/2017/08/regulatory-outlook-initial-coin-offerings>. Hacker & Thomale make distinctions between three types of token archetypes, namely, currency, utility and investment token and argue that only investment tokens qualify as securities. See also Hacker, Philipp and Thomale, *Chris, Crypto-Securities Regulation: ICOs, Token Sales and Cryptocurrencies under EU Financial Law* (November 22, 2017), p. 43. Available at SSRN: <https://ssrn.com/abstract=3075820> or <http://dx.doi.org/10.2139/ssrn.3075820>.

⁴ See Matthew Kien-Meng Ly, *Coining Bitcoin's "Legal Bits": Examining the Legal Framework for Bitcoin and Virtual Currencies*, 27 HARV. J. OF L. & TECH. 588 (2014) at 590; R. Ali, J. Barrdear, R. Clews, and J. Southgate, *Innovations in payment technologies and the emergence of digital currencies*, 54 BANK OF ENG. Q. BULLETIN 262.

⁵ *Supra* note 3.

⁶ *Id.*

ideological nature of the debate on the regulation of cryptocurrencies, as a result of which many exaggerated claims regarding cryptocurrencies have escaped unquestioned in literature dealing with law and technology. The result of this uncritical reception of whatever industry experts claim about cryptocurrencies and pretending that nothing happened when those claims turned out to be false or exaggerated is lack of credibility in intellectual debates and of regulatory efforts.

One of the narratives that have been advanced is that cryptocurrencies would help bank the unbanked.⁷ This claim has been one of the buzz words that have been spreading around, but when the value of the major cryptocurrencies became unaffordable, not just to the unbanked but to the middle-income earner⁸ and transactions in cryptocurrencies are exceedingly technical and risky, it is clear that cryptocurrencies have nothing to do with the unbanked. Just to be clear, the so-called unbanked are those who have no access to financial services such as credit card or debit card⁹. The claim that cryptocurrencies would give the unbanked access to financial services was clearly bogus from the very outset and proven to be false now. But the claim is now buried under more junk news reports on the internet and nobody is willing to go to the archives and pull them out to ask the industry experts what they were thinking when they made the claim. Highlighting on the campaign strategy of early bitcoin developers, Former Greek Finance Minister Varoufakis stated:

There is a Bitcoin aristocracy, the Bitcoin early adopters, who accumulated very cheaply Bitcoins from the beginning. They have every reason to talk this thing up and lure people into like a Tulip-like mania or a pyramid, making extravagant claims [...] to (open and use a new Bitcoin ATM). This was all just hype.¹⁰

⁷ Paul Vigna and Michael J. Casey, *Bitcoin for the Unbanked: Cryptocurrencies That Go Where Big Banks Won't*, FOREIGN AFFAIRS (Oct. 25, 2017), <https://www.foreignaffairs.com/sponsored/bitcoin-unbanked>; Steve Forbes, *How Bitcoin Will End World Poverty Forbes Magazine*, FORBES (Apr. 2, 2015), <https://www.forbes.com/sites/steveforbes/2015/04/02/how-bitcoin-will-end-world-poverty/#40cb2eb82a5a>; George Basiladze, *How Cryptocurrencies Can Help Bank the Unbanked*, FIN. MAGNETS (Aug. 16, 2015), <https://www.financemagnates.com/cryptocurrency/bloggers/how-cryptocurrencies-can-help-bank-the-unbanked/>

⁸ It suffices to state that as of January 12, 2018 on Bitstamp (exchange), the rate for bitcoin is over 13,000 USD, for Bitcoin Cash is over 2,500 USD, for Ethereum is over 1,000 USD and for Ripple is over 2,000 USD. Whether or not this rates fluctuate, increase, or reduce drastically, they have already demonstrated that cryptocurrencies have nothing to do with the unbanked.

⁹ Eric Sammons, *How Cryptocurrencies like Dash Help the Poor*, DASH NEWS (Aug 23, 2017), <https://www.dashforcenews.com/cryptocurrencies-like-dash-help-poor/>.

¹⁰ Evan Smart, *Bitcoin Debate between Andreas Antonopoulos vs. The Greek Finance Minister*, CRYPTOCOIN NEWS (Feb. 18, 2015), <https://www.cryptocoinsnews.com/bitcoin-debate-andreas-antonopoulos-vs-greek-finance-minister/>.

These are important issues as they demonstrate that the appropriate regulatory policy response for cryptocurrencies must begin with the assumption that the cryptocurrency economy is built on a bubble and the early developers of cryptocurrencies cannot be trusted to offer responsible policy framework for self-regulation.

1. OVERVIEW OF THE CRYPTOCURRENCY SYSTEM

1.1 DEFINING CRYPTOCURRENCIES

“Cryptocurrency is a system of currency that uses cryptography to allow secure transfer and exchange of digital tokens in a distributed and decentralised manner.”¹¹ The most dominant cryptocurrency that laid the ground for all cryptocurrencies is bitcoin, which was created by a person or a group identified pseudonymously as Satoshi Nakamoto¹². The white paper of bitcoin defines bitcoin as “purely peer-to-peer version of electronic cash that allows online payments to be sent directly from one party to another without going through a financial institution.”¹³ The idea of enabling fund transfer to be conducted without an intermediary is one of the reasons for the creation of bitcoin and subsequent other cryptocurrencies. Similarly, to other cryptocurrencies, bitcoin can only be stored on a computer (or a smart phone)¹⁴.

Cryptocurrencies are created by mining -- solving automatically generated mathematical puzzles towards processing transactions of users¹⁵. In technical terms, “...*mining* is the competitive process of collecting transactions and adding them to the blockchain in the form of blocks.”¹⁶ “Blockchain is a sequence of blocks, which holds the complete record of transactions (a public ledger) indicating the order in which the transactions occurred.”¹⁷

The total number of bitcoins to be created is limited by the bitcoin protocol to 21 Million BTC¹⁸, an upper limit that is either different or not applicable to most of the other active cryptocurrencies. To encourage miners in maintaining the system by taking part in the mining process, 50 bitcoins were rewarded initially to a miner that solves the mathematical puzzle, an amount that reduces by half quadrennially¹⁹. As the mathematical puzzles become more

¹¹ Eli Dourado and Jerry Brito, *Cryptocurrency*, THE NEW PALGRAVE DICTIONARY OF ECON. (2014).

¹² Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, BITCOIN.ORG (Nov. 1, 2008), <https://bitcoin.org/bitcoin.pdf>.

¹³ *Id.*

¹⁴ Conrad Barski and Chris Wilmer, *Bitcoin for the Befuddled*, NO SCRATCH PRESS (2015) 1.

¹⁵ *Id.* at 4.

¹⁶ *Id.* at 6.

¹⁷ David Lee Kuo Chuen, *Handbook of Digital Currency: Bitcoin, Innovation, financial Instruments, and Big Data*, ELSEVIER INC. (2015) at 49.

¹⁸ Andreas M. Antonopoulos, *MASTERING BITCOIN 2* (Mike Loudikes and Allyson MacDonald, 1st Ed. 2015).

¹⁹ *Id.*

difficult and the reward smaller, miners invest more time and resource today in mining²⁰. Once all the 21 million bitcoins are created, the exclusive source of miners' income would be transaction fees²¹. As of September 2017, there are a little over 16-million bitcoins in circulation²².

1.2 WHY CRYPTOCURRENCIES?

Understanding the reasons for the birth of cryptocurrencies gives a complete picture of the regulatory problem embodied in them. It also allows one to appreciate whether there was a realistic vision for the creation of a system of payment or currency. Since the creation of bitcoin coincided with the 2008 global financial crisis, it is commonly suggested that bitcoin is the result of the global financial crisis, although there is no concrete evidence for that²³. The purpose and the core principles of cryptocurrencies do not address the causes or consequences of the global financial crisis. Nevertheless, it cannot be ignored that the lack of trust in government institutions and central banks that ensued during and in the aftermath of the global financial crisis might have been exploited as a marketing tool by the developers and backers of bitcoin and other cryptocurrencies²⁴. But that remains the only connection between cryptocurrencies and the global financial crisis.

A strong argument is made that cryptocurrencies have four potential advantages relative to cash money and traditional payment services that justify their creation, i.e., they are cheap payment methods, trustless, decentralized, and pseudonymous²⁵. But most of these attributes are more talking points than true attributes that withstand even the slightest scrutiny, as examined in the preceding sub-sections. Though these features of decentralized cryptocurrencies are frequently discussed in literature, it is necessary to provide their overview since they are important in examining the feasibility of constructing payment services law for cryptocurrencies.

1.2.1 CHEAP

Cryptocurrencies are claimed to lower transaction costs because transactions such as transfer of funds do not involve third party intermediaries

²⁰ *Id.*

²¹ Rainer Böhme et al., *Bitcoin: Economics, Technology, and Governance*, 29 J. OF ECON. PERSPECTIVES 213, 218.

²² *Bitcoins in circulation*, BLOCKCHAIN INFO (Sep. 22, 2017), <https://blockchain.info/charts/total-bitcoins>.

²³ See Yanis Varoufakis, *Bitcoin and the dangerous fantasy of 'apolitical' money*, YANIS VAROUFAKIS BLOG (Apr. 22, 2013), <https://www.yanisvaroufakis.eu/2013/04/22/bitcoin-and-the-dangerous-fantasy-of-apolitical-money/>.

²⁴ *Id.*

²⁵ *Supra* footnote 17 at 436.

that charge fees²⁶. Discussing the advantage of bitcoin over cash money, Bill Gates stated that bitcoin is exciting because it shows how cheap transfer of fund from one place to another can be²⁷. Every bitcoin transaction is verified and approved by the majority of the miners on the blockchain²⁸. The transaction verification entitles the miner to a certain number of bitcoins -- 50 during the earlier days²⁹. Due to the limited number of reward bitcoins that can be obtained as more bitcoins are created and the increased difficulty in solving the mathematical puzzle, the reward system is considered to be insufficient to incentivize miners. Today, miners earn bitcoins by charging transaction fees³⁰. From 2015 to 2017, transactions fees in bitcoin have increased up to 1200 %³¹. Hence, the argument that bitcoin is cheap is not valid anymore.

With regard to other cryptocurrencies as well, the transaction fee is not that cheap³². It must be noted that there is difficulty in ascertaining how much one pays for each transaction due to the fact that the majority of the cryptocurrencies are expensive and used only by business entities or individuals with high income, which actually makes the cryptocurrency system inaccessible to people with low income or even independent researchers with insufficient fund to conduct experimental transactions. Transaction fees cannot be assessed without conducting transactions. Hence, it should not come as a surprise if evidence regarding transaction fees that come from news sources may be dismissed as unreliable. But some cryptocurrency exchanges today display their transaction fee schedule to users on their webpages. For instance as of February 1, 2018, “Transferring funds from Bitstamp account to a credit card carries a flat fee of \$10 for amounts up to \$1000 and 2% for transfers above \$1000.”³³ This means that to transfer 3000 dollar equivalent of Ether or any other Bitstamp traded cryptocurrency to his/her bank account, the user pays 60 dollars. This is not a cheap transaction fee at all. Comparatively, Coinbase discloses the fee at the time the user conducts the transaction.³⁴

²⁶ Edward V. Murphy, CONG. RESEARCH REP, *Questions, Answers, and Analysis of Legal Issues* 5 (2015).

²⁷ Charlotte Krol, *Bill Gates: Bitcoin is exciting because it is cheap*, THE TELEGRAPH (Oct. 3, 2014), <http://www.telegraph.co.uk/technology/11138905/Bill-Gates-Bitcoin-is-exciting-because-it-is-cheap.html>.

²⁸ *Supra* note 17 at 38.

²⁹ *Supra* note 12 at 217.

³⁰ *Does Coinbase Pay Miner or Network Fees when Sending Digital Currency?*, COINBASE (August 4 2017), <https://support.coinbase.com/customer/portal/articles/815435-does-coinbase-pay-bitcoin-miner-fees>.

³¹ Justin Connell, *Bitcoin Transaction Fees Are Up More Than 1200% in Past Two Years*, BITCOIN.COM (Feb. 22 2017), <https://news.bitcoin.com/bitcoin-transaction-fees-1200-past-two-years/>

³² See Alyssa Hertig, *Bought your first Bitcoin or Ether? Brace for the Fees*, COINDESK (Dec. 18, 2017), <https://www.coindesk.com/bought-first-bitcoin-ether-now-brace-fees/>.

³³ Unified Fee Schedule, BITSTAMP, https://www.bitstamp.net/fee_schedule/.

³⁴ Coinbase Pricing & Fees Disclosures, COINBASE (Jan. 31, 2018), <https://support.coinbase.com/customer/en/portal/articles/2109597-coinbase-pricing-fees-disclosures>.

1.2.2 TRUSTLESS

In traditional banking (payment services), customers should trust intermediaries including the bank and other third party payment service providers³⁵, while in decentralized cryptocurrency systems, on a basic level, trust in an intermediary is unnecessary³⁶. Cryptocurrencies are considered to remove the requirement of trusting intermediaries to process transactions.³⁷ Antonopoulos states:

Here's the most important effect of this new trust model of trust-by-computation: no one actor is trusted, and no one needs to be trusted. There is no central authority or trusted third party in a distributed consensus network³⁸.

The argument that blockchain removes trusted third parties assumes that the blockchain is the only infrastructure necessary for the functioning of cryptocurrencies. But that simply is naïve and perhaps a denial of the reality of cryptocurrencies. Cryptocurrencies cannot function without other supporting infrastructures such as exchanges and digital wallets. First time users of cryptocurrencies must necessarily purchase cryptocurrencies from exchanges using traditional currencies and this renders the exchange a necessary part of the cryptocurrency ecosystem, unless the user in question is a miner who earns cryptocurrencies by mining; in the latter case, the user has the option to transact directly from the blockchain. Then users may need to store their cryptocurrencies in third-party administered digital wallets who should keep funds safely but may also use their power to the detriment of users.

Cryptocurrency exchanges and wallet providers are similar to traditional financial institutions. They are third-party intermediaries that operate on the same principle of trust. They are susceptible to the same problems traditional financial institutions are, including charging excessive fees, using personal information for unconsented purposes, insolvency and many other events. Moreover, exchange and digital wallets are vulnerable to hacking³⁹ and other attacks that enormously affect users. In order to advance that cryptocurrencies do not require trust, a strong case has to be made that cryptocurrency exchanges

³⁵ *Supra* note 12 at 1.

³⁶ Brian Kelly, THE BITCOIN BIG BANG: HOW ALTERNATIVE CURRENCIES ARE ABOUT TO CHANGE THE WORLD 69 (2015).

³⁷ Carl P. Mullan, THE DIGITAL CURRENCY CHALLENGE: SHAPING ONLINE PAYMENT SYSTEMS THROUGH US FINANCIAL REGULATIONS 88 (Palgrave Macmillan, 2014).

³⁸ Andrea Antonopoulos, *Bitcoin security model: trust by computation A shift from trusting people to trusting math*, RADAR (Feb. 20, 2014), <http://radar.oreilly.com/2014/02/bitcoin-security-model-trust-by-computation.html>.

³⁹ See generally *Mt. Gox Collapse of 214 resulting in loss of 850000.000 BTC due to hacking*, BITCOIN TALK (Nov. 16, 2014), <https://bitcointalk.org/index.php?topic=57633>; See Wolfie Zhao, *\$30 Million: Ether Reported Stolen Due to Parity Wallet Breach*, COINDESK (July 19, 2017), <https://www.coindesk.com/30-million-ether-reported-stolen-parity-wallet-breach/>.

and digital wallet service providers are not necessary part of the cryptocurrency ecosystem.

Last but not the least, one of the areas in which a trust by users is required is transaction confirmation. Because the cost for verification of transactions is covered mostly by transactions fees and different users can offer different fees, certain transactions could remain unconfirmed in the blockchain because miners could choose to dedicate their computational skill to higher fee transactions and that happens today more often⁴⁰. The users who offer relatively lower transaction fee do not have the assurance that their transactions get confirmed in time. This requires a trust in the miners. Noted earlier, cryptocurrency exchange based fees are fixed by the exchanges and are not negotiable between the user and the miners, representing an exception to the negotiability of fee and its potential effect in delaying transactions. In the face of the above facts, it seems that trustlessness is merely marketing tool advanced by the developers and early backers of cryptocurrencies.

1.2.3 DECENTRALIZED

Another attribute of cryptocurrencies is decentralization. It is argued that “the lack of central points of oversight, planning, and control makes cryptocurrencies less susceptible to catastrophic failure.”⁴¹ The blockchain is available to anyone who is able to engage in mining by dedicating their computational skill⁴². Decentralization is expressed not only in the lack of central point of control but also in the broadcasting of all transactions conducted using the cryptocurrency in question to the nodes (computers in the network)⁴³. This in turn ensures transparency and prevents central point of failure as there is no single entity that controls the infrastructure, or can manipulate or tempt with the system⁴⁴.

The claim of decentralization should be addressed differently for two category of cryptocurrencies, i.e., for the earlier generation cryptocurrencies such as bitcoin and ether and for the new generation cryptocurrencies. While for the former, in theory decentralization is possible, for the latter, it is almost non-existent by definition as shown later.

⁴⁰Erik Vohress, *The True Cost of Bitcoin Transactions*, MONEY AND STATE (Sep. 22, 2017), <http://moneyandstate.com/the-true-cost-of-bitcoin-transactions/>.

⁴¹John Blocke, *Decentralization Fetishism is Hindering Bitcoin's Progress*, MEDIUM, https://medium.com/@johnblocke/decentralization-fetishism-is-hindering-bitcoins-progress-11cfa5c7964d_.

⁴²*Supra* note 18 at 177.

⁴³Pierluigi Cuccuru, *Beyond bitcoin: an early overview on smart contracts* 25 Int'l. J. of L. and Info. Tech. 1, 4.

⁴⁴*Id* at 4-5.

For earlier generation cryptocurrencies, the blockchain is available to anyone who is willing and able to engage in mining⁴⁵, which makes the system open and decentralized in principle. Nevertheless, questioning the claim of decentralization in bitcoin, De Filippi and Loveluck argue:

...Hence, just like many other open source projects, there is a discrepancy between those who can provide input to the project (the community at large) and those who have the ultimate call as to where the project is going. Indeed, while anyone is entitled to submit changes to the software (such as bug fixes, incremental improvements, etc.), only a small number of individuals (the core developers) have the power to decide which changes shall be incorporated into the main branch of the software.⁴⁶

Hence, in the governance structure of bitcoin, decentralization shrinks at the top level with implication not only for the democratic decision-making process but also on the technical functioning of the system⁴⁷. The following is an example of how the decision-making process weakens the system. In the design of the blockchain for bitcoin, every block has a capacity of 1 megabyte⁴⁸. The block size limit was placed disputably to ensure that the blockchain remains decentralized, since high block size means that there would be delays in transaction propagation as large miners can benefit at the expense of small miners, hence creating centralization⁴⁹.

Some of the core developers of bitcoin wanted to increase the block size on the ground that it has been arbitrarily fixed and was causing delay in transaction confirmation⁵⁰. Some claimed that transactions remain unexecuted between 60 seconds to 14 hours as a direct consequence of the limit in block size⁵¹. Due to disagreement among the core developers on whether to increase the block size, Mike Hearn, one of the core developers resigned as a full-time bitcoin developer in January 2016⁵².

⁴⁵ *Supra* note 18, at 177.

⁴⁶ Primavera De Filippi & Benjamin Loveluck, *The invisible politics of Bitcoin: governance crisis of a Decentralised infrastructure*, 5 INTERNET POL'Y REV. 1, 13 (2016).

⁴⁷ *Id.*

⁴⁸ *Average Block Size*, BLOCKCHAIN, <https://blockchain.info/charts/avg-block-size>; *See also, supra* note 44, at 7.

⁴⁹ *Arguments against increasing the block size?*, REDDIT, https://www.reddit.com/r/Bitcoin/comments/5p9iv8/arguments_against_increasing_the_block_size/.

⁵⁰ Jeff Garzik, *Bitcoin is Being Hot-Wired for Settlement*, MEDIUM (Dec. 29, 2015), <https://medium.com/@jgarzik/bitcoin-is-being-hot-wired-for-settlement-a5beb1df223a>.

⁵¹ Steve Sokolowski, *Why Payouts Didn't Execute Today*, PROHASHING (Dec. 11, 2015), <https://forums.prohashing.com/viewtopic.php?f=11&t=679>.

⁵² Joseph Young, *Mike Hearn Resigns and Leaves Bitcoin Permanently*, NEWSBTC (Jan. 15, 2016), <http://www.newsbtc.com/2016/01/15/mike-hearn-resigns-and-leaves-bitcoin-permanently/>.

Due to the sustained disagreement among the developers and miners, as of August 1, 2017, a split or what is referred to in technical term as “a hard fork” has occurred, leading to two different chains in the blockchain⁵³. With the hard fork, two separate systems have been created, i.e., one that requires upgrading the software to Segwitx2 increasing the block size from 1 megabyte to 2 and stores some of the bitcoins off the blockchain, and the other which merely increases the block size to 8 megabytes⁵⁴. The latter option, i.e., where the block size is increased to 8 megabytes, led to the creation of a new cryptocurrency – bitcoin cash (BCC)⁵⁵. “Tuesday evening (1st of August 2017), several hours after the fork had been completed, Coin Market Cap reported that Bitcoin Cash (BCH) which is the newly created by using the 8 megabytes block is priced around \$379.40, a fraction of the original Bitcoin’s value, which is priced at \$2720.”⁵⁶ Users who have stored their bitcoins on hard drive have the option to continue to use bitcoin, or the new currency bitcoin cash⁵⁷. Today, both bitcoin and bitcoin cash are operating separately.

These stories suggest that bitcoin is not as decentralized as it is claimed to be. Whatever core changes take place to the bitcoin protocol depends on whether the core developers agree on it⁵⁸. The core developers are not democratically elected group of people. They were chosen based on their expertise, their involvement in the project and their shared ideology with the founder⁵⁹. The small miners down the ladder are insignificant as far as major changes are concerned unless they take matters into their hands and create a parallel system of currency, which actually weakens the system.

With respect to the NGCs, decentralization is officially compromised. The NGCs are based on the concept that only those who directly invest money in project have access to the infrastructure. Mining is controlled and monitored by a central authority, usually the team of developers that create the blockchain concerned and offer the tokens to the public for sale through Initial Coin Offering (ICO). To illustrate, Evion white paper states that there are only two channels of mining operation⁶⁰. The first one is where Evion, the company mines the tokens while the second is where a third-party that has a contract with Evion mines the tokens with the view to sharing profit⁶¹. Mining ENV token is not open to the public, leading to the conclusion that there is now a new type of

⁵³ Brooke Wanser, *Bitcoin Cash: Five Facts You Need to Know*, HEAVY (Aug. 3, 2017), <http://heavy.com/news/2017/08/how-does-bitcoin-cash-work/>.

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ James Titcomb, *Bitcoin Cash: Price of New Currency Rises after Bitcoin's Hard Fork*, THE TELEGRAPH (Aug. 2, 2017), <http://www.telegraph.co.uk/technology/2017/08/01/bitcoin-cash-everything-need-know-bitcoins-hard-fork/>.

⁵⁸ *See Team*, BITCOIN CORE (2017), <https://bitcoincore.org/en/team/>.

⁵⁹ *See supra* note 46 at 13.

⁶⁰ Envion Mobile, *Mining White Paper*,

https://www.envion.org/en/download/envion_whitepaper.pdf

⁶¹ *Id.*

cryptocurrency that defies one of the major features of earlier cryptocurrencies by introducing centralization.

1.2.4 PSEUDONYMOUS

The last feature of cryptocurrencies that makes them attractive is pseudonymity⁶². In bitcoin, although all transactions conducted by the user are publicly visible, they are represented by the public key (bitcoin address for instance), which is a unique set of numbers and letters serving as pseudonym⁶³. The pseudonymity provided by blockchain can be de-anonymized using techniques that link the public key to the identity of the user⁶⁴, for instance when a user purchases a cryptocurrency from an exchange using bank account. More complex techniques can also be applied to tackle pseudonymity⁶⁵. But de-anonymization takes time, requires technological expertise and money which makes it difficult.

In the era of mass collection and misuse of personal data by governments and giant corporations, the need to ensure anonymity/pseudonymity in many cases might be necessary⁶⁶. But it is also the tool that enables illegality that must be carefully addressed. Viewed from practical point of view, it is the reason cryptocurrencies are preferred by certain users. But even this feature is useful only if the user is a miner. For those who rely on exchanges and third party digital wallets, there is an identity verification process whereby the user must submit identity documents⁶⁷.

2. OVERVIEW OF THE LEGAL CLASSIFICATION OF CRYPTOCURRENCIES

2.1 THE SIGNIFICANCE OF LEGAL CLASSIFICATION

The clarity in the legal classification of cryptocurrencies is crucial in defining regulatory policies, ensuring legal certainty and rule of law. In 2016, a Florida State Circuit judge dismissed a money laundering charge on the ground that bitcoin did not qualify as a monetary instrument, a prerequisite for money

⁶² Hanna Halaburda and Miklos Sarvary, *BEYOND BITCOIN: THE ECONOMICS OF DIGITAL CURRENCIES* 100 (Palgrave Macmillan, 2016); *supra* note 4, at 593.

⁶³ Pedro Franco, *UNDERSTANDING BITCOIN: CRYPTOCURRENCY, ENGINEERING AND ECONOMICS* 209 (Wiley, 2015).

⁶⁴ *Id.*

⁶⁵ *Supra* note 63, at 13.

⁶⁶ See Leon Hempel and Hans Lammerant, *Impact Assessments as Negotiated Knowledge*, *REFORMING EUROPEAN DATA PROTECTION LAW* (2015) 141.

⁶⁷ See *Privacy Policy*, BITSTAMP, <https://www.bitstamp.net/privacy-policy/>.

laundering offence under the Florida State Anti-Money Laundering Law⁶⁸. No similar case has been handled in the European Union so far, but the Florida Court decision clearly demonstrates why legal classification is consequential.

The significance of determining the legal category of cryptocurrencies transcends anti-money laundering law. Today, there are licensed cryptocurrency exchange platforms that perform exchange of traditional currencies to cryptocurrencies and vice-versa⁶⁹. A new type of intermediary - cryptocurrency custodial wallet providers that offer custodial services to users, like banks provide bank account (deposit service) to customers, has emerged⁷⁰. The rights and duties of these intermediaries towards their customers and regulators depend on how cryptocurrencies are classified. Determining whether cryptocurrencies should be taxed, how they should be taxed, and many more policy decisions vary depending on how cryptocurrencies are classified.

The lack of clear legal category for cryptocurrencies could lead to differential treatment of different financial institutions and their respective customers as well as other business entities. Hence, while a payment service provider transferring 50 dollars on behalf of its customer is subjected the Know-Your-Customer requirement of anti-money laundering law that imposes burdensome obligations on the financial institution as well as the customer⁷¹, an intermediary and its customer using cryptocurrency could transfer thousands of dollars without being bound by similar requirements. A company investing in agriculture or green energy is subjected to the regulatory requirements of securities law while cryptocurrency centered companies are uncovered by securities law in Europe. This kind of differential application of legal rules to essentially similar institutions and persons exists in the areas of taxation, prudential regulation of financial institutions and other regulatory regimes to which financial institutions, companies and individual persons are subjected. It is for this reason that the debate on the legal classification of cryptocurrencies is crucial to many stakeholders and is highly divisive.

⁶⁸ § Fl. St. Ord. 896.101(2)(d)-(e)

⁶⁹ *List of Digital Currency Exchanges from Around the World*, STEEMIT (June 2017), <https://steemit.com/bitcoin/@xikandarxaheer/list-of-digital-currency-exchanges-from-around-the-world>.

⁷⁰ “A custodian wallet provider is an entity that provides services to safeguard private cryptographic keys on behalf of their customers, to holding, store and transfer virtual currencies.” PROPOSAL FOR A DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL 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 DIRECTIVE 2009/101/EC, COM (2016) 450, Proposed Addition of Paragraph 18(b) to Art. 3 of DIRECTIVE (EU) 2015/849 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 20 MAY 2015 ON THE PREVENTION OF THE USE OF THE FINANCIAL SYSTEM FOR THE PURPOSES OF MONEY LAUNDERING OR TERRORIST FINANCING, AMENDING REGULATION (EU) No 648/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, AND REPEALING DIRECTIVE 2005/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL AND COMMISSION DIRECTIVE 2006/70/EC, OJEU, L 141/73.

⁷¹ Doug Hopton, *MONEY LAUNDERING: A CONCISE GUIDE FOR ALL BUSINESSES* 78 (Gower Pub. Ltd. 2009).

2.2 RECAP OF THE DEBATE ON LEGAL CLASSIFICATION

Since cryptocurrencies are also used for exchange of goods and services online⁷² as unit of account and store value fulfilling all the characteristics of the economic definition of money,⁷³ some argue that cryptocurrencies should be treated as money⁷⁴. Others argue that cryptocurrencies should be defined as commodity⁷⁵, an argument which is corroborated by the decision US Commodities Future Trading Commission (CFTC)⁷⁶ and the Internal Revenue Service Guideline on Taxation of Cryptocurrencies⁷⁷. In Europe, the Central Bank of Finland has also classified cryptocurrencies as commodity⁷⁸. The central point of contention in this regard is the lack of inherent value of cryptocurrencies⁷⁹, while there scholars who argue that cryptocurrencies do have inherent value in that they enable less costly two-party transactions than traditional three-party transactions⁸⁰.

In the US, the Federal Commodities Futures Trading Act defines commodities broadly to include all interests, services and rights as long as futures are traded on them that the CFTC used in its move to treat bitcoin as commodity⁸¹. Peculiarly, the EU level definition of commodity attributes tangibility to commodities thereby removing cryptocurrencies out-rightly from the definition of commodity⁸². However, member states in the EU are free to adopt their own definition of commodities⁸³, which is why the Finnish Central

⁷² See *100+ Companies That Accept Bitcoins as Payment*, EBAY (Dec. 11, 2015), <http://www.ebay.com/gds/100-Companies-That-Accept-Bitcoins-As-Payment-/10000000206483242/g.html>.

⁷³ See Fredrick S. Mishkin, *THE ECONOMICS OF MONEY, BANKING AND FINANCIAL SYSTEM* 44 (Pearson Education, 4th Edition, 2004).

⁷⁴ Eric P. Pacy, *Tales from the Cryptocurrency: On Bitcoin, Square Pegs, and Round Holes*, 49 *NEW ENG. L. REV.* 121 (2014).

⁷⁵ *Supra* note 2.

⁷⁶ See *U.S. v Coinflip, Inc.*, CFTC, Docket No. 15-29 (Sept. 17, 2015).

⁷⁷ IRS Virtual Currency Guidance: Virtual Currency Is Treated as Property for U.S. Federal Tax Purposes; General Rules for Property Transactions Apply, IRS, IR-2014-36 (March 25, 2014).

⁷⁸ Cameron Fuller, *Bitcoin Vs. Bank of Finland: Cryptocurrencies Ruled as Commodities after Failing Money Test*, *INTERNATIONAL BUSINESS TIMES* (Jan. 21, 2014), <http://www.ibtimes.com/bitcoin-vs-bank-finland-cryptocurrencies-ruled-commodities-after-failing-money-test-1545072>.

⁷⁹ Nicholas Godlove, *Regulatory Overview of Virtual Currency*, 10 *OKLA. J. OF L. & TECH.* 1, 26 (2014).

⁸⁰ *Supra* note 2 at 629. (“This means that the inherent value of a bitcoin is found in the difference of transaction costs between an online threeparty exchange, and a two-party exchange.”)

⁸¹ 7 U.S.C. § 1.a (9).

⁸² COMMISSION REGULATION (EC) NO 1287/2006 OF 10 AUGUST 2006 IMPLEMENTING DIRECTIVE 2004/39/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL AS REGARDS RECORDKEEPING OBLIGATIONS FOR INVESTMENT FIRMS, TRANSACTION REPORTING, MARKET TRANSPARENCY, ADMISSION OF FINANCIAL INSTRUMENTS TO TRADING, AND DEFINED TERMS FOR THE PURPOSES OF THAT DIRECTIVE, OJEU L 241/1, Art. 2(1).

⁸³ *Id.*, Recital 24 (“The definition of a commodity should not affect any other definition of that term in national legislation and other community legislation.”)

Bank has classified cryptocurrencies as commodity. The law on paper in the EU is indecisive and the issue is likely to remain controversial.

The debate on the legal classification of cryptocurrencies rather than being grounded on evidence and objectivity, tends to utilize radical subjectivity making it difficult to engage in constructive and solution oriented dialogue. It appears that the key reason for utilizing radical subjectivity is the need to define cryptocurrencies as something other than money, to avoid stricter state regulation or perhaps even a total ban, through polarization. Classifying cryptocurrencies as commodities as opposed to money could aid in avoiding the application of anti-money laundering law as evidenced by the decision of the California Court where the judge dismissed money laundering charge on the ground that bitcoin did not qualify as money⁸⁴. In 2014, Pacy argued:

...regulators and scholars have been reticent to treat cryptocurrencies like Bitcoin as money, electing instead to attempt to fit this new technology into an existing regulatory framework as something other than money. By doing this, they create unnecessary complexity and sometimes absurd results.⁸⁵

The situation has remained almost the same in the year 2018. Despite the fact that cryptocurrencies are exchangeable to and from traditional currencies and they are used to pay for things, there is unwillingness to call them money⁸⁶.

2.2.1 THE RADICAL SUBJECTIVISM

The attempt to define cryptocurrencies as a commodity and the methodology adopted reveals the utilization of radical subjectivism in certain regards, which comes at the expense of intellectual debates losing credibility and misrepresentation of facts.

Bitcoin has been compared to gold by its enthusiasts often in a misleading manner aimed at hyping users and investors⁸⁷. The comparison focuses on the process of creation of bitcoin-mining a term which also describes gold extraction process⁸⁸ and the competitive price for the two things⁸⁹. Often, the cryptocurrency/gold comparison is based on the notion that gold is expensive just because people subjectively view it as more valuable relative to other metallic commodities that are perhaps as durable and functional as gold. Hence, the argument goes that if the users view cryptocurrencies as valuable,

⁸⁴ Florida vs. Michel A. Espinoza, F14-2923, (11th Cir. July 22, 2016).

⁸⁵ *Supra* note 74 at 121.

⁸⁶ *Id.*

⁸⁷ Jocelyn Aspa, *Is Bitcoin the New Gold?*, INVESTING NEWS (Sep. 2017), <https://investingnews.com/daily/tech-investing/fintech-investing/bitcoin-the-new-gold/>. Accessed on 13 Jan. 18.

⁸⁸ *Id.*

⁸⁹ *Id.*

there is no reason not to treat them as gold. Reflecting this sentiment, Prentis argues:

The price of traditional commodities, like gold, silver, and agricultural products, vary in accordance with their demand and scarcity. When more people want a commodity that has a fixed supply, the price rises. Similarly, the price of Bitcoin fluctuates according to the same fixed supply model.... Bitcoins are considered rare because there is a fixed supply of them, leading users to be willing to pay increasing prices to control them. The value of a bitcoin is ultimately driven by supply and demand—a coin is worth whatever someone is willing to pay for it⁹⁰.

Prentis asserts that it is appropriate to treat bitcoin as commodity⁹¹ asserting that bitcoin has inherent value in its ability to reduce transaction cost by enabling less costly two-party transactions than traditional three-party transactions⁹².

While it is undeniable that users/speculators are willing to pay for bitcoin, bitcoin cash, ether or litecoin as much as they are willing to pay for gold, it is farfetched to go as far as arguing that bitcoin has intrinsic value. In examining whether bitcoin has inherent value, Godlove argues that “It has more characteristics in common with commodities than with currency, except for the most essential: It has no inherent value.”⁹³ If intrinsic value is a value of a thing judged independently of its monetary use or a value of a thing for its own sake⁹⁴, the question is, would cryptocurrencies remain useful if stripped of their ability to transfer fund? It requires an impossible mental gymnastics to give positive answer to this. One could make an exception for certain types of new generation cryptocurrencies that are used as means of taking part in certain investment ventures whose value is determined by their ability to enable users to have access to investment ventures or platforms and services provided in the digital economy (*see infra* § 3.2).

Bitcoin has also been compared with subterranean property⁹⁵. In 2014, the US District Court of Western District of Washington handled a case in which it considered, *inter alia*, whether a contract to mine and deliver certain number of bitcoins constitutes an executory contract⁹⁶. Examining the case,

⁹⁰ *Supra* note 2, at 628.

⁹¹ *Id* at 626.

⁹² *Id* at 629 (“This means that the inherent value of a bitcoin is found in the difference of transaction costs between an online three party exchange, and a two-party exchange.”)

⁹³ *Supra* note 79 at 26.

⁹⁴ Michael J. Zimmerman, *Intrinsic vs. Extrinsic Value*, THE STANFORD ENCYCLOPAEDIA OF PHILOSOPHY (2015), <https://plato.stanford.edu/entries/value-intrinsic-extrinsic/>.

⁹⁵ Casey Doherty, *Bitcoin and Bankruptcy – Understanding the Newest Potential Commodity*, ABIJ. 33, 28–33 (2014).

⁹⁶ *In re CLI Holdings*, Case No. 13–19,746 (W.D. Wash. 2013).

Doherty wrote an article in which he stated that ‘Bitcoin also shares similarities to “subterranean” commodities through its extraction process, as demonstrated by in re CLI Holdings.’⁹⁷ Citing Doherty’s article, Borroni in addressing the legal framework for bitcoin in the EU wrote “...the qualification of Bitcoins as a commodity stems from the case in re CLI Holdings, whereby the court treated Bitcoins like a “subterranean commodity” (for example oil), due to the similarities arising from the “extraction process” shared by both of them”⁹⁸. Doherty’s article and by extension Borroni’s, make a factually incorrect suggestion that the court drew a parallel between bitcoin and subterranean properties.

In re CLI Holdings⁹⁹ on or about August 14, 2013, Bitvestment entered into a bitcoin services agreement with CoinLab, CLI Holdings Inc. and their respective affiliates (Amended Agreement)¹⁰⁰. As per the agreement, Bitvestment paid the debtor, 75,000 USD in return for which the debtor agreed to mine and deliver 7,984.006735 BTC to Bitvestment¹⁰¹. The debtor breached the contract failing to deliver the bitcoins mined after the amended agreement, following which, Bitvestment filed a lawsuit in the US District Court for the Southern District of NY against the Debtor seeking, *inter alia*, specific performance¹⁰².

On November 5, 2013, the District Court stayed the action against the debtor because the debtor filed Chapter 11 bankruptcy¹⁰³ subsequently to which it filed a motion to reject the contract¹⁰⁴. The debtor’s motion for rejection of the contract was based on U.S.C. § 365 which allows the judge to approve the rejection of executory contract by the trustee¹⁰⁵. The court dismissed the motion.

In its reasoning the court reaffirmed that the key feature of executory contracts is that the “obligations of both parties are so far unperformed that the failure of either party to complete performance would constitute a material breach and thus excuse the performance of the other.”¹⁰⁶ It ruled that since

⁹⁷ *Supra* note 95.

⁹⁸ Andrea Borroni, *A Fuzzy Set in the Legal Domain: Bitcoins According to US Legal Formants*, BITCOIN AND MOBILE PAYMENTS 104 (Palgrave Macmillan 2017).

⁹⁹ *Supra* note 96.

¹⁰⁰ In Re CLI Holdings Inc., Washington Western Bankruptcy Court, Case No. 13-19746-KAO (Feb. 7, 2014), Motion to Dismiss Chapter 11 Bankruptcy, p. 2.

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.*

¹⁰⁴ In Re CLI Holdings Inc., Washington Western Bankruptcy Court, Case No. 13-19746-KAO (15 November, 2013).

¹⁰⁵ 11 U.S.C. §365(a).

¹⁰⁶ In Re CLI Holdings Inc., Washington Western Bankruptcy Court, Case No. 13-19746-KA(12 Dec. 2013) , Order Denying Debtor's Motion to Reject Executory Contract with Bitvestment Partners LLC, p. 1. Since the court’s order cites the parties’ submissions, the reasoning of the court is found in the Creditor (Bitvestments’s) objection to debtor’s motion to reject executory contract. *See In Re CLI Holdings Inc., Washington Western Bankruptcy Court, Case No. 13-19746-KAO(29 Nov. 2013)*, Bitvestment Partners LLC’s objection to debtor’s motion to reject executory contract, p. 4. The court relied on the definition of

Bitvestment has performed its obligation (paying 75,000 USD), the debtor is the only party to the agreement with an ongoing obligation, namely to mine and deliver to Bitvestment the Bitcoins for which reason the contract was not executory¹⁰⁷.

In this case, whether bitcoin is commodity was not relevant, despite this, Doherty used it to compare bitcoin with subterranean property¹⁰⁸. He stated that “the court, in keeping with the analogous majority view of oil and gas precedent (though not citing it), found that the debtor could not reject a contract where the only performance of the interest-holder was to receive production.”¹⁰⁹ The court did not cite oil and gas precedents by Doherty’s own admission but he still used the case to draw a parallel between bitcoin and subterranean properties. To read oil and gas precedents into this decision is a complete misrepresentation of the court’s decision and the parties’ arguments as well as a betrayal of objectivity committed by Doherty in his attempt to fit the case to his narrative. Subterranean commodities such as oil have physical existence and intrinsic value whereas cryptocurrencies do not. This in and of itself makes the comparison a mere academic exercise with no use for policy decisions. The reality is that it sounds more convincing to push the agenda that cryptocurrencies are commodity and not money by misusing judicial decisions.

The stories highlighted suggest that due to the radical subjectivism utilized in the debate on the legal classification of cryptocurrencies, it is difficult to engage in a rational and policy oriented discussion. Hence, it is more judicious to single out the areas in which cryptocurrencies are relevant and should be regulated and examine if the legal framework accommodates them or could inspire tailor-made regulatory framework for them, instead of getting lost in responding to industry driven talking points.

2.3 THE LATEST DEVELOPMENT

The latest development affecting the legal classification of cryptocurrencies is the emergence of New Generation Cryptocurrencies (NGCs), created through complex Initial Coin Offerings (ICOs), where the investors who invest money in a new cryptocurrency (token) are given various rights, including the right to share dividends derived from the investment of the company and the right to vote to determine the direction of the company¹¹⁰.

Illustrations of NGCs include GxCoin that gives token holders the right to vote on investment proposals by the promoters according to the term of the

executory contracts provided by the Ninth Circuit in *Marcus & Millichap Inc. v Munple, Ltd.* (In re Munple), 868 F.2d 1129, 1130 (9th Cir.1989), cited by Bitvestment in its objection to the debtor’s motion for the rejection of the contract.

¹⁰⁷ *Id.*

¹⁰⁸ *Supra* note 95.

¹⁰⁹ *Id.*

¹¹⁰ *See supra* note 3.

smart contract¹¹¹ or Astronaut Token sold to investors with the view to investing the fund received from the investors in various listed cryptocurrencies and ICOs,¹¹² token holders being entitled to receive dividends quarterly, *pro rata* to their coin holding¹¹³. More emblematically, Envion Company that offers ENV tokens has two mining operation channels¹¹⁴. The first one is the so-called proprietary mining operation where the company invests in, owns and operates the mining, whose proceed is distributed to token holders as earnings¹¹⁵. The second component is where Third-Party Operations (TPO) where an independent company, acquires the mining operation from the company while the company operates them and the third-party operator is rewarded with a share and the 35% of the earnings of this business model is distributed to ENV token holders¹¹⁶.

In the US, the Securities Exchange Commission (SEC) has ruled that tokens sold using these kinds of schemes qualify as investment contract¹¹⁷. In its 13th of November 2017 investor warning, the European Securities Market Authority (ESMA) identified risks pertaining to ICOs/NGCs¹¹⁸. It issued a supplementary statement in which it stated that depending on how the ICO is structured, the token may fall under the MiFiD II, the Alternative Investment Fund Managers (AIFMs) directive and be subjected to the prospectus directive¹¹⁹. But it did not give a detailed guideline on when precisely ICOs may fall under the MiFiD II and the AIFMs directive.

It is established in the existing literature that the NGCs do qualify as security and may fall under the European Securities Market Law¹²⁰, for which reason this article does not dedicate more space to the discussion. It suffices to state that the NGCs have not even made it to exchange platforms, if at all any of them could be traded on exchanges. Their chances of success and economic significance are difficult to estimate at this point as most of them are just launched or yet to be launched. Most importantly, some of the NGCs are based

¹¹¹ GxCoin, White Paper,

https://docs.wixstatic.com/ugd/1b7d6b_a9eab92530a94bc0a09020a2cacbf266.pdf.

¹¹² Astronaut Capital, *Astronaut White Paper*, 3 <https://astronaut.docsend.com/view/p4iazfu>

¹¹³ *Id* at 19.

¹¹⁴ *Supra note* 60 at 15.

¹¹⁵ *Id.*

¹¹⁶ *Id.*

¹¹⁷ SECURITIES EXCHANGE COMM'N, RELEASE 34-81207, REPORT OF INVESTIGATION PURSUANT TO SECTION 21(A) OF THE SECURITIES EXCHANGE ACT OF 1934: THE DAO, 12, <https://www.sec.gov/litigation/investreport/34-81207.pdf>; *See* Cease and Desist Order, SEC Administrative Proceeding File No. 3-18304 (Dec. 11, 2017).

¹¹⁸ ESMA, ESMA alerts investors to the high risks of Initial Coin Offerings (ICOs), ESMA50-157-829, 2017, Available at https://www.esma.europa.eu/sites/default/files/library/esma50-157-829_ico_statement_investors.pdf. Accessed on 13 Jan. 18.

¹¹⁹ EUROPEAN SEC. AND MARKETS AUTH., ESMA50-157-828, 2017, ESMA alerts investors to the high risks of Initial Coin Offerings (ICOs), https://www.esma.europa.eu/sites/default/files/library/esma50-157-828_ico_statement_firms.pdf.

¹²⁰ *See supra* note 3.

on the earlier cryptocurrencies such as bitcoin and ether and are mostly instruments of advancing the use of the earlier generation cryptocurrencies while others are accepted as means of payment only on specific platforms to allow the user to have access to services provided by those platforms and their community of users and developers there by limiting their chance of being accepted as universal methods of payment¹²¹.

To sum up, though the debate on legal classification of cryptocurrencies is profound and informative of the points of contention, it is also too polarized to guide policy decision and framing of legal rules and to a large degree influenced by ideological inclination and industry affiliation. Therefore, from the existing scholarship, readers can pick which side they are on. This article takes a more pragmatic approach and aims to examine the potential regulation of cryptocurrencies under payment services law; this can and should be done, regardless of how decentralized cryptocurrencies are defined. Cryptocurrencies are exchanged to and from traditional currencies¹²². They are being used to transfer fund from one place to another. Exchanges that handle them also handle traditional currencies¹²³. Therefore, it is imperative to examine how payment services law treats them or should treat them and what the placement of cryptocurrencies under payment services law or designing a unique one for them entails.

¹²¹ For instance, Crypto Investment Fund (CIF) ICO issues CIF Token that is offered to businesses that accept cryptocurrencies in their payment system using CIF payment processor. CIF Token gives these businesses access to utilities provided by CIF including education on the use of blockchain and cryptocurrencies. *See* CRYPTO IMPROVEMENT FUND ICO, Business Plan, (Nov. 2017), https://www.cryptoimprovementfund.io/wp-content/uploads/2017/11/CIF_BP_VF.pdf. Astro Token gives investors the access to Astronaut Platform where users determine which tokens and ICOs to invest in based on research conducted by Astronaut. *See* ASTRONAUT CAPITAL, *Astronaut White Paper*, 4 <https://astronaut.docsend.com/view/p4iazfu>. These NGCs are tied to the existing cryptocurrencies one way or another. For instance, sale of tokens of AMLT token and Angel Token were conducted in Ether. *See* AMLT THE TOKEN OF COMPLIANCE, *White Paper* October 2017, 41, <https://amlt.coinfirm.io/pdf/white-paper.pdf> & ANGEL TOKEN WHITE PAPER, 25 https://angelinvestors.io/wp-content/uploads/2017/11/Angel-Token-White-Paper-3_0.pdf. While the above Tokens demonstrate that the NGCs that are being created are dependent on earlier general cryptocurrencies, there are also others that provide specific utility to investors/community of users but with no perceivable chance of being payment methods. For instance Paragon Token (PGR) provides users access to various blockchain based services towards the legalization of Cannabis. PARAGON WHITE PAPER VERSION 1.0(2017), p. 8, <https://paragoncoin.com/whitepaper.pdf>. The list can go on and on. The key point to make is that the new tokens/cryptocurrencies that are being issued are either based on earlier cryptocurrencies or have limited use and therefore unlikely to be dominant methods of payment.

¹²² *See generally* BITSTAMP, <https://www.bitstamp.net/account/login/?next=/market/order/instant/>; COINBASE, <https://www.coinbase.com/?r=521e2d1ec6d27cc790000091>.

¹²³ *Id.*

3. CRYPTOCURRENCIES UNDER EU PAYMENT SERVICES LAW

The regulation of cryptocurrencies under the payment services law has been explored by scholars¹²⁴. But most of the previous works ignore the central problem- decentralization (*see* infra section 3.7). This part of the article examines the legal framework governing payment services in the EU with the view to showing how decentralization is a significant impediment to constructing tailor-made legal framework for payment services.

3.1 THE SINGLE EURO PAYMENT AREA REGULATION

Since 2012, the European Union has implemented a legal framework governing Single Euro Area Payment (SEPA Regulation) that aims to provide uniform electronic payment system across the European Union.¹²⁵ The SEPA Regulation “lays down rules for credit transfer and direct debit transactions denominated in euro within the EU where both the payer’s payment service provider and the payee’s payment service provider are located in the EU, or where the sole payment service provider (PSP) involved in the payment transaction is located in the Union”¹²⁶. The SEPA Regulation sets common rules for credit transfer and debit transactions including conditions of payment, fees and governs the rights and duties of the payment service providers and users in general¹²⁷.

Since payments made in cryptocurrencies do not qualify as credit transfer or debit transactions, the SEPA regulation does not govern them. However, cryptocurrency exchanges should and do comply with SEPA Regulation when users deposit Euros in their digital wallet to purchase cryptocurrencies or to withdraw their cryptocurrencies in Euros.¹²⁸ But SEPA Regulation does not regulate payments effected exclusively in cryptocurrencies as the payments must be denominated in Euro as a general rule.¹²⁹ Therefore, under SEPA Regulation, the key problem with cryptocurrencies is the inability of

¹²⁴ Tara Mandjee, *Bitcoin, its Legal Classification, and its Regulatory Framework*, 15 J. OF BUS. & SEC. L. 157 (2016); Noah Vardi, *Bit by Bit: Assessing the Legal Nature of Virtual Currencies*, BITCOIN AND MOBILE PAYMENTS 66-67 (Palgrave Macmillan, 2016); Harry Leinonen, *Decentralised Blockchain and Centralised Real-Time Payment Ledgers: Development Trends and Basic Requirements*, TRANSFORMING PAYMENT SYSTEMS IN EUROPE 236-260 (Palgrave Macmillan, 2016).

¹²⁵ REGULATION (EU) NO 260/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 14 MARCH 2012 ESTABLISHING TECHNICAL AND BUSINESS REQUIREMENTS FOR CREDIT TRANSFERS AND DIRECT DEBITS IN EURO AND AMENDING REGULATION (EC) NO 924/2009, OJEU, L 94/22.

¹²⁶ *Id* Art. 1(1).

¹²⁷ *See Id* Arts. 3-8.

¹²⁸ Payment Methods for European Customer, COINBASE (Jan 24, 2018), <https://support.coinbase.com/customer/portal/articles/1767231-payment-methods-for-european-customers>.)

¹²⁹ *Supra* note 125 Art. 16(2) & (8).

cryptocurrencies to qualify as currency of the EU member states covered by the regulation, for which reason they are not covered by it.

3.2 THE ELECTRONIC MONEY DIRECTIVE

When examining cryptocurrencies and payments services, the Electronic Money Directive of 2009¹³⁰ appears relevant due to the digital nature of electronic money which makes it closely resemble cryptocurrencies. But as Vardi points out, the electronic money directive does not apply to cryptocurrencies because (a) electronic money is issued in exchange for the transfer of corresponding traditional currency at par value and (b) it must be redeemable into traditional a currency at par value upon request of the electronic money holder¹³¹.

Strictly speaking, cryptocurrencies are not issued in exchange for real currency. Of course, as a factual matter, a user who wishes to acquire cryptocurrency needs to purchase it from an exchange with real currency or other cryptocurrencies. But this is not equivalent to an issuer receiving an equivalent in a real currency. The seller of the cryptocurrency is not necessarily the issuer. Second, whoever sells a cryptocurrency in general does not have the duty to redeem it for real currency. So clearly, cryptocurrencies do not qualify as electronic money.

3.3 THE PAYMENT SERVICES DIRECTIVE

The latest EU directive governing payment services, the Payment Services in the Internal Market Directive (PSD II)¹³² has no specific provision dedicated to cryptocurrencies. The PSD II applies to payment services¹³³ including services enabling cash to be placed on a payment account and all the operations required for operating a payment account¹³⁴; services enabling cash withdrawals¹³⁵; execution of payment transactions, including transfers of funds on a payment account with the user's payment service provider or with another payment service provider¹³⁶; execution of payment transactions where the funds are covered by a credit line for a payment service user¹³⁷; issuing of payment

¹³⁰ EUROPEAN COMM'N, DIRECTIVE 2009/110/EC OF 16.9.2009 ON THE TAKING UP, PURSUIT AND PRUDENTIAL SUPERVISION OF THE BUSINESS OF ELECTRONIC MONEY INSTITUTIONS, 7 (October 10, 2009)

¹³¹ *Supra* note 124 at 61; *See Id* Arts 2(2) & Arts 11(2).

¹³² EUROPEAN COMM'N, DIRECTIVE 2015/2366 /EC OF 25 NOVEMBER 2015 ON PAYMENT SERVICES IN THE INTERNAL MARKET, AMENDING DIRECTIVES 2002/65/EC, 2009/110/EC AND 2013/36/EU AND REGULATION (EU) NO 1093/2010, AND REPEALING DIRECTIVE 2007/64/EC(2015), OJEU, L 337/35.

¹³³ *Id* Art. 2(1).

¹³⁴ *Id* Annex I (1).

¹³⁵ *Id* Annex I (2)

¹³⁶ *Id* Annex 1(3)

¹³⁷ *Id* Annex 1(4).

instruments and/or acquiring of payment transaction¹³⁸; money remittance¹³⁹; payment Initiation Service¹⁴⁰; and account Information.¹⁴¹

The underlying feature of the concept of payment service under the directive is transfer or administration of fund/money and activities aimed at facilitating it¹⁴². The directive applies to payments services provided in the currency of EU members states and under certain conditions in a currency of a Non-EU state¹⁴³. To that effect the directive states that “payments shall be made in the currency agreed between the parties.”¹⁴⁴ Because cryptocurrencies are not currencies (legal tender of EU member states or third countries), the payment services directive does not apply to them.

3.4 THE LESSON FROM SKATTEVERKET V DAVID HEDQVIST

Skatteverket v David is the first case involving bitcoin decided by the European Court of Justice (ECJ)¹⁴⁵. It involved the interpretation of the Directive on Common system of VAT¹⁴⁶. David Hedqvist a Swedish National sought a preliminary decision from the Swedish “Revenue Law Commission on whether transactions to exchange traditional currency for the bitcoin or vice-versa, which he wished to perform through a company, were subject to VAT.”¹⁴⁷ The Revenue Law Commission opined that Hedqvist’s activities were not subject to VAT because they are exempt under the Common VAT Directive which requires members to exempt transactions “including negotiation concerning currency, bank notes and coins used as legal tender”.¹⁴⁸

The Swedish Tax Authority appealed the case to the Swedish Administrative Supreme Court challenging the decision of the Swedish Revenue Law Commission¹⁴⁹. Being uncertain whether bitcoin exchange is exempt under the relevant provision of the directive, the Swedish Administrative Supreme Court made a preliminary reference to the ECJ¹⁵⁰.

The ECJ concluded that (a) exchange of bitcoin to or from other currencies is supply of service for consideration¹⁵¹. However, (b) it is exempt

¹³⁸ *Id* Annex 1(5).

¹³⁹ *Id* Annex 1(6).

¹⁴⁰ *Id* Annex 1(7).

¹⁴¹ *Id* Annex 1(8).

¹⁴² *Id* Annex 1(1)-(8).

¹⁴³ *Id* Art. 2(1)-(3).

¹⁴⁴ *Id* Art. 59(1).

¹⁴⁵ *Skatteverket v David Hedqvist*, Court of Justice of the European Union, Case C-264/14, 6 (July 2015).

¹⁴⁶ EUROPEAN UNION, COUNCIL DIRECTIVE 2006/112/EC OF 28 NOVEMBER 2006 ON THE COMMON SYSTEM OF VALUE ADDED TAX, n. 243 (Nov. 12, 2006).

¹⁴⁷ *Supra* note 145 at para 15.

¹⁴⁸ *Id* at Para 16; *See also supra* note 146.

¹⁴⁹ *Supra* note 145 at P18.

¹⁵⁰ *Id* at P 20.

¹⁵¹ *Id* at P26.

under article 135(1) (e) of the Common VAT directive¹⁵². The court in particular argued that bitcoin is not a tangible property¹⁵³ rather it is *a means of payment* accepted by the parties though it is not a legal tender¹⁵⁴. In its reasoning the court stated “... the ‘bitcoin’ virtual currency has no other purpose than *to be a means of payment*”¹⁵⁵.

The ECJ showed a pragmatism in resolving the dispute without classifying bitcoin as anything that is statutorily recognized, by labelling it as “*a means of payment*”. It is to be noted that under the PSD II, “payment instrument”, not “means of payment” is defined as “a personalised device(s) and/or set of procedures agreed between the payment service user and the payment service provider and used in order to initiate a payment order.”¹⁵⁶ The relevant provision of the VAT directive essentially exempts negotiations involving legal tenders from VAT¹⁵⁷. It can be argued that the fact that the ECJ put currencies and bitcoin together by treating them under this provision indicates that at least for the purpose of the VAT directive, the court thinks that bitcoin is equivalent to currency but this is only a speculation considering that the court, it seems, intentionally avoided calling it money.

3.5 PAYMENT SERVICES LAW FOR CRYPTOCURRENCIES

The European Central Bank indicated in its 2015 report on cryptocurrencies that “In the EU, virtual currency is not currently regulated and cannot be regarded as being subject to the (current) PSD or the EMD. As the phenomenon is still relatively new and also moving into different areas, it would be too early to try making new, tailor-made legislation”¹⁵⁸. Three years later, there is no effort in designing tailor-made payment service law for cryptocurrencies. More importantly, the suggestion that it is possible to designing *sui generis* payment services law for cryptocurrencies has never been critically examined. The task faces enormous challenges tied to the fact that it is difficult to define payment service provider using decentralized cryptocurrencies in cases where cryptocurrency users have direct access to the blockchain with no third party that has meaningful control over transfer of funds. The blockchain does not qualify as a payment service provider or financial institution as it is neither centrally managed by a single institution (*save in cases of centralized cryptocurrencies*), nor in a position to get an

¹⁵² *Id at P 57.*

¹⁵³ *Id at P 57.*

¹⁵⁴ *Id at P 50.*

¹⁵⁵ *Id at P 52.*

¹⁵⁶ *Supra note 96.*

¹⁵⁷ EUROPEAN UNION, COUNCIL DIRECTIVE 2006/112/EC OF 28 NOVEMBER 2006 ON THE COMMON SYSTEM OF VALUE ADDED TAX, n. 243 (Nov. 12, 2006).

¹⁵⁸ EUROPEAN CENTRAL BANK, VIRTUAL CURRENCY SCHEMES– A FURTHER ANALYSIS, 24 (2015).

authorization to serve as payment service provider. Most payments in cryptocurrency are effected directly between the payer and the payee.

Hughes and Middlebrook extensively examine possible different models for the regulation of cryptocurrency intermediaries in the US¹⁵⁹. Their work starts by clearly stating that “on the blockchain transaction”, i.e., direct transfer of fund from a sender to receiver which is recorded on the public ledger and can be verified by other users -does not go through an intermediary¹⁶⁰. Hence, they examine the possible regulatory models only for “off the blockchain” transactions, where “intermediaries act as custodians of cryptocurrency or cryptocurrency credentials originally belonging to their clients and may facilitate and clear transactions for clients without updating the public ledger.”¹⁶¹ They examine various provisions of the Uniform Commercial Code, Art. 4 and the Electronic Fund Transfer Act as implemented by regulation E with the view of constructing how these statutes can serve as the basis for designing specific regulation for cryptocurrency intermediaries¹⁶².

There is no comprehensive legal research assessing the challenges of constructing payment services law for cryptocurrencies. The approach to addressing this issue which gives regulators, lawyers and consumers a clear and practical information on the issue is the one that points out the key challenge that should be tackled and how it could be tackled if at all possible. This article identifies technical deficiency as the single greatest challenge to building payment system based on decentralized cryptocurrencies.

3.5.1 TECHNICAL DEFICIENCY

The most significant challenge to creating a payment system based on cryptocurrencies is the technical deficiency of decentralized cryptocurrencies. If this challenge is not tackled, a regulatory framework is guaranteed to be ineffective. Various regulatory rules that apply to payment service providers regulated by the EU payment services law could equally apply to payment service provisions using cryptocurrencies. For instance, general prudential requirements aimed at ensuring the soundness of financial institutions that requires, among others, that payment service providers maintain certain amount of capital can be imposed on financial institutions handling cryptocurrencies¹⁶³.

¹⁵⁹ Sarah Jane Hughes & Stephen T. Middlebrook, *Advancing a Framework for Regulating Cryptocurrency Payments Intermediaries*, 32 YALE L. J. 496, 559.

¹⁶⁰ *Id.* at 497.

¹⁶¹ *Id.*

¹⁶² *Id.* at 549-556.

¹⁶³ See EUROPEAN UNION, REGULATION (EU) NO 575/2013 OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 26 JUNE 2013 ON PRUDENTIAL REQUIREMENTS FOR CREDIT INSTITUTIONS AND INVESTMENT FIRMS AND AMENDING REGULATION (EU) NO 648/2012, OJEU L 176/1. (It is to be noted that in addition to the requirements of initial capital and own fund required under Arts. 7, 8 & 9 of the PSD II, all credit institutions including payment service providers are subjected to the regulation that provides detail guidelines on prudential residential.)

Under the payment services directive, payment service providers are expected to maintain initial capital and own fund that must not fall below a certain amount¹⁶⁴. Any kind of regulatory rule aimed at ensuring the financial soundness of payment service providers could be applied to payment service providers using cryptocurrencies. But the technical deficiency that lies at the foundation of cryptocurrencies and blockchain is difficult to resolve.

Technical deficiency refers to the defect in the technological infrastructure of decentralized cryptocurrencies that makes it difficult to define payment services providers that are capable of satisfying the requirements necessary to obtain license/authorization to engage in payment services activities. The lack of the necessary technical infrastructure of decentralized cryptocurrencies contradicts some of the core principles controlling authorization of payment service providers. Tackling decentralization goes to the core of regulating cryptocurrencies as payment system. Other issues such as issues of security, consumer protection, and bankruptcy are secondary and resolvable. Discussing these issues without first fixing the technical deficiency, in particular decentralization is futile.

To use an analogy - to tame a black mamba, one of the deadliest snakes in the world, upon capturing it a prudent person must defang it before taking any other measure. To capture the snake and put it in a cage with its fang intact is likely to end in the snake killing either the capturer who intends to tame it or other people. The capturer could say that the cage is secure enough, or he/she puts on gloves, boots and long sleeve clothes in handling the snake. But none of these cautionary measures can assure that the snake does not bite and kill someone. The most efficient and effective measure to avoid being killed by the black mamba during taming is to take out its fangs. Discussing other cautionary measures is imprudent and most likely useless. Decentralized cryptocurrencies are like a black mamba, and decentralization is like the fang of the black mamba. Attempting to regulate decentralized cryptocurrencies without first tackling its decentralization is like attempting to tame the black mamba without removing its fang.

A. LACK OF THE NECESSARY ORGANIZATIONAL STRUCTURE AND TRANSPARENT RULES OF RESPONSIBILITY

Under the PSD II, in order to obtain an authorization, a payment service institution must have prudent management, robust governance arrangement, clear organizational structure and well-defined, transparent and consistent lines of responsibility¹⁶⁵. The PSD II states in particular that:

The competent authorities shall grant an authorisation only if, taking into account the need to ensure the sound and prudent

¹⁶⁴ *Supra note* 132 Arts 7 & 8.

¹⁶⁵ *Supra note* 132 Art. 11(4).

management of a payment institution, the payment institution has robust governance arrangements for its payment services business, which include a clear organisational structure with well-defined, transparent and consistent lines of responsibility, effective procedures to identify, manage, monitor and report the risks to which it is or might be exposed,...

Decentralized cryptocurrencies are inimical to the requirements of prudent management, robust governance arrangement, clear organizational structure and well-defined, transparent and consistent lines of responsibility because transfer of fund can be made directly from the sender (payer) to the receiver (payee), to be confirmed by miners on the blockchain, with no central processing authority¹⁶⁷. There is neither an organizational structure of management, nor lines of responsibility that requires miners to engage in mining or imposes an obligation on them to confirm transactions.

Even in cases where custodian digital wallet providers are involved in facilitating payment, though they could meet the requirements of prudent and responsible management and hence could obtain authorization, they cannot solve the problem arising from “on-the blockchain” transactions where users do not go through custodian wallet providers. In other words, unless “on-the blockchain” transactions are prohibited by making it mandatory for users to go through digital wallet providers or exchanges to conduct transactions in cryptocurrencies, it is impossible to design a regulatory framework akin to the payment services directive for cryptocurrencies. Assuming further that users do use intermediaries to conduct their transactions, the intermediaries themselves depend on the blockchain for final settlement since any cryptocurrency transaction must be registered on the blockchain.

To take a practical example, what happens if “A” transfers 1 Bitcoin to “B” in payment and offers a fee, the equivalent of 10 dollars in bitcoin and the transaction remains unexecuted for two days as a result of which the underlining contract is cancelled by the counter-party or “A” could not book his/her hotel, because the miners simply did not confirm the transaction on the ground that the transaction fee was too low? In payment services provided by traditional currencies, the PSD II makes the payment service provider liable for any charges and interest resulting from the non-execution or defective, including late execution of the payment transaction¹⁶⁸. For “on the blockchain” transactions, no similar rule could be designed just because there is no central office that is in charge of executing payments. Since the miner could be anyone in the world, in case of his/her failure to confirm a transaction, there is no way

¹⁶⁶ *Id.*

¹⁶⁷ Joan Antonio Donet, Cristina Perez-Sola, and Jordi Herrera-Joancomart, *The Bitcoin P2P Network* (March 7, 2014).

¹⁶⁸ *Supra* note 132 Art. 89(3).

for a supervisory authority to design a complaint mechanism or a redress and penalty systems¹⁶⁹.

If a legal rule which requires that all transactions in cryptocurrencies go through intermediaries is to be setup, the same enforcement problem persists. How could the miners distinguish between transactions coming from intermediaries on the one hand and those coming from other entities and individual users on the other hand? After all, every cryptocurrency user has only a public key on the blockchain¹⁷⁰ without name or any other personal identification information. Therefore, technically, it is not possible to implement such as rule with respect to decentralized cryptocurrencies.

B. ANTI-MONEY LAUNDERING AND COUNTERING TERRORISM FINANCING LAW ENFORCEMENT ISSUE

All financial institutions are obliged to operate in compliance with the existing rules governing combating money laundering and countering terrorism financing enshrined in the EU Anti-Money Laundering and Countering Terrorism Financing Directive (“the AML/CTF Directive (2015)”) ¹⁷¹. This directive was formally implemented in the member states of the EU by the 26 of June 2017¹⁷². Since this directive did not cover cryptocurrencies, the European Commission has proposed an amendment - “the Proposed AML/CTF Directive”¹⁷³.

The proposed AML/CTF directive recognizes that under the applicable law, obligations imposed on traditional financial institutions including the duty to identify suspicious activities aimed at combating money laundering and terrorism financing using the Union's financial system do not apply to cryptocurrency exchange services providers and custodian wallet providers¹⁷⁴. It also recognizes that the anonymity provided by cryptocurrencies, enabling criminal behaviours would be more hindrance than an asset for cryptocurrencies and sets to tackle anonymity¹⁷⁵. Accordingly, the proposed amendment is set to extend the application of AML/CTF Law to cryptocurrencies and intermediaries dealing with them¹⁷⁶, defines the new institutions such as

¹⁶⁹ See generally supra note 132, see Arts 90 and 103 respectively.

¹⁷⁰ Supra note 18 at 15.

¹⁷¹ EUROPEAN PARLIAMENT, DIRECTIVE (EU) 2015/849 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 20 MAY 2015 ON THE PREVENTION OF THE USE OF THE FINANCIAL SYSTEM FOR THE PURPOSES OF MONEY LAUNDERING OR TERRORIST FINANCING, AMENDING REGULATION (EU) NO 648/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, AND REPEALING DIRECTIVE 2005/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL AND COMMISSION DIRECTIVE 2006/70/EC (2015).

¹⁷² Id.

¹⁷³ Supra note 70.

¹⁷⁴ Id Recital 6.

¹⁷⁵ Id Recital 10.

¹⁷⁶ Id Recital 6.

custodian wallet providers¹⁷⁷, and requires member states to prohibit financial institutions from keeping anonymous accounts, anonymous passbooks, or anonymous safe deposit boxes¹⁷⁸.

Pursuant to its purpose, the proposed directive has a set of measures aimed at combating money laundering and terrorism financing using cryptocurrencies. Two of the oddest notions under the proposed directive are the potential setting up and maintaining of a central database for registering cryptocurrency users' identities accessible to Financial Intelligence Units of member states and self-declaration forms for users¹⁷⁹. These ideas are odd as they deviate from measures imposed by AML/CTF laws applicable to traditional financial institutions. To require user database in traditional financial service would be requiring a central registry for users of the USD, the Euro or Yuen. While this measure may be aimed to identifying cryptocurrency users who have direct access to the blockchain because they do not use custodial digital wallets or exchanges, it is nearly impossible to enforce it. If users simply fail to register or self-declare, law enforcement has to put all individuals who have computer on which the blockchain node can be downloaded as suspects for violating the rule.

By proposing legal rules that are patently ineffective, the European Commission and the relevant institutions that took part in drafting the proposed AML/CTF as related to cryptocurrencies are dodging the question of regulating miners and the blockchain. When the blockchain is the central point of decentralized cryptocurrencies and the miners are like bankers who handle transactions, it is either naïve or intentionally dodgy trying to regulate only users and intermediaries whose role in the ecosystem of cryptocurrencies is only secondary.

¹⁷⁷ *Id* Recital 6 & Proposed Addition of Paragraph 18(b) to Art. 3 of the EUROPEAN PARLIAMENT, DIRECTIVE (EU) 2015/849 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 20 MAY 2015 ON THE PREVENTION OF THE USE OF THE FINANCIAL SYSTEM FOR THE PURPOSES OF MONEY LAUNDERING OR TERRORIST FINANCING, AMENDING REGULATION (EU) NO 648/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, AND REPEALING DIRECTIVE 2005/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL AND COMMISSION DIRECTIVE 2006/70/EC (2015).

¹⁷⁸ *Id*, Recital 6 & Proposed Replacement of Art. 10(1) of THE EUROPEAN PARLIAMENT DIRECTIVE (EU) 2015/849 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 20 MAY 2015 ON THE PREVENTION OF THE USE OF THE FINANCIAL SYSTEM FOR THE PURPOSES OF MONEY LAUNDERING OR TERRORIST FINANCING, AMENDING REGULATION (EU) NO 648/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, AND REPEALING DIRECTIVE 2005/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL AND COMMISSION DIRECTIVE 2006/70/EC.

¹⁷⁹ *Id*, Proposed Addition to Art. 65 of THE EUROPEAN PARLIAMENT DIRECTIVE (EU) 2015/849 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 20 MAY 2015 ON THE PREVENTION OF THE USE OF THE FINANCIAL SYSTEM FOR THE PURPOSES OF MONEY LAUNDERING OR TERRORIST FINANCING, AMENDING REGULATION (EU) NO 648/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, AND REPEALING DIRECTIVE 2005/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL AND COMMISSION DIRECTIVE 2006/70/EC.

4. THE FUTURE OF CRYPTOCURRENCIES AS PAYMENT SYSTEM

This article has shown that the existing EU legislation governing payment services do not apply to cryptocurrencies. Moreover, there is an impediment to constructing tailor-made payment services law for cryptocurrencies ingrained in the technical design of decentralized cryptocurrencies. But what does the future hold for cryptocurrencies as payment system? There are two alternative solutions both of which are not reassuring to anyone who wants to see cryptocurrencies-succeed centralization or state cryptocurrency.

4.1 CENTRALIZATION

By now it must be an open secret that decentralization is considered to be the strongest attribute of cryptocurrencies. But from regulatory point of view, it is the feature that works against cryptocurrencies as it would eventually hurt the chance of designing reasonable regulatory framework for cryptocurrencies. Speaking of the virtue of decentralization, Antonopoulos states:

Early digital currencies used a central clearinghouse to settle all transactions at regular intervals, just like a traditional banking system. Unfortunately, in most cases these nascent digital currencies were targeted by worried governments and eventually litigated out of existence. Some failed in spectacular crashes when the parent company liquidated abruptly. To be robust against intervention by antagonists, whether legitimate governments or criminal elements, a decentralized digital currency was needed to avoid a single point of attack. Bitcoin is such a system, completely decentralized by design, and free of any central authority or point of control that can be attacked or corrupted¹⁸⁰.

Antonopoulos thinks that the complete decentralization of bitcoin ensures robustness and is government intervention-proof¹⁸¹. The assertion may be correct. But the absurdity in praising complete decentralization as a saviour of cryptocurrencies from legitimate governments speaks volumes about how irresponsible some of the cryptocurrency backers can be. Why should legitimate governments not be able to reasonably regulate cryptocurrencies? But setting that question aside, complete decentralisation is actually the single greatest adversary of cryptocurrencies with the potential to end them or render them just experimental projects, with no meaningful use for the broader economy. In order to create a robust payment system, it is absolutely imperative to have a central entity that obtains authorization to engage in providing

¹⁸⁰ *Supra* note 18 at 3.

¹⁸¹ *Id.*

payment services, is able to take responsibility for facilitating payments and is held accountable and liable for any obligations arising from its activities. There is simply no system that is sustainable with no central authority that is held accountable to the community of users. But centralization is undesirable for at least two reasons. It creates a private monopoly and it does not entirely resolve the accountability deficit that is deeply rooted in the decentralized cryptocurrencies.

A. PRIVATE MONOPOLY

Centralizing cryptocurrencies has the potential to create a monopoly. One of the political motives for creating bitcoin is the aversion to a central bank monopoly over the creation and regulation of money as acknowledged by the European Central Bank stating that “the following ideas are generally shared by Bitcoin and its supporters: they see bitcoin as a good starting point to end the monopoly central banks have in the issuance of money”¹⁸². The intention behind cryptocurrencies is to challenge the existing financial system which presupposes the monopoly of central banks in money creation and mainstream financial institutions in the provision of financial services. If centralized cryptocurrency is to be advocated for, it would mark the official reversal of this objective of cryptocurrencies.

Centralization of cryptocurrencies and blockchain could take various forms. The simplest form is where a company or a group of companies highly regulated by the state create(s) cryptocurrencies. Centralization could also be achieved by leaving cryptocurrencies as decentralized as they are today but requiring that all transactions be conducted through intermediaries with no direct access by the user to the blockchain. But the latter route is costly in terms of enforcing the rules that impose the use of intermediaries. But both options would essentially create a conducive atmosphere for the monopoly in the delivery of payment services, the very idea decentralized cryptocurrencies were designed to tackle.

B. GENERAL LACK OF ACCOUNTABILITY

As cryptocurrencies stand today, lack of accountability of developers and miners for any conduct that may undermine monetary policy or payment system is of an immense concern. The European Central Bank echoed the sentiment that cryptocurrencies are not threat to monetary policy arguing that they are irrelevant to the real economy¹⁸³ and that the upper limit placed on bitcoin creation by its protocol ensures that it has no inflationary effect¹⁸⁴. It

¹⁸² EUROPEAN CENTRAL BANK, VIRTUAL CURRENCY SCHEME (2012), 22.

¹⁸³ *See supra* note 158.

¹⁸⁴ *Supra* note 182 at 25(Virtual Currency Scheme 2016).

reached similar conclusion regarding the potential adverse effect of cryptocurrencies on the stability of EU payment system¹⁸⁵.

Today, the notion that the upper protocol based limit to the creation of bitcoin is a determining factor in the effect of cryptocurrencies on monetary policy or payment system should not be taken seriously. Bitcoin protocol is run by individuals who have no mandate given to them by any group of people. If there is an agreement amongst them, there is no reason the protocol cannot be changed. There is already an evidence that the protocol is not faithfully adhered to. Due to the sustained disagreement among the developers and miners, as of August 1, 2017, a split or what is referred to in technical term as “a hard fork” has occurred, leading to two different chains in the bitcoin blockchain¹⁸⁶. With the hard fork, two separate systems have been created, i.e., one that requires upgrading the software to Segwitx2 increasing the block size from 1 megabyte to 2 and stores some of the bitcoins off the blockchain, and the other which merely increases the block size to 8 megabytes¹⁸⁷. The latter option led to the creation of a new cryptocurrency – the Bitcoin Cash (BCC)¹⁸⁸, which is operating parallel to bitcoin. Protocol based limit to bitcoin is a hoax. If it is not, bitcoin advocates must answer why bitcoin and bitcoin cash, both traded on cryptocurrency exchanges, that emanated from the bitcoin blockchain are operating side-by-side but as independent cryptocurrencies.

Another important factor that must be taken into account in determining the supply of cryptocurrencies and their disruptive effect on the financial system in general and payment system in particular is that the cryptocurrency systems are run by self-interest maximizing individuals who are motivated by money. They are not motivated by the desire to build a better payment system for the society. It is for this reason that ideas such as bitcoin’s potential to help banking the unbanked¹⁸⁹, propagated by the bitcoin advocates happened to be only a hoax when the cryptocurrency community turned around and started advancing that cryptocurrencies are just assets with skyrocketing prices. On December 6, 2017, on Bitstamp, a Luxembourg based cryptocurrency exchange, 1 bitcoin was worth over 12,000 USD, 1 Litecoin was worth over 99 USD, and 1 Ether was worth over 433 USD¹⁹⁰. These prices surely fluctuate, regardless of which, it is reasonable to ask which one of these cryptocurrencies is accessible to the unbanked.

The campaign for cryptocurrencies is based hyperbole and a degree of deceptive advertising, in the light of which it is not rational to believe that the project genuinely provides a better alternative to the existing state monopoly over money creation and regulation. Neither would cryptocurrencies, left to

¹⁸⁵ *Supra* note 158 at 27.

¹⁸⁶ *Bitcoin Cash: 5 Fast Facts you need to Know*, HEAVY, <http://heavy.com/news/2017/08/how-does-bitcoin-cash-work/>.

¹⁸⁷ *Id.*

¹⁸⁸ *Id.*

¹⁸⁹ Nyshka Chandran, *Can bitcoin help the world's unbanked?*, CNBC (July 5, 2017), <https://www.cnbc.com/2015/07/05/can-bitcoin-help-the-worlds-unbanked.html>.

¹⁹⁰ *See BITSTAMP*, <https://www.bitstamp.net/>

private entities, offer stable and reliable system of payment. Centralisation of cryptocurrencies would not solve the issues of accountability unless the level of centralization goes to the extent of creating cryptocurrencies that are bound by national rules and operate at a national level.

4.2 STATE CRYPTOCURRENCY

State cryptocurrency is the most extreme policy direction that could be taken with respect to cryptocurrencies. At the very outset, it ought to be clear that state/national cryptocurrency potentially addresses not only the issues of payment system but also monetary policy at large, provided that the use of cryptocurrencies as medium of exchange for goods and services become mainstream. At this point in time, there is no precise data on the volume of transactions conducted in cryptocurrencies and it is not useful to try to look for data or to speculate. But should cryptocurrencies become a mainstream system of payment, a revision of monetary policy would be inevitable¹⁹¹. This, among others, requires issuing state cryptocurrencies because there is simply no evidence suggesting that cryptocurrencies as private currencies would function. Neither are there rules to that effect.

In emphasizing on the importance of rule based monetary system, Friedman argued that rule based monetary system “will have the effect of enabling the public to exercise control over monetary policy through its political authorities, while at the same time it will prevent monetary policy from being subject to the day-by-day whim of political authorities.”¹⁹² Friedman’s proposal for rule based monetary policy is a result of his objection to the prevailing monetary policy that is based on wide discretion exercised by independent authorities (central banks), which he considers is contrary to ensuring stable monetary system¹⁹³. If state-run monetary policies should be subject to tight rule based controls, there no reason similar standards should not be applied with regard to cryptocurrencies.

But assuming that the time to discuss the monetary impact of cryptocurrencies and the regulatory response for that is not yet due, state cryptocurrency would significantly tackle the difficulty in taming cryptocurrencies even merely as payment systems.

A. *EXPLORING THE STATE CRYPTOCURRENCY PROPOSITION*

The concept of state cryptocurrency was alluded to in 2016 by the current chairman of the US Federal Reserve, Powell who made the suggestion

¹⁹¹ See *supra* note 175 at 23; Wallace Young, *What Community Bankers Should Know About Virtual Currencies*, FED. RESERVE SYS. (2015), 2.

¹⁹² Milton Friedman, *CAPITALISM AND FREEDOM* 51 (University of Chicago Press, 2002).

¹⁹³ *Id.*

that central banks could issue their own cryptocurrencies by using distributed digital ledger technology¹⁹⁴. The Central Bank of China has launched a prototype of its cryptocurrency¹⁹⁵. But no specific date is set for the launching of the Chinese state cryptocurrency. In theory, the solution maintains the benefits of distributed digital ledger and the speed and convenience (if any) associated with cryptocurrencies. But two general questions must be answered with respect to the idea of state cryptocurrency. The first one is whether the system solves problems inherent in cryptocurrencies as we know them today. The second one is, even if a state cryptocurrency naturally mitigates the risks associated with decentralized cryptocurrencies, whether it is feasible.

B. THE FEASIBILITY OF STATE CRYPTOCURRENCY

A proposal for state cryptocurrency is not advocated for in mainstream scholarship. Michael states that “peer-to-peer central bank is the most obvious public institution that might be built on a cryptocurrency, because a cryptocurrency essentially performs the function of a central bank.”¹⁹⁶ He spends the rest of his argument addressing how a software based creation of money could be used to control money growth and inflation dedicating little discussion to how the Peer-to-Peer central bank works.

According to a paper published online by Deloitte, state-sponsored cryptocurrency differs from decentralized cryptocurrencies, *inter alia*, in the lack of cap on money supply contained on the ledger, in the reduced stigma and fear of adoption, official sanction and use of national currency and in the regulation of Ledger miners and the low probability of fluctuation in exchange rate¹⁹⁷. In theory, state cryptocurrency should incorporate the essential features of cryptocurrencies with the necessary modification to ensure that the system runs smoothly by balancing decentralisation and a level of centralization necessary to govern the blockchain not only by rules of algorithm but also by legal rules that apply to the conduct of miners and other intermediaries that partake in maintaining the ecosystem. Its most important feature must be that it replicates cryptocurrencies to the maximum extent possible.

First, a state cryptocurrency should be created by the national central bank with due regard to its incumbent monetary policy priorities, including

¹⁹⁴ Jerome H. Powell, Remarks at Blockchain: The Future of Finance and Capital Markets? The Yale Law School Center for the Study of Corporate Law (March 3 2017) transcript available at <https://www.federalreserve.gov/newsevents/speech/powell20170303a.htm>.

¹⁹⁵ *China Is Developing its Own Digital Currency*, BLOOMBERG NEWS (Feb. 23, 2017), <https://www.bloomberg.com/news/articles/2017-02-23/pboc-is-going-digital-as-mobile-payments-boom-transforms-economy>.

¹⁹⁶ Michael Abramowicz, *Cryptocurrency Based Law*, GEORGE WASH. UNI. L. SCHOOL PUBLIC LAW RESEARCH PAPER 6 (March 6, 2015), <http://ssrn.com/abstract=2573788>.

¹⁹⁷ *State-Sponsored Cryptocurrency: Adapting the best of Bitcoin's innovation to the Payments Ecosystem*, DELOITTE (2015), <https://www2.deloitte.com/us/en/pages/consulting/articles/state-sponsored-cryptocurrency-adapting-bitcoin-innovation.html>.

inflation control. Second, the state cryptocurrency should maintain a level of decentralization by allowing banks and financial institution to incorporate it in their payment system. The users of state cryptocurrencies would have digital wallets provided by licensed financial institutions. Since the state cryptocurrency does not necessarily replace cash money, rather it supplements it; it could be preferred by certain users. If the real intent of cryptocurrencies was indeed to enable conducting transactions faster and cheaper, state cryptocurrency would be the closet replica, without the downside of regulatory difficulty and cost involved in attempting to regulate decentralized cryptocurrencies. But I don't advocate for inflexibly fixed supply for state cryptocurrencies as the decision to increase or reduce money supply has to be revised according to the need for money supply in the society. Hence, the central bank in charge of the specific cryptocurrencies (for instance the European Central Bank and European National Central Banks) should determine the supply of the cryptocurrency. Software protocol imposed limit is arbitrary and unrealistic. For instance, it is almost impossible to purchase small amount of bitcoin because it is too expensive and one ends up paying excessive transactions fee to purchase a small amount.

Overall, implementing state cryptocurrency is possible but the challenge it faces should not be ignored. First and foremost, a state cryptocurrency might discourage users from using cryptocurrencies. Today, it is clear that the fast growth of cryptocurrencies is attributed to the fact that they are private and they operate in relatively under-regulated or unregulated spaces.

If the state takes cryptocurrencies over, it is not certain whether they would remain equally attractive. At the same time, whether a state cryptocurrency is implemented or not, regulations are going to be put in place sooner or later. Hence, if a state cryptocurrency can discourage users, so does tighter regulation. So it seems that any sort of regulation of cryptocurrencies is likely to curtail their attractiveness. Originally the value of cryptocurrencies derived from their potential to serve as cheap method of payment. But as times passes, this *raison d'etre* has been abandoned as the transaction cost for the major cryptocurrencies is not that low and transfer of fund is not that fast. When this is coupled by regulations that are almost non-existent now in the EU, using cryptocurrencies would be even more expensive. So, was the cryptocurrency as money and payment system merely an attractive broken campaign promise? It appears so.

A system of payment or currency whose main strength is lack of regulation cannot be considered sustainable at all. I strongly argue that both tighter regulation and state cryptocurrency have similar effect of discouraging the use of cryptocurrencies as both would simply target decentralization and anonymity, two of the most attractive features of cryptocurrencies. The best course of action would have been to simply define cryptocurrencies as securities as the new generation cryptocurrencies are used to evidence a stake in an enterprise. But the problem is that some are used as medium of exchange and there even emerging project campaigning to make cryptocurrencies mainstream

payments methods¹⁹⁸. If this is indeed not done, a greater portion of the cryptocurrencies would simply not have values.

CONCLUSION

It is almost a decade since bitcoin was first launched. Today there are dozens of decentralized peer-to-peer currencies. Despite the regulatory problems cryptocurrencies present, no meaningful step has been taken in the European Union. A closer examination of cryptocurrencies demonstrates that typical cryptocurrencies do not fit into the traditional legal rules governing payments services. Due to the technical deficiency of decentralized cryptocurrencies, reflected in unfettered decentralisation as their main feature, designing tailor-made payment service law for cryptocurrencies is impossible.

This article proposed two possible solutions to the problem. The first one is centralization of cryptocurrencies run by private entities coupled with a mandatory obligation to use intermediaries to transact in cryptocurrencies. This solution could potentially create private monopoly over payments systems conducted in cryptocurrencies. It also sustains the accountability deficit deeply embodied in decentralized cryptocurrencies. The second solution is creating state cryptocurrencies, run by the central bank. This solution is likely to discourage the use of cryptocurrencies, as it seems that cryptocurrencies have gained popularity because they are run by private entities, in a decentralized manner and anonymously. But considering that tighter regulatory frameworks will inevitably be put in place with the effect of discouraging the use of cryptocurrency for the prevalence of strong rule of law in the digital economy, the creation of state cryptocurrencies is the only realistic solution moving forward.

¹⁹⁸ See CRYPTO IMPROVEMENT FUND ICO, *Business Plan*, (Nov. 2017), https://www.cryptoimprovementfund.io/wp-content/uploads/2017/11/CIF_BP_VF.pdf.