HOW SHOULD BITCOIN BE REGULATED?

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Abstract:

The lack of clarity about Bitcoin's legal framework has meant that none of the regulators across the EU have yet achieved sufficient clarity in the legal treatment of Bitcoin and its stakeholders. This uncertainty poses a number of substantial risks to Bitcoin stakeholders and creates challenges for regulatory authorities. Therefore, there is a need for a clear strategy for Bitcoin's regulation aiming to ensure the maximum possible balance between the interests of Bitcoin stakeholders longing for the preservation of Bitcoin's benefits and mitigation of relevant risks, and the interests of regulators striving for ensuring the compliance of Bitcoin stakeholders with the law. In this paper, the author develops such a strategy. Its implementation provides for the official recognition of Bitcoin as an unregulated technology, the recognition of that Bitcoin users interacting between each other and Bitcoin miners are outside the regulatory scope, and the efficient application of existing legal mechanisms to Bitcoin merchants, Bitcoin exchanges and the relations between these categories of Bitcoin stakeholders with Bitcoin users. Thus, the balanced regulation of Bitcoin is achieved in the form of a partial regulation of the usage of Bitcoin at different levels of Bitcoin's functionality.

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I.   INTRODUCTION

Bitcoin, the first decentralised virtual currency based on a peer-to-peer network, is essentially a novel online payment system with unique properties substantially distinguishing it from other online payment systems. However, Bitcoin's legal framework is very unclear, which has entailed that none of the regulatory bodies across the EU have yet achieved sufficient clarity in the legal treatment of Bitcoin and its stakeholders. This vagueness and uncertainty pose a number of substantial risks to Bitcoin stakeholders and create challenges for regulatory authorities: Bitcoin users remain legally unprotected as consumers; Bitcoin transactions are often conducted in circumvention of traditional contract and tax law; the properties of Bitcoin and the lack of its clear regulation are often exploited by criminals who use Bitcoin for the purposes of money laundering etc.

Therefore, there is a need for a clear strategy of Bitcoin's regulation aiming to ensure the maximum possible balance between the interests of Bitcoin stakeholders longing for the preservation of Bitcoin's benefits

and the mitigation of the relevant risks, and the interests of regulators striving for ensuring the compliance of Bitcoin stakeholders with the law. In this paper, the author develops such a strategy of balanced regulation.

The sought balanced regulation should determine the legal issues surrounding the concept of Bitcoin, clarify the legal statuses of and the legal rules applicable to Bitcoin stakeholders, and provide regulatory authorities with legal tools for overseeing the compliance of Bitcoin stakeholders with applicable law. In order to develop the strategy of Bitcoin's balanced regulation, the author analyses the aspects of Bitcoin's functionality from technical and legal perspectives. The legal analysis is carried out using the traditional legal dogmatic method.

The structure of the paper is as follows: In the introduction and section II, the author provides briefly information on the legality of Bitcoin and an overview of Bitcoin's functionality. Section III encompasses the legal analysis of Bitcoin and Bitcoin stakeholders. In section IV, the author's strategy of the implementation of the sought balanced regulation of Bitcoin is provided. In the conclusion, the author's findings are summarised. Within the paper, the focus is on the regulation of Bitcoin within the European Union (EU).

II. EXPLANATION OF BITCOIN

1.   Is Bitcoin Legal?

Notwithstanding that the concept of Bitcoin lacks clear legal framework, the EU regulatory bodies tend to agree that Bitcoin is legal. The European Central Bank in its comprehensive research on virtual currencies[1] has defined Bitcoin as 'unregulated digital money'[2] which falls 'within central banks' responsibility as a result of characteristics shared with payment systems that give rise to the need for at least an examination of developments and the provision of an initial assessment'.[3] The European Banking Authority has designated virtual

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[1] European Central Bank, *Virtual Currency Schemes* (ECB Publications 2012) <www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf> accessed 17 April 2014.
[2] ibid, 5.
[3] ibid, 47.

currencies, including Bitcoin, as 'a form of unregulated digital money that is not issued or guaranteed by a central bank and that can act as means of payment'[4]. In Germany, the Federal Ministry of Finance has announced that Bitcoin is a 'unit of account' and a kind of 'private money' which can be used in 'multilateral clearing circles'.[5] In Finland, the State Accounting Board has determined that Bitcoin transactions are subject to business accounting rules.[6]

2.   What Is Bitcoin and How Does It Work?

a.   *A bitcoin and Bitcoin. The Bitcoin Protocol*

Introduced in 2008[7] and launched in 2009, Bitcoin constitutes both a virtual currency and a digital payment system within which transactions in this currency are made. Bitcoin as a virtual currency is denominated in virtual units of account called bitcoins. Bitcoin as a payment system is not controlled and/or owned by any entity and is based on a decentralised peer-to-peer network which consists of users and functions under the Bitcoin protocol.

The Bitcoin protocol solely determines the rules under which the Bitcoin network operates, the same way as any protocol functioning on the Internet determines rules for a specific technology. For example, Voice over IP (VoIP) protocols form the underlying set of rules for Internet telephony, and Simple Mail Transfer Protocol (SMTP) serves as an essential part of the set of rules for email communication. The Bitcoin protocol is open-source, which means that the review and modification of the protocol's code can be carried out by any

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[4] European Banking Authority, *Warning to consumers on virtual currencies* (EBA 2013) <www.eba.europa.eu/documents/10180/598344/EBA+Warning+on+Virtual+Currencies .pdf> accessed 17 April 2014.

[5] Letter from Federal Ministry of Finance of Germany to Frank Schaeffler (7 August 2013) <www.frank-schaeffler.de/wp-content/uploads/2013/08/2013_08_07-Antwort-Koschyk-Bitcoins-Umsatzsteuer.pdf> accessed 17 April 2014.

[6] State Accounting Board of Finland, *Digitaalisen vertaisvaluutan käsittelystä kirjanpidossa* (State Accounting Board of Finland 2012) <http://ktm.elinar.fi/ktm/fin/kirjanpi.nsf/717602942eb71ebdc22570210049e02b/f3aa8c34 418d93e3c2257aad0040d1f3?OpenDocument> accessed 17 April 2014.

[7] See Satoshi Nakamoto, 'Bitcoin: A Peer-To-Peer Electronic Cash System' (*Bitcoin.org*, 2008) <http://bitcoin.org/bitcoin.pdf> accessed 17 April 2014.

developer.[8] However, the open-source nature of the protocol does not imply that any modification of the protocol instantaneously becomes an effective rule for the Bitcoin network. If this scenario was possible, anyone would be able to change the way Bitcoin functions by merely modifying the protocol's code in any arbitrary way. However, Bitcoin's security measure is the principle of consensus of the majority, which means that new modifications become effective rules if only these modifications are embraced by the majority of users of the network.[9] The majority of users embrace these new modifications by starting using the modified protocol-based client software, that is Bitcoin wallets, discussed in more detail in section II.2.e below. Logically, the users tend to embrace only those modifications which are not detrimental. Therefore, the Bitcoin protocol is practically impossible to amend in a way that contradicts the interests of the majority of users of the Bitcoin network.

The Bitcoin protocol ensures that bitcoins are created within the Bitcoin network at a pre-determined pace and with the pre-programmed supply: roughly every 10 minutes 25 new bitcoins are put into circulation. However, the base amount of bitcoins periodically created decreases by half every four years. To clarify, within the period from 2017 to 2020, only 12.5 bitcoins will be created at the same pace. A bitcoin is highly divisible, since it can be divided into 100 million units called satoshi. Due to the previously described properties of the Bitcoin protocol, the last satoshi will be created in 2140, and the total maximum amount of bitcoins ever created is about 21 million. Bitcoin has deflationary properties due to the limited supply, and can be used in any kind of transactions due to the high level of divisibility.[10]

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[8] 'Who Created Bitcoin?' (*Bitcoin.org*) <https://bitcoin.org/en/faq> accessed 17 April 2014.

[9] 'Could Users Collude Against Bitcoin?' (*Bitcoin.org*) <https://bitcoin.org/en/faq> accessed 17 April 2014; 'How Could the Bitcoin Protocol Be Changed? Has This Ever Occurred?' (*Bitcoin Beta*) <http://bitcoin.stackexchange.com/questions/3945/how-could-the-bitcoin-protocol-be-changed-has-this-ever-occurred> accessed 17 April 2014.

[10] See 'Controlled Supply' (*Bitcoin wiki*) <https://en.bitcoin.it/wiki/Controlled_supply> accessed 17 April 2014.

b.   Is Bitcoin Anonymous?

All Bitcoin transactions are made public in the online public ledger called the blockchain. The information available in the blockchain includes the details of every Bitcoin transaction. These details do not include information which could directly identify the parties of a transaction, but include the exact time and the estimated amount of the transaction, and also the transactors Bitcoin addresses used for sending and receiving bitcoins. Though the identifying information is not public, the other available data can be used to track the transaction to certain individuals.[11] Since the complete anonymity of the transacting parties is not achievable, Bitcoin can be classified as partly anonymous.

c.   High Volatility

Resulting from its decentralised nature and qualities inherent to the Bitcoin protocol, Bitcoin as a virtual currency is not backed by any entity, is not redeemable for any commodity and has no intrinsic value. Bitcoin is a very volatile virtual currency, which can be seen from substantive fluctuations of its exchange value.[12] According to the European Central Bank, Bitcoin's exchange value 'with respect to other currencies is determined by supply and demand'.[13]

d.   Bitcoin Versus Traditional Payment Systems

Bitcoin was originally designed as an alternative to traditional centralised electronic payment systems which suffer 'from the inherent weaknesses of the trust based model'.[14] Such traditional digital payment systems have a number of properties: transaction costs are high, which makes small online transactions impracticable; the processing of transactions is time-consuming; transactions are reversible, which allows chargeback fraud[15]; privacy of transactions is not achievable, since

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[11] Elli Androulaki and others, 'Evaluating User Privacy in Bitcoin' in Ahmad-Reza Sadeghi (ed), *Financial Cryptography and Data Security: 17th International Conference, FC 2013, Okinawa, Japan, April 1-5, 2013, Revised Selected Papers* (Berlin Heidelberg, Springer 2013).

[12] See 'Market Price (USD)' (*Blockchain.info*) <https://blockchain.info/charts/market-price> accessed 17 April 2014.

[13] European Central Bank (n 1), 6.

[14] Nakamoto (n 7), 1.

[15] See 'Chargeback Fraud' (*Wikipedia)*

a payment service provider possesses identifying information on transactors; there tend to be territorial limitations of use, which makes impossible to send funds online from and to certain locations.

At the same time, Bitcoin provides the opportunity to conduct online transactions directly between transactors, not involving any trusted party such as a payment service provider. Bitcoin, in turn, essentially functions as digital cash: a transaction is private unless the parties transact with such Bitcoin stakeholders as Bitcoin exchanges (see the next section); the processing of the transaction may be instantaneous or very fast; the transaction is irreversible, which makes chargeback fraud impossible; there are no or insignificant transaction costs, which enables the practicability of small casual online payments; there are no territorial limitations, which means that bitcoins can be sent and received from and to any location. Therefore, Bitcoin has several advantages over traditional digital payment systems.

e. *Bitcoin Stakeholders and the Mechanism of Bitcoin Transactions*

Bitcoin is used by an ever-increasing number of Bitcoin stakeholders who can be conditionally divided into four main categories: users, miners, exchanges, and merchants.

Users are the persons who use bitcoins to buy goods and services from Bitcoin merchants, store bitcoins, or buy or sell bitcoins for traditional currency through Bitcoin exchanges. To become a Bitcoin user, one needs to obtain a Bitcoin wallet by, for example, downloading a free open-source client software on a computer or a smartphone, or signing up for a free online service providing web wallets.[16] These software or web wallets are used as a storage for bitcoins and as a user client ensuring the interaction between the Bitcoin user and the Bitcoin network. The installation and usage of a Bitcoin wallet does not require the provision of any identifying data from a user. The wallets, just as the Bitcoin network, operate under the Bitcoin protocol. Operating principles and functions of the wallets are usually the same in essence irrespective of the wallet type or provider. The Bitcoin wallets are interoperable with each other.

<http://en.wikipedia.org/wiki/Chargeback_fraud> accessed 17 April 2014.
[16] See 'Choose your Bitcoin Wallet' (*Bitcoin.org*) <http://bitcoin.org/en/choose-your-wallet> accessed 17 April 2014.

The user is provided with two keys generated by the wallet: a private key and a public key. The private key is generated only once. It is secret and used as a password for the wallet. The public key, in turn, is generated any number of times on demand of the user. The public key is the user's Bitcoin address serving as a kind of a bank account for receiving and sending bitcoins. Therefore, the user may use different Bitcoin addresses for different transactions.

A bitcoin can be perceived as a record of transactions taken place within the Bitcoin network ('a chain of digital signatures'[17]) up to the moment when the bitcoin has been placed on the holder's Bitcoin address, or, put this another way, when the holder has obtained ownership over this bitcoin. When one Bitcoin user (the payer) sends bitcoins to another Bitcoin user (the payee), the payer digitally signs the message about the current transaction with her/his secret private key. The message in whole contains the information on: all the previous transactions related to these bitcoins; the amount of the bitcoins sent to the payee; and the payee's Bitcoin address which is the payee's public key.

Then, the payer sends the message about the current transaction not to the payee but to the Bitcoin peer-to-peer network, where the message should be included in a cluster of digital information called a 'block'. The block contains messages about other current transactions within the Bitcoin network, given these messages have not been included in any prior block. The block constitutes a kind of a mathematical puzzle, as every message is signed by payers' private keys and is, thus, based on public key cryptography. [18] After the message about the current transaction has been included into the block, this block should be placed into the Bitcoin public ledger called the 'blockchain'. The blockchain, as the name suggests, constitutes the chain of blocks. The blockchain is publicly accessible online.[19]

To be included into the blockchain, the block should be 'solved' by the Bitcoin miners. Solving the block basically means finding the unique

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[17] Nakamoto (n 7), 2.
[18] See 'Public-Key Cryptography', *Wikipedia* <http://en.wikipedia.org/wiki/Public-key_cryptography> accessed 17 April 2014.
[19] See 'Home: Welcome to Blockchain' (*Blockchain.info*) <https://blockchain.info> accessed 17 April 2014.

answer to the mathematical puzzle constituting the block.[20] The *miners* are those Bitcoin stakeholders who contribute the processing power of their computer systems to this process. When the block is solved, it is immediately placed into the blockchain. When the block is included into the blockchain, it means that all transactions, the information on which has been initially included into the block, are deemed confirmed by one block. Since every subsequent block contains the reference to the prior one, the transaction is confirmed by every block following the block into which the transaction has been initially included. This mechanism prevents the possibility of forgery and double spending of bitcoins.[21] Usually, a number of blocks should be solved to confirm the transaction.[22] When the message is sent, the payer's bitcoins are immediately sent to the payee, but the payee can spend these bitcoins only after the transaction has been confirmed.

The Bitcoin protocol ensures that one block is solved, or, in other words, the unique answer to the mathematical puzzle is found, roughly every 10 minutes.[23] This interval is kept standard with time, since the difficulty of blocks automatically adjusts to the computational powers of computer systems exploited by miners. As these computational powers tend to increase[24], so does the difficulty of the mathematical puzzles to solve. The amount of bitcoins, mentioned in section I.2.a. above, constitutes a kind of *reward* for solving a block. When the block is solved, the generated reward in the amount of 25 bitcoins (currently) is automatically sent to the randomly chosen Bitcoin address of the miner who has been contributing to the process of solving the block. The acquisition of the reward is always registered as the first transaction of the block and constitutes the essence of the Bitcoin mining.[25] The

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[20] See 'Blocks' (*Bitcoin wiki*) <https://en.bitcoin.it/wiki/Blocks> accessed 17 April 2014.

[21] See 'Double-Spending' (*Bitcoin wiki*) <https://en.bitcoin.it/wiki/Double-spending> accessed 17 April 2014.

[22] See 'Confirmation' (*Bitcoin wiki*) <https://en.bitcoin.it/wiki/Confirmation> accessed 17 April 2014.

[23] See n 20.

[24] See 'International Technology Roadmap for Semiconductors: 2011 Edition, Executive Summary' (according to the document, the number of transistors on a processor chip is doubling every 3 years since 2013, thus overcoming Moore's law, 2011) 86, 91, 95 <www.itrs.net/Links/2011ITRS/2011Chapters/2011ExecSum.pdf> accessed 17 April 2014. See also Gordon Moore, 'Cramming More Components Onto Integrated Circuits' (1965) 38(8) Electronics 114.

[25] See 'What is Bitcoin Mining?' (*Youtube*) <www.youtube.com/watch?v=GmOzih6I1zs> accessed 17 April 2014.

bitcoins obtained in this way are considered to be mined by the miner. Moreover, the miner may also receive an additional reward in the form of a transaction fee if it has been initially assigned by a payer for the priority confirmation of a transaction.

Another category of Bitcoin stakeholders is *Bitcoin exchanges* which provide the online trading platforms where the registered members can exchange their bitcoins for traditional currency and vice versa. A Bitcoin exchange is connected to the Bitcoin network and acts as an intermediary involved in the exchange transactions directly between its members. To become a member of the exchange, the Bitcoin user has to register an account on the exchange platform. In order to use services provided on the platform, including purchasing and selling bitcoins, or placing the member's funds on and withdrawing the member's funds from the member's account through a bank transfer, the member of the exchange usually has to verify his registered account. The account verification generally requires the submission of the member's identifying information including a valid ID to the exchange.[26] Currently the most popular European exchanges have implemented know-your-customer and anti-money laundering policies.[27]

Bitcoin merchants, in turn, are businesses which accept bitcoins as a medium of exchange for goods and services and are connected to the Bitcoin network. There are a number of available Bitcoin electronic payment processors providing Bitcoin merchants with the possibility to accept bitcoins in business.[28] Considering the nature of Bitcoin transactions, a Bitcoin merchant does not usually check the identity of a customer. The only thing usually required from the customer is the provision of a valid e-mail address to ensure the subsequent commercial communication, and, in case of a physical delivery of goods or services, a valid delivery address. Therefore, Bitcoin merchants do not tend to implement know-your-customer and anti-money laundering policies.

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[26] See 'Privacy Policy' (*Bitstamp*) <www.bitstamp.net/privacy-policy/> accessed 17 April 2014.

[27] ibid. See also 'Coinfloor Terms and Conditions' (*Coinfloor*) <https://coinfloor.co.uk/legal> accessed 17 April 2014; 'Terms of Service of Bitcoin-Central.Net' (*Bitcoin-Central*) <https://bitcoin-central.net/page/tos> accessed 17 April 2014.

[28] BitPay is one of the most popular merchant tools implemented to accept bitcoins in business, and currently supports over 30 thousand businesses and organisations; <https://bitpay.com> accessed 17 April 2014.

Importantly, since the roles of the Bitcoin stakeholders listed above are conditionally assigned according to the kind of activity of a Bitcoin stakeholder, it is typical that the same Bitcoin stakeholder would fall under or even combine certain different roles from time to time. For example, Bitcoin users carry the roles of miners as long as these users contribute the computational powers of their computer systems to the Bitcoin network. Conversely, miners act as users when they spend bitcoins previously mined.

3.   Closing Remarks

It can be concluded from the discussion above that Bitcoin constitutes both a very volatile virtual currency and a partly anonymous digital payment system within which transactions in this currency are made. Bitcoin as a virtual currency is denominated in bitcoins. Bitcoin as a payment system is not controlled and/or owned by any entity and is based on a decentralised peer-to-peer network operating under the Bitcoin protocol which is practically impossible to amend in a way that contradicts the interests of the majority of Bitcoin stakeholders.

Bitcoin has several advantages over traditional payment systems: transactions can be private; there are no or insignificant transaction costs; there are no territorial limitations; the processing of transactions is instantaneous or very fast; transactions are irreversible.

The main categories of Bitcoin stakeholders are users, miners, exchanges, and merchants. To become a Bitcoin user, one needs to register a Bitcoin wallet which serves as a storage for bitcoins and a user client ensuring the interaction between the Bitcoin user and the Bitcoin network. The creation of bitcoins within the network is carried out under the Bitcoin protocol through rewarding the Bitcoin miners who confirm Bitcoin transactions.

In the next section, the legal analysis of Bitcoin and Bitcoin stakeholders is carried out.

III.   LEGAL ANALYSIS OF BITCOIN AND BITCOIN STAKEHOLDERS

1.   **Introductory Remarks**

In this section, the legal analysis of Bitcoin's functionality is carried out from the perspective of relevant EU supranational legislation and underlying conceptual framework. The legal analysis aims to demonstrate the overall lack of clarity about Bitcoin's legal framework, reflect the author's attempts at determining the applicability of relevant legislation to Bitcoin and its stakeholders, and, more importantly, deliver research data necessary for determining the regulatory scheme in the final Section. The legal analysis method allows to determine the degree of Bitcoin's legal commonality with conceptual and legal categories covered by the relevant legislation.

2.   **Bitcoin As Money/Currency/Digital Cash**

There are three known essential functions of money: a medium of exchange, a unit of account, and a store of value.[29] In 2012, the European Central Bank defined virtual currencies, including Bitcoin, as 'a type of unregulated, digital money'[30], which 'act[s] as a medium of exchange and as a unit of account within a particular virtual community'[31], but does not clearly 'fulfil the 'store of value' function in terms of being reliable and safe'.[32] More recently, the European Banking Authority have designated virtual currencies, including Bitcoin, as 'a form of unregulated digital money that is not issued or guaranteed by a central bank and that can act as means of payment'.[33]

Though the issue is controversial, one can argue that Bitcoin has all the essential functions of money: Bitcoin serves as a medium of exchange

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[29] See European Central Bank, *Virtual Currency Schemes* (ECB Publications 2012) 10 <www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf> accessed 17 April 2014; 'Money' (*Wikipedia*) <http://en.wikipedia.org/wiki/Money> accessed 17 April 2014.

[30] European Central Bank (n 29), 13.

[31] European Central Bank (n 29), 11.

[32] ibid.

[33] European Banking Authority, 'Warning to consumers on virtual currencies' (EBA 2013)   2 <www.eba.europa.eu/documents/10180/598344/EBA+Warning+on+Virtual+Currencies .pdf> accessed 17 April 2014.

when bitcoins are sent to merchants in exchange for goods and services; Bitcoin functions as a unit of account when merchants denominate the prices of certain goods and services in bitcoins; and Bitcoin is used as a store of value when users hold bitcoins to send or sell them in future, relying on a positive leap forward in the exchange price of the bitcoins (see section II.2.c. above).

There are three known types of money: commodity money, representative money, and fiat money.[34] Commodity money is the money whose intrinsic value is determined by the commodity the money is made of. The supply of commodity money is naturally limited, which may cause deflation increasing the value of this money. Silver or ancient gold coins are examples of commodity money. Representative money is the money whose intrinsic value is backed by a certain commodity this money is redeemable for.[35] Tokens or certificates that can be exchanged for a fixed quantity of gold are representative money.[36] Finally, fiat money is not made of or backed by any commodity, and has no intrinsic value. Fiat money is a legal tender put into circulation and backed by a government. Nowadays, fiat money constitutes the basis of modern economies. The supply of fiat money is not naturally limited. Currency is a form of fiat money, and is a fungible, transferable, divisible and recognisable legal tender. In its turn, cash is a tangible form of currency. Currency is centralised, since it is issued and backed by a government. The exchange value of the currency directly depends on the government policy and the national economy.

As has been noted, Bitcoin has all the essential functions of money. At the same time, Bitcoin is, like commodity money, scarce and endowed with deflationary properties, since its supply is initially limited by the Bitcoin protocol (see section II.2.a. above). Bitcoin has, like fiat money, no intrinsic value backed by any commodity. A bitcoin is a denomination of Bitcoin-currency which is, in turn, a form of Bitcoin-money. It can be argued that Bitcoin is, like a legal tender, fungible, transferable, divisible (even to a much higher extent than fiat, that is

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[34] See 'Money' (n 29); Jodi Beggs, 'Types of Money' (*About.com*) <http://economics.about.com/od/money/a/Types-Of-Money.htm> accessed 17 April 2014.

[35] ibid.

[36] See 'Representative Money' (*Fact Index*) <www.fact-index.com/r/re/representative_money.html> accessed 17 April 2014.

traditional, currencies), and somewhat recognisable. Bitcoin fundamentally functions as digital cash. Since Bitcoin functions digitally, the concept of cash as a form of currency, and the concept of currency as a denomination of cash, merge into the one concept of Bitcoin.

At the same time, Bitcoin's lack of intrinsic value backed by a commodity distinguishes Bitcoin from commodity money. Bitcoin is, unlike fiat money, not backed by any entity. Bitcoin is decentralised, since it is not issued by any entity but created by the dispersed Bitcoin community itself. Furthermore, Bitcoin is, unlike representative money, not redeemable for any commodity.

Considering that Bitcoin shares certain common properties with commodity money and fiat money, and carries some novel characteristics not peculiar to any analysed type of money, it can be argued that Bitcoin may constitute a novel type of money and a new type of currency, not yet recognised anywhere as a legal tender.

3.   **Bitcoin as a Commodity/Good**

Since the supply of Bitcoin is initially limited, and bitcoins are created by Bitcoin miners at an ever-decreasing pace due to the Bitcoin protocol, one may assume that Bitcoin shares common features with commodities. Though the EU supranational legislation does not provide a conventional definition of a commodity, this category is generally recognised as a homogeneous fungible good whose value is determined by supply and demand.[37]

As Bitcoin is traded on exchange platforms for fiat currency, one may assume that Bitcoin is a good. Its standard definition can be found in the Agreement on the European Economic Area (EEA Agreement)[38] which defines a good as 'both materials and products'.[39] A material is defined as 'any ingredient, raw material, component or part, etc., used

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[37] See 'Economics A-Z terms: Commodity' (*The Economist*) <www.economist.com/economics-a-to-z/c#node-21529407> accessed 17 April 2014.
[38] Agreement on the European Economic Area [1994] OJ L1/3.
[39] Protocol 4 on the rules of origin to the Agreement on the European Economic Area [1994] OJ L1/54, art 1 point (d).

in the manufacture of the product'.[40] A product means 'the product being manufactured, even if it is intended for later use in another manufacturing operation'.[41]

Bitcoin does not fall under the definition of a material, since Bitcoin is not tangible and is not used in any manufacturing process. Whether or not Bitcoin can be considered a product depends on the degree of congruence of the Bitcoin mining activity with the activity of manufacturing. Manufacture, pursuant to the EEA Agreement, is 'any kind of working or processing including assembly or specific operations'.[42] From this perspective the Bitcoin mining seems to be essentially similar to the process of manufacturing. But, the concept of manufacturing has been always considered from the industrial angle, which implies that there should be a certain manufacturer which intends to use produced goods and/or sell them to consumers. If so, Bitcoin cannot be classified as a good, since there cannot be determined a certain entity which produces bitcoins. However, if one considers the essence of the process, but not the implication stated previously, the Bitcoin mining may fall under the definition of manufacturing, and, therefore, Bitcoin may be theoretically considered a good.

Assuming that Bitcoin is a good, one can argue that Bitcoin is, just as a commodity, homogenous and fungible good, since Bitcoin is denominated in bitcoins, which are the units of the same nature. Bitcoin's value is determined by supply and demand. Therefore, Bitcoin may also theoretically fall under the definition of a commodity.

As can be seen from the discussion above, Bitcoin may in theory fall under the statutory definitions of a commodity and a good. However, though certain EU regulators have acknowledged that Bitcoin may be used as an article of commerce[43], both the EEA Agreement and the Harmonised Commodity Description and Coding System[44] perceive commodities and goods as tangible items and do not cover digital concepts such as Bitcoin.

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[40] Protocol 4 (n 39), art 1 point (b).

[41] Protocol 4 (n 39), art 1 point (c).

[42] Protocol 4 (n 39), art 1 point (a).

[43] '*Merkblatt - Hinweise zum Zahlungsdiensteaufsichtsgesetz (ZAG)*' (BaFin 2011) <www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Merkblatt/mb_111222_zag.html> accessed 17 April 2014.

[44] 'HS Nomenclature 2012 Edition' (*World Customs Organization*)

4.   Bitcoin as a Payment Service Provider/E-Money/Payment Service/Payment System

Since Bitcoin is essentially a platform for digital payments, one may assume that Bitcoin is a payment service provider. The Payment Services Directive (PSD)[45] is applicable to payment services provided within the EU.[46] The PSD distinguishes several categories of payment service providers, among which are credit institutions, e-money institutions, and payment institutions. Pursuant to the Credit Institutions Regulation (CIR) [47], which stipulates prudential requirements for credit institutions and investment firms supervised under the Credit Institutions Directive (CID)[48], a credit institution means 'an undertaking the business of which is to take deposits or other repayable funds from the public and to grant credits for its own account'.[49] The E-Money Directive (EMD)[50], which integrates e-money institutions into the regulatory framework of the PSD[51], designates an e-money institution as a 'legal person that has been granted authorisation […] to issue electronic money'.[52]

Bitcoin can neither be classified as a credit institution nor an e-money institution, as Bitcoin is not a legal entity. To the contrary, as we have

<www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs_nomenclature_2012/hs_nomenclature_table_2012.aspx> accessed 17 April 2014.

[45] Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC [2007] OJ L319/1 ('PSD').

[46] PSD (n 45), art 2 para 1.

[47] Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 [2013] OJ L176/1 ('CIR').

[48] Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC [2013] OJ L176/338 ('CID').

[49] CIR (n 47), art 4 para 1 point 1.

[50] Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions amending Directives 2005/60/EC and 2006/48/EC and repealing Directive 2000/46/EC [2009] OJ L267/7 ('EMD').

[51] ibid, recital 9.

[52] ibid, art 2 point 1.

seen before, Bitcoin is a decentralised virtual currency circulating within the Bitcoin peer-to-peer network which operates under the Bitcoin protocol and is not controlled or owned by any entity. Therefore, it should be analysed whether Bitcoin may constitute e-money.

The EMD defines e-money as

> electronically [...] stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions [...], and which is accepted by a natural or legal person other than the electronic money issuer.[53]

The EMD distinguishes several categories of e-money issuers, among which are credit institutions and e-money institutions. Pursuant to the EMD, 'electronic money issuers issue e-money at par value on the receipt of the funds'[54]. Moreover, e-money issuers shall redeem, at any moment and at par value, the monetary value of e-money held upon request of the e-money holder[55].

Considering whether the statutory definition of e-money is applicable to Bitcoin, it can be argued that Bitcoin is a monetary value stored electronically and accepted by a person other than the issuer. But it is clear that Bitcoin is not a monetary value represented by a claim on the issuer, and is not issued on receipt of funds. Moreover, 'issuing' is not the term to be applicable in the case of Bitcoin, since this term is usually used within the context of the centralised putting into circulation, and bitcoins are not issued by any entity but created by the disseminated community of Bitcoin miners, which essentially means that the Bitcoin network produces bitcoins itself without receipt of any funds. Furthermore, the principle of redemption of the monetary value of e-money set out in the PSD cannot be applied in the case of Bitcoin, since there is no legal entity in charge of issuing bitcoins on receipt of funds and the redemption of the monetary value of bitcoins upon request of the holder. Therefore, the current statutory definition of e-money is not applicable to Bitcoin. It can be concluded that Bitcoin clearly falls outside the scope of the EMD. Besides, the European Central Bank have also argued that the EMD does not seem to be applicable to Bitcoin.[56]

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[53] ibid, art 2 point 2.
[54] ibid, art 11 para 1.
[55] ibid, art 11 para 2.
[56] European Central Bank (n 29), 43.

The PSD does not regulate the issuance of e-money or amend the prudential regulation of e-money institutions and payment institutions — the new category of payment service providers introduced by the PSD — are not allowed to issue e-money.[57] Payment institutions are also not entitled to take deposits and are subject to the single licensure[58] and the effective anti-money laundering requirements.[59] A payment institution is designated by the PSD as 'a legal person that has been granted authorisation [...] to provide and execute payment services throughout the Community'.[60] At the same time, a payment service, as determined by the PSD, includes, inter alia, services for execution of payment transactions and services for money remittance.[61]

Since Bitcoin is not a legal entity and is not controlled and/or owned by any legal entity, Bitcoin cannot be classified as a payment institution. However, considering the information stated above, one can assume that Bitcoin may be classified as a payment service since Bitcoin allegedly falls under the classification of a service for execution of payment transactions, and a money remittance service.

A payment transaction is defined by the PSD as 'an act, initiated by the payer or by the payee, of placing, transferring or withdrawing funds, irrespective of any underlying obligations between the payer and the payee'.[62] Funds, as defined by the PSD, means the 'banknotes and coins, scriptural money and e-money'.[63] As has been concluded above, Bitcoin is not e-money. It means that bitcoins are not funds within the statutory meaning prescribed by the PSD. Nevertheless, assuming that Bitcoin is money and a currency (see section III.2. above), it is reasonable to examine the issue further, since in this case a Bitcoin transaction constitutes a transfer of funds from the Bitcoin payer to the Bitcoin payee irrespective of any obligations between the transactors. This approach leads to the assumption that the Bitcoin transaction may be classified as a payment transaction within the meaning of the PSD. However, it should be considered if a Bitcoin user might be classified as a payer or a payee under the PSD.

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[57] PSD (n 45), recital 9.
[58] ibid, recital 10.
[59] ibid, recital 11.
[60] ibid, art 4 point 4.
[61] ibid, Annex.
[62] ibid, art 4 point 5.
[63] ibid, art 4 point 15.

A payer, according to the PSD, means 'a natural or legal person who holds a payment account and allows a payment order from that payment account, or, where there is no payment account, a natural or legal person who gives a payment order'.[64]

First, it is important to analyse whether a Bitcoin payer holds a payment account within the meaning of the PSD or not. Pursuant to the PSD, a payment account is 'an account held in the name of one or more payment service users which is used for the execution of payment transactions'.[65] As has been mentioned in section II.2.e. above, the interaction between Bitcoin users and the Bitcoin network is carried out through Bitcoin wallets. The installation and usage of a Bitcoin wallet does not require the provision of any identifying data from a user (see sections II.2.b. and II.2.e. above). Moreover, the wallet itself does not constitute a Bitcoin address used for receiving or sending bitcoins; the wallet generates such addresses on demand of the user. Since the Bitcoin address is essentially used for the execution of Bitcoin transactions, one may assume that the Bitcoin address is a payment account kept within the Bitcoin wallet. But, pursuant to the PSD, a payment account should be tied to the identity of the user. Since the Bitcoin address is not held in the name of the user, this address does not constitute a payment account within the meaning of the PSD. Neither does the Bitcoin wallet.

The next issue to consider is whether the execution of a Bitcoin transaction may include the placement of a payment order. A payment order, according to the PSD, is 'any instruction by a payer or payee to his payment service provider requesting the execution of a payment transaction'.[66] It can be argued that the execution of a Bitcoin transaction does not include the placement of a payment order, since a Bitcoin user just sends the message to the Bitcoin network, not to any legal entity, and the network represented by miners ensures the processing, clearing and settlement of the transaction. Therefore, the Bitcoin payer cannot be considered a payer within the meaning of the PSD, as the Bitcoin payer does not hold a payment account and/or place a payment order.

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[64] ibid, art 4 point 7.
[65] ibid, art 4 point 14.
[66] ibid, art 4 point 16.

A payee, according to the PSD, is 'a natural or legal person who is the intended recipient of funds which have been the subject of a payment transaction'.[67] Assuming that bitcoins are funds, one can assume that the Bitcoin payee is a payee within the meaning of the PSD. However, reverting to the definition of a payment transaction under the PSD, a Bitcoin transaction would be considered a payment transaction only if the Bitcoin transaction is initiated by a payer or a payee. It is the Bitcoin payer who initiates the Bitcoin transaction by signing and sending the message about the transaction. However, since the Bitcoin payer does not fall under the category of a payer envisaged in the PSD, the Bitcoin transaction does not meet the definition of a payment transaction under the PSD. This fact entails that Bitcoin does not fall under the classification of a payment service for execution of payment transactions within the meaning of the PSD, even if one considers bitcoins to be funds pursuant to the PSD.

The next issue to analyse is whether Bitcoin may constitute a payment service for money remittance within the meaning of the PSD. Money remittance is defined by the PSD as:

> a payment service where funds are received from a payer (criterion 1), without any payment accounts being created in the name of the payer or the payee (criterion 2), for the sole purpose of transferring a corresponding amount to a payee or to another payment service provider acting on behalf of the payee, and/or where such funds are received on behalf of and made available to the payee (criterion 3).[68]

As we have seen, bitcoins are not funds as defined by the PSD, and a Bitcoin user cannot fall under the category of a payer pursuant to the PSD. However, to better understand the extent of potential applicability of the PSD to Bitcoin, the issue can be reasoned from the assumption that bitcoins constitute funds and the Bitcoin payer may be classified as a payer within the meaning of the PSD.

Applying this approach, one can argue that the Bitcoin transaction constitutes the process of transferring the payer's funds to the payee. Thus, the first criterion of the definition of a money remittance may be

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[67] ibid, art 4 point 8.
[68] ibid, art 4 point 13.

fulfilled. Second, since it has been reasoned that Bitcoin wallets and Bitcoin addresses do not constitute payment accounts within the meaning of the PSD, the second criterion of the above definition may also be fulfilled. Third, the definition of money remittance provides for the receipt of funds from the payer for their subsequent transfer to the payee. This criterion is used in the context of services provided by a payment service provider as a legal entity. According to the PSD, money remittance is 'usually based on cash provided by a payer to a payment service provider, which remits the corresponding amount […] to a payee or to another payment service provider acting on behalf of the payee'.[69] But, in the case of Bitcoin, it is clear that the funds of the payer are not received by any trusted party to ensure their transfer to the payee. These funds are generated by the Bitcoin network itself. Moreover, Bitcoin users solely determine the purpose of use of their bitcoins which already exist within the Bitcoin network. Since the transfer of funds from the Bitcoin payer to the Bitcoin payee does not involve any trusted party, the third criterion of the above definition of money remittance cannot be fulfilled. Therefore, Bitcoin cannot be classified as a money remittance service within the meaning of the PSD, even if one assumes that bitcoins are funds and the Bitcoin payer is a payer under the PSD.

The other important issue to analyse is whether Bitcoin may fall under the statutory definition of a payment system. According to the PSD, a payment system means a 'funds transfer system with formal and standardised arrangements and common rules for the processing, clearing and/or settlement of payment transactions'[70]. Pursuant to the PSD, payment service providers should have the possibility 'to access the services of technical infrastructures of payment systems.[71]

Applying the assumption that bitcoins are funds, Bitcoin can be perceived as a funds transfer system. The question may be whether standardised arrangements and common rules stipulated in the above definition pertain to Bitcoin. As can be reasoned from sections II.2.a. and II.2.e., the Bitcoin protocol solely determines the rules under which Bitcoin operates. Under the Bitcoin protocol, Bitcoin transactions are processed, cleared, and settled by the community of Bitcoin miners. It can be argued that these rules somewhat constitute common rules and

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[69] ibid, recital 7.
[70] ibid, art 4 point 6.
[71] ibid, recital 16.

standardised arrangements within the meaning of the PSD, even though they are not explicitly communicated to Bitcoin users prior to or during the usage of Bitcoin. That is why Bitcoin theoretically may fall under the definition of a payment system stipulated in the PSD, if one assumes that bitcoins constitute funds.

As has been concluded before, Bitcoin cannot be classified as a payment service within the meaning of the PSD. Even if it could, the provision of payment services is deemed to be a priori carried out by payment service providers.[72] However, if one assumes that bitcoins are funds within the relevant statutory meaning, Bitcoin may fall under the definition of a payment system envisaged in the PSD. But, again, payment systems are provided by payment service providers.[73] Since it is impossible to determine a certain service provider in the case of Bitcoin, Bitcoin clearly falls outside the scope of the PSD. Incidentally, the European Central Bank has also concluded that the PSD is inapplicable in the case of Bitcoin.[74] Moreover, the new European Commission's Proposal[75], which incorporates and repeals the effective PSD, does not intend to change the situation: The concept of Bitcoin is still not covered by the proposed new version of the PSD.[76]

Since Bitcoin is not a legal entity and is not controlled and/or owned by any legal entity, the Anti-Money Laundering Directive (AMLD)[77], which sets out anti-money laundering requirements in relation to, inter alia, credit institutions, investment firms, and other financial institutions, is also not applicable to Bitcoin.

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[72] ibid, art 29.

[73] ibid, recital 46.

[74] European Central Bank (n 29), 43.

[75] European Commission, 'Proposal of 24 July 2013 for a Directive of the European Parliament and of the Council on payment services in the internal market and amending Directives 2002/65/EC, 2013/36/EU and 2009/110/EC and repealing Directive 2007/64/EC' COM (2013) 547 final.

[76] ibid, 9-12.

[77] Directive 2005/60/EC of the European Parliament and of the Council of 26 October 2005 on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing [2005] OJ L309/15 ('AMLD').

5.   A Bitcoin as a Financial Instrument

Since Bitcoin carries a value derived from the market demand and supply, one can assume that Bitcoin represents the ownership over a financial asset, and therefore is a financial instrument. The Markets in Financial Instruments Directive (MFID)[78] 'cover[s] undertakings the regular occupation or business of which is to provide investment services and/or perform investment activities on a professional basis'[79], and protects investors within the EU[80]. The MFID applies to, inter alia, investment firms and credit institutions providing payment services.[81] Since Bitcoin is not an undertaking, the MFID is not applicable to Bitcoin itself. At the same time, the degree of legal commonality of a bitcoin with a financial instrument may determine the extent of the applicability of the MFID to Bitcoin stakeholders.

As can be seen from section II.2.e. above, the Bitcoin stakeholders encompass such main categories as, inter alia, merchants, and exchanges. According to the MFID, an investment firm is 'any legal person whose regular occupation or business is the provision of one or more investment services to third parties and/or the performance of one or more investment activities on a professional basis'. [82] Bitcoin merchants do not comply with this definition, since the legal relationship between a merchant and a Bitcoin user is limited to the purchase of certain goods and services by means of the Bitcoin transaction. The question is whether Bitcoin exchanges may comply with the above classification of an investment firm. As has been mentioned, the degree of a bitcoin's legal commonality with a financial instrument should clarify the issue.

Pursuant to the MFID, the concept of a financial instrument includes, inter alia, transferable securities. [83] The MFID defines transferable securities as:

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[78] Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on markets in financial instruments amending Council Directives 85/611/EEC and 93/6/EEC and Directive 2000/12/EC of the European Parliament and of the Council and repealing Council Directive 93/22/EEC [2004] OJ L145/1 ('MFID').

[79] MFID, recital 7.

[80] ibid, recital 31.

[81] ibid, art 1.

[82] ibid, art 4 para 1 point 1.

[83] ibid, annex I (C).

> those classes of securities which are negotiable on the
> capital market, with the exception of instruments of
> payment, such as [inter alia] securities giving the right to
> acquire or sell any such transferable securities or giving
> rise to a cash settlement determined by reference to
> transferable securities, currencies, interest rates or yields,
> commodities or other indices or measures.[84]

Securities are essentially a cash financial instrument, which means that
the value is determined directly by the relevant market.[85] In the case of
Bitcoin, it can be argued that Bitcoin's value is determined directly by
supply and demand in the financial market (see section II.2.c. above).
Bitcoin is also negotiable, since its exchange price is very volatile which
can be seen from a wide range of available ask and bid prices.[86]

At the same time, the definition of transferable securities excludes
instruments of payment. The MFID does not provide the definition of
an instrument of payment. It is possible to apply the wording of the
PSD, which defines a payment instrument as 'any personalised device(s)
and/or set of procedures agreed between the payment service user and
the payment service provider and used by the payment service user in
order to initiate a payment order'.[87] It is important to establish, first,
whether the legal relations between Bitcoin users and Bitcoin exchanges
imply that the users act as payment service users, and the exchanges act
as payment service providers.

According to the PSD, a payment service user is 'a natural or legal
person making use of a payment service in the capacity of either payer
or payee, or both'.[88] In this situation, the legal status of a Bitcoin user
who has entered the legal relations with a Bitcoin exchange directly
depends on the fact whether the exchange is a payment service provider
which provides the user a payment service related to Bitcoin. The PSD
distinguishes several categories of payment service providers, among

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[84] ibid, art 4 para 1 point 18 (emphasis added).

[85] See 'Financial instrument' (*Wikipedia*)
<http://en.wikipedia.org/wiki/Financial_instrument> accessed 17 April 2014.

[86] See 'Markets' (*Bitcoin Charts*) <http://bitcoincharts.com/markets/> accessed 17 April
2014.

[87] PSD (n 45), art 4 point 23.

[88] PSD (n 45), art 4 point 10.

which are credit institutions, electronic money institutions, and payment institutions.

Pursuant to the CIR, a credit institution means 'an undertaking the business of which is to take deposits or other repayable funds from the public and to grant credits for its own account'.[89] A deposit is generally considered to be a repayable sum of money placed by a person on a person's individual account in a credit institution for the purposes of safekeeping. According to the Court of Justice of the European Union,

> the term 'other repayable funds' [...] refers not only to financial instruments which possess the intrinsic characteristic of repayability, but also to those which, although not possessing that characteristic, are the subject of a contractual agreement to repay the funds paid.[90]

One may assume that a Bitcoin exchange accepts member's funds as a deposit or other repayable funds, since the member's funds are kept on the member's verified individual account and withdrawn, that is repaid, on demand of the member.[91] However, the exchange does not grant any credits for its own account (see section II.2.e. above). Therefore, the Bitcoin exchange does not meet the definition of a credit institution prescribed by the CIR.

As has been mentioned in section II.2.e. above, to use an exchange platform, a Bitcoin user should become a member of the platform by registering and verifying an account. The status of a member encompasses both the status of a seller, and the status of a buyer. The seller is the member who creates an ask position on the exchange platform to sell bitcoins. A buyer is a member who, alternatively, creates a bid position on the exchange platform to buy bitcoins. When these two positions, the ask and the bid, are met, or, in other words, when the prices of the ask and the bid match, a bitcoins exchange transaction takes place. Bitcoin exchanges usually imply that they do not act as any party in such transactions and their role is limited to the provision of the trading platforms. In this case, the exchange acts as an intermediary,

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[89] CIR (n 47), art 4 para 1 point 1 (emphasis added).

[90] Case C-366/97 *Romanelli* [1999] ECR I-855, para 17 (emphasis added).

[91] See 'Coinfloor Terms and Conditions' (*Coinfloor*) <https://coinfloor.co.uk/legal> accessed 17 April 2014.

while the buyer and the seller are the parties of the agreement on bitcoins exchange transaction.[92]

Since a Bitcoin exchange usually acts as an intermediary in bitcoins exchange transactions, the exchange does not take part in the creation of any funds, including e-money issuance, within the exchange platform. Therefore, Bitcoin exchanges fall outside the categories of an e-money issuer and e-money institution respectively.

Another issue to analyse is whether a Bitcoin exchange may be legally classified as a payment institution. Payment institutions are designated by the PSD as 'a legal person that has been granted authorisation [...] to provide and execute payment services throughout the Community'.[93] As has been mentioned in section III.4. above, payment institutions are not entitled to take deposits or issue e-money. At the same time, payment services, according to the PSD, include, inter alia, services for execution of payment transactions, and services for issuance and/or acquisition of payment instruments.[94]

As for the services for execution of payment transactions, it is important to define whether transactions within an exchange platform can be classified as payment transactions. The PSD defines a payment transaction as 'an act, initiated by the payer or by the payee, of placing, transferring or withdrawing funds, irrespective of any underlying obligations between the payer and the payee'[95]. Funds, as defined by the PSD, are the 'banknotes and coins, scriptural money and e-money'[96].

As has been discussed in section II.2.e. above, a member of an exchange can top up his/her verified account with fiat currency through a bank transfer. It can be argued that the money placed on the member's account constitutes funds.

A payer is defined as 'a natural or legal person who holds a payment account and allows a payment order from that payment account, or,

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[92] See 'Terms of Use' (*Bitstamp*) <www.bitstamp.net/terms-of-use/> accessed 17 April 2014; 'Terms of Service of Bitcoin-Central.Net' (*Bitcoin-Central*) <https://bitcoin-central.net/page/tos> accessed 17 April 2014.
[93] PSD (n 45), art 4 point 4.
[94] ibid, Annex.
[95] ibid, art 4 point 5.
[96] ibid, art 4 point 15.

where there is no payment account, a natural or legal person who gives a payment order'.[97] A payee, pursuant to the PSD, is 'a natural or legal person who is the intended recipient of funds which have been the subject of a payment transaction'.[98] Pursuant to the PSD, a payment account is 'an account held in the name of one or more payment service users which is used for the execution of payment transactions'.[99] A payment order, according to the PSD, is 'any instruction by a payer or payee to his payment service provider requesting the execution of a payment transaction'.[100]

It can be argued that the member's verified account is held in the name of the member and used for the execution of bitcoins exchange transactions. It also can be reasoned that the member submits the exchange an instruction to execute a payment transaction when the member places the ask/bid price on the exchange platform. Therefore, the member may be regarded as a payment service user and thus both as a payer and a payee within the meaning of the PSD. Since it is a payer or a payee who initiates a bitcoins exchange transaction, and the transaction necessitates the transferring of funds from the payer (buyer) to the payee (seller), the bitcoins exchange transaction falls under the definition of a payment transaction prescribed by the PSD. Therefore, the Bitcoin exchange provides the services for execution of payment transactions which are payment services under the PSD.

The next issue to examine is whether a Bitcoin exchange provides services for issuance and/or acquisition of payment instruments. The PSD defines a payment instrument as 'any personalised device(s) and/or set of procedures agreed between the payment service user and the payment service provider and used by the payment service user in order to initiate a payment order'.[101]

As can be seen from the previous discussion, a Bitcoin exchange can be classified as a payment service provider, and its members can be defined as payment service users within the meaning of the PSD. An exchange provides its members with technical tools to place ask/bid prices on the

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[97] ibid, art 4 point 7.
[98] ibid, art 4 point 8.
[99] ibid, art 4 point 14.
[100] ibid, art 4 point 16.
[101] ibid, art 4 point 23.

exchange platform. Since, as has been concluded above, the placement of ask/bid prices can be regarded as a payment order, such tools may be classified as payment instruments. Therefore, it can be argued that the Bitcoin exchange provides the services for acquisition of payment instruments which are payment services under the PSD.

The analysis carried out above discovers a number of important facts.

> First, Bitcoin exchanges are not credit institutions within the meaning of the CIR as the exchanges do not provide services for granting credits for their own account. Therefore, the CIR together with the CID are not applicable to Bitcoin exchanges as credit institutions.

> Second, Bitcoin exchanges may be classified as payment institutions, since they provide members with payment services. Such a classification means that Bitcoin exchanges can be regarded as payment service providers under the PSD. Therefore, the PSD may be applicable to Bitcoin exchanges. Incidentally, the Bank of France has argued that Bitcoin exchanges should be regarded as payment service providers pursuant to the PSD.[102] The above classification entails that the AMLD laying down the anti-money laundering requirements in relation to, inter alia, financial institutions including payment service providers[103], may also be applicable to Bitcoin exchanges.

> Third, members of a Bitcoin exchange may have the legal statuses of payment service users, since such members use the payment service provided by the exchange which is a payment service provider.

> Fourth, bitcoins do not fall under the definition of a payment instrument specified in the MFID, as they cannot be regarded as a set of instructions for the placement of a payment order within

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[102] Bank of France, '*Les dangers liés au développement des monnaies virtuelles: l'exemple du bitcoin*' (Bank of France 2013) <www.banque-france.fr/fileadmin/user_upload/banque_de_france/publications/Focus-10-stabilite-financiere.pdf> accessed 17 April 2014.
[103] AMLD (n 77), art 3 point 2; PSD (n 45), art 91 para 1; CID (n 48), Annex I para 4.

the exchange platform. This fact allows us to continue analysing Bitcoin from the perspective of the definition of transferable securities envisaged in the MFID.

Again, the MFID defines transferable securities as:

> those classes of securities which are negotiable on the capital market, with the exception of instruments of payment, such as [inter alia] securities giving the right to acquire or sell any such transferable securities or giving rise to a cash settlement determined by reference to transferable securities, currencies, interest rates or yields, commodities or other indices or measures.[104]

It has been concluded that Bitcoin is negotiable, since its exchange price is very volatile which results in a wide range of available ask/bid prices. As has been discussed in section II.2.e. above, a holder of bitcoins can send these bitcoins to another Bitcoin user directly not involving any intermediary, or sell these bitcoins to another Bitcoin user through an exchange platform. The settlement of such transactions necessitates the transfer of the ownership over the bitcoins sent from the payer to the payee or sold from the seller to the buyer respectively. Since bitcoins can be acquired and sold with the concurrent transfer of the ownership over them, bitcoins are transferable. Therefore, one of the criteria of transferability is met, and bitcoins may be classified as transferable securities within the meaning of the MFID. Since transferable securities are the form of financial instruments, bitcoins may be classified as financial instruments under the MFID.

The next issue to analyse is to what extent the MFID may be applicable to Bitcoin exchanges which provide the platforms for trading bitcoins. The MFID applies to, inter alia, credit institutions providing investment services and activities, and investment firms[105] designated as 'any legal person[s] whose regular occupation or business is the provision of one or more investment services to third parties and/or the performance of one or more investment activities on a professional basis'.[106] As we have seen, Bitcoin exchanges do not fall under the category of credit institutions within the meaning of the CIR. It is therefore important to

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[104] MFID (n 78), art 4 para 1 point 18 (emphasis added).
[105] ibid, art 1.
[106] ibid, art 4 para 1 point 1.

determine whether Bitcoin exchanges may be classified as investment firms providing investment services and/or performing investment activities.

The MFID distinguishes a number of investment services and activities, among which is the '[r]eception and transmission of orders in relation to one or more financial instruments'.[107] A Bitcoin exchange provides a platform for trading bitcoins. It has been concluded that the members of the platform place payment orders in relation to bitcoins by submitting relevant ask/bid prices on the exchange platform. Therefore, it can be argued that the Bitcoin exchange receives and transmits the payment orders in relation to bitcoins. Since bitcoins may be regarded as financial instruments, such services may meet the definition of investment services and activities provided above. As the Bitcoin exchange is a legal entity whose regular business is the provision of such services to third parties, the Bitcoin exchange may fall under the definition of an investment firm, and the member of the Bitcoin exchange may be considered a client of the investment firm[108] under the MFID. Therefore, the MFID may be applicable to Bitcoin exchanges considered investment firms. Moreover, the CIR together with the CID may also be applicable to Bitcoin exchanges as investment firms, since both the CIR and the CID are applicable to credit institutions and investment firms.[109]

Interestingly in Germany, the Federal Financial Supervisory Authority (BaFin) and the Federal Ministry of Finance have also argued that a bitcoin may be classified as a financial instrument within the meaning of the German Banking Act[110] which defines financial instruments as, inter alia, securities.[111]

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[107] ibid, annex I (A).

[108] ibid, art 4 para 1, point 10.

[109] CID (n 48), arts 1, 2 para 1, 3 para 1 points 1, 2, 3; CIR, arts 1, 4 para 1 points 1, 2, 3.

[110] 1961 German Banking Act (*Gesetz über das Kreditwesen*) ('FRG'), s 1.

[111] ibid; '*Merkblatt-Hinweise zum Zahlungsdiensteaufsichtsgesetz (ZAG)*' (BaFin 2011) <www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Merkblatt/mb_111222_zag.html> accessed 17 April 2014; Letter from Federal Ministry of Finance of Germany to Frank Schaeffler (7 August 2013) <www.frank-schaeffler.de/wp-content/uploads/2013/08/2013_08_07-Antwort-Koschyk-Bitcoins-Umsatzsteuer.pdf> accessed 17 April 2014.

6.   Bitcoin and E-Commerce

a.   *Bitcoin as an Information Society Service*

Considering the nature of Bitcoin and Bitcoin transactions, it is reasonable to assume that Bitcoin is an information society service (ISS) within the meaning of the E-Commerce Directive (ECD) [112] that constitutes a substantial part of the EU legislation covering ISSs. In defining an ISS, the ECD refers to the ISS Directive[113] which, in turn, designates an ISS as 'any service normally provided for remuneration (criterion 1), at a distance (criterion 2), by electronic means (criterion 3) and at the individual request of a recipient of services (criterion 4)'.[114]

First, Bitcoin is not a service provided for remuneration, since Bitcoin is publicly accessible and is not provided by any entity which could implement the relevant remuneration policy. Second, it can be argued that Bitcoin as a virtual payment system is provided at a distance, since, according to the ISS Directive, 'at a distance' means 'that the service is provided without the parties being simultaneously present'.[115] Third, 'by electronic means', pursuant to the ISS Directive, means 'that the service is sent initially and received at its destination by means of electronic equipment for the processing [...] and storage of data, and entirely transmitted, conveyed and received by wire, by radio, by optical means or by other electromagnetic means'.[116] Bitcoin seems to meet this criterion as well. Fourth, 'at the individual request of a recipient of services' means 'that the service is provided through the transmission of data on individual request'.[117] The relation of Bitcoin user to the Bitcoin network should be analysed to determine whether Bitcoin meets the last criterion of the definition of an ISS stipulated by the ISS Directive.

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[112] Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (Directive on electronic commerce) [2000] OJ L178/1 ('ECD').

[113] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services [1998] OJ L204/37 ('ISS Directive').

[114] ISS Directive, art 1 para 1 point 2.

[115] ibid.

[116] ibid.

[117] ibid.

A Bitcoin user, as has been mentioned in section II.2.e. above, interacts with the Bitcoin network by means of a Bitcoin wallet. It can be assumed that the installation of the Bitcoin wallet constitutes a kind of a request for the service. It should be noted that the ISS Directive distinguishes a number of services that are not considered to be provided at the individual request of a recipient. These are the services 'provided by transmitting data without individual demand for simultaneous reception by an unlimited number of individual receivers (point to multipoint transmission)'[118], and include TV broadcasting, radio broadcasting, and teletext.[119] One may assume that Bitcoin combines the elements of services provided and not provided at individual request. On the one hand, the Bitcoin user installs the Bitcoin wallet, gets a generated Bitcoin address, and sends a message about an upcoming transaction to the Bitcoin network, which constitutes a request for the service for the processing of the upcoming transaction. On the other hand, by the analogy with the definition given by the ISS Directive, Bitcoin is a payment platform available free of charge and accessible anywhere and anytime to anyone having the necessary technical equipment such as computers or smartphones (see section II.2.e. above).

As we see, the legal presence or absence of an individual request within the provision of a certain service both depend on whether the service is transmitted to the user via a somewhat shielded point-to-point channel or is transmitted to the public through a generally accessible point-to-multi-point connection. In the case of Bitcoin, there is no point-to-point channel of the transmission of the service, since the user receives the service from the Bitcoin network supported by the community of Bitcoin miners. From the other perspective, a point-to-multi-point transmission also does not take place in the Bitcoin scheme, since the service is not centralised. It can be argued that Bitcoin as a service is transmitted to the user through a kind of multi-point-to-point platform, whose concept is not considered by the ISS Directive. Therefore, Bitcoin does not meet the first criterion and the fourth criterion of an ISS and is not an ISS under the ISS Directive. Moreover, both the ISS Directive and the ECD regard ISSs as services provided by ISS providers which are natural or legal persons. There is no Bitcoin provider as Bitcoin has a dispersed nature and is not controlled and/or

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118 ibid, annex V para 3.
119 ibid.

owned by anyone. Consequently, the ECD and the ISS Directive are definitely not applicable to Bitcoin itself. Incidentally, the European Central Bank have also concluded that the ECD does not seem to cover Bitcoin transactions.[120]

The other question is whether the ECD may be applicable to the Bitcoin stakeholders such as merchants and exchanges. Since Bitcoin is not an ISS, the determination of whether the Bitcoin stakeholders are ISS providers solely depends on the nature of services provided by these stakeholders.

b.   Bitcoin Merchants and Their Customers

Bitcoin merchants are retail and online businesses that sell goods/services for bitcoins. The acceptance of bitcoins by the merchant is usually carried out through the Internet-connected Bitcoin electronic payment processor (see section II.2.e. above) which denominates the prices of merchant's goods and services in bitcoins and carries out the checkout process including either the forwarding of the received bitcoins to the merchant's Bitcoin wallet or the conversion of these bitcoins into traditional fiat currency with its subsequent transfer to the merchant's bank account. The conversion of the bitcoins is carried out in accordance with the Bitcoin exchange price effective at the time of the checkout.

Importantly, a Bitcoin user who buys goods or services from the Bitcoin merchant enters a traditional contractual relationship with this merchant by concluding corresponding contracts. The only distinctive feature of these legal relations is the payment aspect, since the payment for goods or services is carried out through the irreversible Bitcoin transaction. Therefore, the mere fact that the payment is made in bitcoins does not affect the applicability of traditional contract law to the relations between the Bitcoin merchant and its customer.

The applicability of the business-specific legislation such as the ECD to this contractual relationship solely depends on the nature of the merchant's business activity. If the merchant is a retail business accepting bitcoins from the customers directly on its premises, the traditional national contract law will be applicable to such legal

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[120] European Central Bank (n 29), 44-45.

relations. At the same time, if the Bitcoin merchant provides ISSs and is an ISS provider under the ECD, both the national contract law and the ECD will be applicable to the merchant. Moreover, the requirements of the Consumer Rights Directive (CRD)[121] that covers the contracts concluded between the traders and the consumers should also be taken into account. While it is clear that the CRD is not applicable to Bitcoin itself, as there is no legal entity in charge of Bitcoin, the CRD is applicable to the Bitcoin merchants which act as traders within the meaning of the CRD, whereas their customers have the status of consumers within the meaning of the CRD.[122]

However, there are certain unclear issues stemming from the consumer's payment in bitcoins. For example, it is unclear how to apply taxation rules to such Bitcoin transactions. Though certain national regulatory authorities within the EU have argued that Bitcoin transactions are subject to taxation under the relevant tax law, none of these regulatory bodies have clarified in what way this taxation should be implemented.[123] As we have seen, the Bitcoin merchant has two available options on receipt of the bitcoins from the consumer: Option one is to forward these bitcoins to the merchant's wallet, and option two is to convert the bitcoins into fiat currency with its subsequent transfer to the merchant's bank account. One can argue that the latter option makes it possible to impose a tax on the corresponding sum placed on the merchant's bank account after the settlement of the Bitcoin transaction. But if the merchant chooses the former option, it is unclear how it would be achievable   within a certain financial reference period   to levy a tax on the sum denominated in bitcoins held in the merchant's Bitcoin wallet.

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[121] Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and repealing Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council [2011] OJ L304/64 (CRD).

[122] ibid, art 2 points 1, 2.

[123] See Letters from Federal Ministry of Finance of Germany to Frank Schaeffler (20 June 2013, 7 August 2013) <www.frank-schaeffler.de/wp-content/uploads/2013/08/2013_06_20-Antwort-Bitcoin-Koschyk.pdf> accessed 17 April 2014; Tax Administration of Finland, '*Virtuaalivaluuttojen tuloverotus*' (Tax Administration of Finland 2013) <http://vero.fi/fi-FI/Syventavat_veroohjeet/Verohallinnon_ohjeet/Virtuaalivaluuttojen_tuloverotus> accessed 17 April 2014.

The lack of clarity on the issue of taxation of Bitcoin transactions entails the uncertainty of the mechanism of compliance with the relevant requirements of the ECD and the CRD. Pursuant to the ECD, '[...] where information society services refer to prices, these are to be indicated clearly and unambiguously and, in particular, must indicate whether they are inclusive of tax and delivery costs'.[124] At the same time, the CRD states that prior to the conclusion of a contract the trader should provide the consumer with, inter alia, the 'total price of the goods or services inclusive of taxes, or where the nature of the goods or services is such that the price cannot reasonably be calculated in advance, the manner in which the price is to be calculated'.[125] Currently, these requirements simply cannot be met because it is unclear for the merchants whether and how they should withhold a tax from Bitcoin transactions.

On the other hand, it is unclear how the reimbursement of the sums paid by the consumer should be carried out by the merchant in the case if the consumer exercises the right of withdrawal envisaged in the CRD. In this case, according to the CRD:

> [t]he trader shall reimburse all payments received from the consumer [...]. The trader shall carry out the reimbursement (...) using the same means of payment as the consumer used for the initial transaction, unless the consumer has expressly agreed otherwise and provided that the consumer does not incur any fees as a result of such reimbursement.[126]

The payments received from the consumer should mean the precise amount of money paid by the consumer to the merchant. But it is still unclear whether the bitcoins paid may constitute money in the traditional legal meaning. This makes the perspective of the reimbursement of the sums to the consumer very uncertain. Moreover, even if one qualifies Bitcoin as money and subject to the reimbursement principle under the CRD, there are still definite risks faced by the merchant and by the consumer. First, if the merchant has to carry out the reimbursement using the same means of payment, this actually means that the repayment should be carried out in bitcoins. Since the

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[124] ECD (n 112), art 5 para 2.
[125] CRD (n 121), arts 5 para 1 point (c), 6 para 1 point (e).
[126] ibid, art 13 para 1.

Bitcoin transaction is irreversible, the possible reimbursement would be carried out only through a new separate Bitcoin transaction but not by means of the cancellation of the initial one. In this case, the merchant and the consumer face substantial economic risks due to Bitcoin's high volatility. Second, in case if the reimbursement should be made using other payment methods, it would be unclear how the amount of money to be paid should be calculated: whether on the basis of the Bitcoin exchange price effective at the moment of reimbursement or on the basis of the Bitcoin exchange price effective at the moment of the settlement of the initial Bitcoin transaction. The lack of clarity on this issue also poses considerable economic risks to both the merchant and the consumer. Furthermore, the lack of clarity about the mechanism of the merchant's compliance with the requirements of the CRD concerning the process of reimbursement of the consumer's payments necessitates substantial legal risks to the merchant.

c.   *Bitcoin Exchanges and Their Customers*

As has been reasoned above, the possibility of legal classification of Bitcoin exchanges as ISS providers depends solely on the nature of services provided by such exchanges. The ISS Directive defines an ISS as 'any service normally provided for remuneration, at a distance, by electronic means and at the individual request of a recipient of services'.[127] It can be argued that the services for trading bitcoins are provided for remuneration, since the exchange usually charges a commission from an amount of any such transaction converted into fiat currency.[128] The services provided by the Bitcoin exchange are provided at a distance and by electronic means. It can be reasoned that the bitcoins exchange services provided by the Bitcoin exchange are provided at the individual request of a recipient of these services, since the member of the exchange submits an instruction to execute an exchange transaction by placing an ask/bid price on the exchange platform. Therefore, the bitcoins exchange services may be regarded as ISSs within the meaning of the ECD. Since the ECD designates an ISS provider as 'any natural or legal person providing an information society service'[129], Bitcoin exchanges may fall under this definition.

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[127] ISS Directive (n 113), art 1 para 1 point 2.

[128] See 'Fee Schedule' (*Bitstamp*) <www.bitstamp.net/fee_schedule/> accessed 17 April 2014.

[129] ECD (n 112), art 2 point (b).

Consequently, the ECD requirements may be applicable to Bitcoin exchanges.

The Consumer Financial Services Directive (CFSD)[130], which covers the distance marketing of consumer financial services and recognises a financial service as 'any service of a banking, credit, insurance, personal pension, investment or payment nature'[131], may also be applicable to Bitcoin exchanges, since, as has been concluded above, they may be classified as payment service providers under the PSD and investment firms under the MFID.

Importantly, the potential applicability of the ECD and the CFSD complements the potential applicability of the PSD or the MFID together with the CIR and the CID to Bitcoin exchanges, since both the ECD and the CFSD 'contribute […] to the creating of a legal framework for the on-line provision of financial services'.[132] Moreover, according to the PSD, consumers should also be protected pursuant to, inter alia, the ECD and the CFSD, and 'the additional provisions in [these] Directives continue to be applicable'.[133]

Another question is whether the CRD may be applicable to Bitcoin exchanges. Importantly, the CRD is not applicable to contracts for financial services.[134] A financial service is defined as 'any service of a banking, credit, insurance, personal pension, investment or payment nature'.[135] As has been concluded in section III.5. above, the services for trading bitcoins may fall under the definition of investment services and activities under the MFID. Therefore, if one reasons from the assumption that bitcoins are financial instruments, the CRD is not applicable to bitcoins exchange transactions within the exchange platforms. However, if one reasons from the fact that bitcoins may be money, a currency, a good, or a commodity, the issue of the applicability of the CRD to Bitcoin exchanges should be revised.

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[130] Directive 2002/65/EC of the European Parliament and of the Council of 23 September 2002 concerning the distance marketing of consumer financial services and amending Council Directive 90/619/EEC and Directives 97/7/EC and 98/27/EC [2002] OJ L271/16 ('CFSD').

[131] ibid, art 2 point (b).

[132] ECD (n 112), recital 27.

[133] PSD (n 45), recital 22.

[134] CRD (n 121), art 3 para 3 point (d).

[135] ibid, art 2 point 12.

The CRD is applicable to 'any contract concluded between a trader and a consumer'.[136] Since a user interacts with an exchange online, and online contracts the CRD is applicable to are distance contracts[137], one may assume that a contract which may be concluded by the Bitcoin user with/on the Bitcoin exchange is a distance contract which is defined as:

> any contract concluded between the trader and the consumer under an organised distance sales or service-provision scheme without the simultaneous physical presence of the trader and the consumer, with the exclusive use of one or more means of distance communication up to and including the time at which the contract is concluded.[138]

The issue to analyse is whether bitcoins exchange transactions are subject to distance contracts between the Bitcoin exchange and its members. Bitcoin exchanges usually imply that a bitcoins exchange transaction constitutes an agreement between the buyer and the seller, and the exchange acts as a mere intermediary not being any part of this agreement (see section III.5. above). If one considers the bitcoins goods, or commodities (see section III.3. above), one can assume that the seller acts as a trader in the exchange transaction, and the payer acts as a consumer. However, the CRD defines goods as 'any tangible movable items'.[139] It means that bitcoins are not goods within the meaning of the CRD, and the CRD is not applicable to the agreement between the buyer and the seller. Even if one ignores the fact that the bitcoins do not meet the definition of goods under the CRD, it would still be unclear whether the contract between the buyer and the seller would comply with such an above criterion as the conclusion 'under an organised distance sales or service-provision scheme'[140], since the exchange transaction is carried out when the seller's ask price randomly matches the buyer's corresponding bid price on the third party exchange platform. Therefore, the CRD is not applicable to bitcoins exchange transactions and Bitcoin exchanges providing the tools for the execution of such transactions.

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[136] ibid, art 3 para 1.
[137] ibid, recital 20.
[138] ibid, art 2 point 7.
[139] ibid, art 2 point 3.
[140] ibid, art 2 point 7.

7.   **Closing Remarks**

As can be seen from the above discussion, the issue of legal classification of Bitcoin and Bitcoin stakeholders is very complex. As concerns Bitcoin, it may constitute a novel type of money and a currency, may be considered a good, a commodity, and may fall under the statutory definition of a transferable security which is a financial instrument. If one assumes that Bitcoin is money or a currency, Bitcoin may also be classified as a payment system, but this reasoning does not affect the inapplicability of the PSD in relation to Bitcoin since payment systems are a priori provided by payment service providers which are legal entities. At the same time, it has been proved that Bitcoin cannot be classified as a payment instrument, an e-money/e-money institution, a credit institution, an investment firm, a payment service/payment service provider, or an ISS/ISS provider. Therefore, the PSD, the EMD, the CIR, the CID, the CRD, the ECD, the CFSD, the ISS Directive, and the AMLD are not applicable to Bitcoin.

The legal analysis carried out above also sheds some light on the issue of legal treatment of Bitcoin stakeholders. As has been argued above, a Bitcoin exchange may be classified as a payment institution, a payment service provider, an ISS provider, or an investment firm. This fact necessitates that the CIR, the CID, the PSD, the ISS Directive, the ECD, the CFSD, the MFID, and the AMLD are potentially applicable to Bitcoin exchanges. At the same time, it has been concluded that a Bitcoin exchange cannot be considered a credit institution, an e-money issuer/e-money institution, or a trader within bitcoins exchange transactions. Therefore, neither the EMD nor the CRD is applicable to Bitcoin exchanges.

In the case of Bitcoin merchants, the applicability of national contract law and the requirements of the CRD is not affected by the mere fact that the payment for goods or services is made in bitcoins. If a merchant provides an ISS to the customers, the ECD requirements will also be applicable to the merchant. However, the lack of clarity of the ECD and the CRD in relation to Bitcoin transactions poses substantial economic and legal risks to Bitcoin merchants.

Bitcoin users and miners, not involved into any legal relations with either Bitcoin exchanges or Bitcoin merchants, do not have any legal

statuses under the analysed legislation. However, a Bitcoin user or a miner, who is a member of an exchange platform and who uses this platform for trading bitcoins, may have the status of a payment service user given that the Bitcoin exchange is a payment service provider. Therefore, the PSD, the ECD, and the CFSD may be applicable to such legal relations. However, if the Bitcoin exchange is considered an investment firm, the member of the exchange may be regarded as a client of the investment firm under the CIR, the CID, and the MFID, and these laws together with the ECD and the CFSD would be applicable to such legal relations. In this case, the PSD would not be applicable, since investment services and activities are not payment services, and an investment firm is not a payment service provider within the PSD (see section III.4. above).

When the Bitcoin user or the miner enters legal relations with a Bitcoin merchant, such relations are covered by the national contract law and the CRD, and the user or the miner is considered a consumer. Depending on the nature of the merchant's business activity, the applicable law may also include the ECD. But, once again, the lack of clarity in the ECD and the CRD in relation to Bitcoin transactions poses substantial economic risks to the consumers.

In the next section, the author focuses on the possible strategy of the regulation of Bitcoin which aims to reach the balance between the interests of Bitcoin stakeholders and regulatory bodies.

IV.   STRATEGY FOR REGULATION OF BITCOIN

1.   The Balance of Interests

In analysing the issue of regulation of Bitcoin, it is important to consider the interests of Bitcoin stakeholders and the relevant interests of regulatory bodies.

It can be argued that Bitcoin stakeholders are not only interested in the preservation of the existing benefits Bitcoin may offer, but also in the mitigation of existing economic and legal risks within the usage of Bitcoin: Bitcoin users are interested in being legally protected in relations with other Bitcoin stakeholders; Bitcoin exchanges are interested in the clear determination of their legal statuses and the legal

requirements they should comply with; Bitcoin merchants are interested in the presence of a clear mechanism of compliance with the effective legal requirements of the applicable legislation. At the same time, regulatory bodies are interested in obtaining the efficient legal tools necessary for ensuring the compliance of Bitcoin stakeholders with the relevant legal requirements. Both the Bitcoin stakeholders and the regulatory bodies can be considered the participants in the issue of the regulation of Bitcoin. The best solution to the issue will be the regulation ensuring the balance of the participants' interests. The sought balanced regulation of Bitcoin would mitigate the existing risks and facilitate the development of the innovative potential of Bitcoin.

2.   Initial Considerations

Relying on the conducted legal analysis, one may assume that the major obstacle on the way toward the balanced regulation is the uncertainty of the legal classification of Bitcoin, since this uncertainty hurdles the determination of what legal rules should apply to Bitcoin, in what way and to what extent, and how and what regulatory bodies should oversee the compliance of Bitcoin stakeholders with these rules. Reasoning from this assumption, it is important to recall the relevant legal findings from the previous section.

Bitcoin as a concept may theoretically be considered money, a currency, a good, or a commodity. Interestingly, the determination of Bitcoin as money and a currency also entails the classification of Bitcoin as a payment system. It means that Bitcoin shares common properties with all the above categories. At the same time, the clarity of the legal classification of Bitcoin is impossible to reach by simply changing the wordings of the relevant statutory definitions, since EU law does not even imply the possibility of existence of the concept of decentralised payment mechanisms. The mere recognition of Bitcoin as one of the above categories within the current legal framework would not have any practical effect, since Bitcoin still would contradict the traditional angle of legal reasoning based on the centralised approach to money, payments, and financial services. Therefore, it does not seem to be possible to include the concept of Bitcoin into the current legal framework.

Then, one may assume that the regulation of Bitcoin requires the implementation of a conceptually new legislation. However, such legislation would not affect or change the decentralised nature of Bitcoin based on a global peer-to-peer network functioning under the Bitcoin protocol (see section II.2. above). Moreover, the requirements of such legislation would be practically impossible to impose on the Bitcoin network, since it is practically impossible to amend the Bitcoin protocol without the consensus of the majority of Bitcoin stakeholders (see section II.2.a. above). It is hard to imagine how modifications of the protocol, representing the interests of certain European regulatory bodies, can be embraced by the majority of the Bitcoin community being international per se. Therefore, it is practically impossible to impose on Bitcoin any regulatory requirements aiming to reach the balance between the interests of Bitcoin stakeholders and the interests of regulatory authorities by merely modifying the Bitcoin protocol's code. Even if this scenario were possible, the protocol's open-source nature would pre-empt any warranty of that the protocol would not be subsequently amended in any other way considered more beneficial for the majority of Bitcoin stakeholders.

Therefore, it is not the lack of clarity about Bitcoin's legal classification that hinders the implementation of regulation, but the a priori unregulated nature of Bitcoin itself. This conclusion leads to another question: is the balanced regulation mentioned above practically achievable? The answer is yes, reasoning from the consideration that the balanced regulation is the partial regulation of the usage of Bitcoin ensuring the maximum possible balance between the interests of Bitcoin stakeholders and the interests of regulatory bodies, but is not a full comprehensive regulation covering all the aspects of the usage of Bitcoin. As has been concluded above, such full regulation is achievable only on paper through the implementation of a conceptually new legislation which, as we have seen, would not have any practical effect.

3.   **The Strategy of the Balanced Regulation**

The sought balanced regulation of Bitcoin can be reached through the implementation of the strategy comprising of four interconnected aspects covering different levels of the functionality of Bitcoin.

a.   Aspect 1 — The Conceptual Level

At the conceptual level, Bitcoin may be considered by analogy with decentralised neutral technologies such as email or Internet telephony which also function within the Internet at a protocol level (see section II.2.a. above).[141] These technologies are decentralised, not owned or controlled by any entity, and are unregulated. However, the services based on these technologies are provided by the respective email and VoIP service providers which are usually subject to legal regulation. These services, in turn, provide users with the access to the underlying technologies. The situation is different in the case of Bitcoin: there are no Bitcoin providers, since Bitcoin is itself a publicly accessible technology and a service. This difference is not relevant in the light of the above analogous consideration, since the regulation covers not email and Internet telephony as technologies but the services based on these technologies. As there are no Bitcoin providers and Bitcoin is publicly accessible, Bitcoin should be officially recognised as an unregulated technology.

The above measure should be carried out through the release of relevant official statements on the treatment of Bitcoin by regulatory bodies. This measure is the only reasonable solution possible at the conceptual level of Bitcoin's functionality.

b.   Aspect 2 — The Level of User Interaction

The implementation of the above approach to Bitcoin will mean that Bitcoin users who transact directly between each other should be considered unregulated and unprotected. Bitcoin miners also should be officially excluded from the scope of regulatory scrutiny. At the same time, to mitigate the existing risks, the user community should be officially informed of the underlying principles of Bitcoin's functionality and the risks stemming from the usage of Bitcoin. The risks may be explained by drawing analogy with cash which can be irreversibly transferred in private without any records, obligations, and

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[141] See 'Simple Mail Transfer Protocol' (*Wikipedia*) <http://en.wikipedia.org/wiki/Simple_Mail_Transfer_Protocol> accessed 17 April 2014; 'Voice over IP' (*Wikipedia*) <http://en.wikipedia.org/wiki/Voice_over_IP> accessed 17 April 2014.

responsibility. Therefore, it should be explicitly communicated that Bitcoin users use Bitcoin at their own risk.

The above measures should be achieved through the issuance of relevant official statements and/or warnings by regulatory bodies. These measures will mitigate the risks posed by Bitcoin users' lack of information on the principles of Bitcoin's functionality, and exclude potential legal risks faced by Bitcoin miners because of the initiation of creation of bitcoins.[142]

c.   *Aspect 3 — The Level of Interaction Between Users and Merchants*

Bitcoin merchants and the legal relations between Bitcoin merchants and their consumers are subject to the requirements of the relevant law (see section III.6.b. above). However, there are a number of risks stemming from the consumer's payment in bitcoins. The legal analysis has determined such problems as the lack of clarity concerning the applicability of taxation rules to Bitcoin transactions, and the uncertainty of the mechanism of reimbursement of consumer's payments by the merchant when the consumer exercises the right of withdrawal.

As for the first problem, since the profit of the Bitcoin merchant as a taxpayer can be denominated either in fiat currency or in bitcoins, the only visible solution to tax the merchant's profit is to impose the tax on the sum denominated in fiat currency. Therefore, Bitcoin merchants should be allowed to accept bitcoins as a payment only on conditions that the bitcoins will be subsequently converted into traditional currency with the following placement of the funds on the merchant's bank account. The tax amount to be paid should be calculated from these funds. The total price inclusive of all taxes should be interpreted in accordance with the Bitcoin exchange price effective on the date of the transaction. To enforce the requirement that the received consumer's bitcoins should be converted into fiat currency, the

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[142] See Tax Administration of Finland, '*Virtuaalivaluuttojen tuloverotus*' (according to the document, the income from mining of bitcoins should be taxable as earned income under the Finnish tax legislation, Tax Administration of Finland 2013) <http://vero.fi/fi-FI/Syventavat_veroohjeet/Verohallinnon_ohjeet/Virtuaalivaluuttojen_tuloverotus> accessed 17 April 2014.

merchants also should be obliged to implement know-your-customer and anti-money laundering policies. This measure will ensure that the merchants conduct the relevant record keeping concerning the details of every transaction. This measure will also ensure that the merchants possess the identifying information on their consumers, and will, thus, mitigate the risks related to the use of Bitcoin for the purposes of money laundering.

As regards the second problem, to mitigate the relevant risks faced by the merchant and the consumer the amount of reimbursement of the payments received from the consumer should constitute the total price paid by the consumer calculated in the way described above. Although this approach contradicts the-same-means-of-payment principle stipulated in the CRD[143], it is the only visible way to reimburse the payments while mitigating the economic risks faced by the both parties, and the legal risks faced by the merchant.

The above requirements should be envisaged in relevant official guidance issued by regulatory bodies. Moreover, since the legal analysis carried out herein is limited by the scope of the paper, there may be other relevant issues stemming from the lack of clarity about the current legislation in respect of Bitcoin transactions. The official guidance should therefore also include the determination and clarification of such issues. The above measures will mitigate the existing economic and legal risks related to the use of Bitcoin by Bitcoin merchants and their consumers.

d.   *Aspect 4 — The Level of Interaction Between Users and Exchanges*

A Bitcoin exchange may be considered a payment institution which is a payment service provider being under the scope of the PSD and the AMLD. The Bitcoin exchange may also be recognised as an investment firm being under the scope of the MFID, the CIR, the CID, and the AMLD. When the provision of payment or investment services is carried out online, the ECD and the CFSD are also applicable.

The designation of Bitcoin exchanges as one of the above statutory categories together with the subsequent bringing of them under the scope of the above legislation will ensure the implementation of know-

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[143] CRD (n 121), art 13 para 1.

your-customer and anti-money laundering policies by such exchanges, which will substantially lessen the scale of the usage of Bitcoin for the purposes of money laundering. This measure will also ensure a certain level of legal protection of the members of the exchange who will be considered payment service users or clients of the investment firm. In particular, the safety of the funds denominated in fiat currency and kept on the members' payment accounts will be within the exchange's responsibility.[144] At the same time, the safeguarding of bitcoins placed on the members' accounts will not be guaranteed due to the unregulated technical nature of Bitcoin (see section IV.2. above). This is the issue Bitcoin exchanges should be obliged to notify their customers of prior to the use of the exchange platforms.

Since the analysis of the business activities of Bitcoin exchanges carried out herein is limited by the scope of the paper, there may be a number of other relevant issues stemming from the unregulated nature of Bitcoin. The practical solutions to such issues in the light of the above legislation should also be officially determined and clarified.

The above measures should be implemented through the issuance of relevant statements on the treatment of Bitcoin exchanges by regulatory bodies. These measures will mitigate the existing economic and legal risks faced by Bitcoin users and Bitcoin exchanges.

4.   **Closing Remarks**

The balanced regulation of Bitcoin that is sought is achievable in the form of the partial regulation of the usage of Bitcoin through the implementation of the described strategy which covers four different levels of Bitcoin's functionality and, particularly, the rational application of existing legal mechanisms to Bitcoin stakeholders by regulatory authorities.

V.   CONCLUSION

In analysing the issue of the regulation of Bitcoin, the author has carried out the technical analysis of the functionality of Bitcoin and the legal analysis of Bitcoin and the Bitcoin stakeholders. The technical analysis has shown that Bitcoin is a novel decentralised payment mechanism

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[144] PSD (n 45), art 9; MFID (n 78), art 13 para 8.

functioning under the Bitcoin protocol which is practically impossible to amend in a way that contradicts the interests of the majority of Bitcoin stakeholders. The legal analysis has discovered, inter alia, that Bitcoin shares common properties with a number of existing conceptual and statutory categories. However, regardless of this fact, it is impossible to bring Bitcoin under the scope of current legislation, since the current legal framework is based on the centralised approach to money, payments, and financial services, and does not imply the existence of decentralised payment mechanisms. At the same time, the implementation of a conceptually new legislation on Bitcoin would not have any practical effect, since it is practically impossible to impose the requirements of such legislation on Bitcoin, and Bitcoin as a technology cannot be regulated. Nevertheless, the legal analysis has also shown that some legislation can be applicable to Bitcoin stakeholders.

In consideration of the technical analysis and the legal findings, the author has argued that the balanced regulation of Bitcoin aiming to ensure the balance between the interests of Bitcoin stakeholders and the interests of regulatory bodies is achievable in the form of the partial regulation of the Bitcoin usage by Bitcoin stakeholders through the implementation of the proposed strategy comprising of four interconnected aspects which cover different levels of Bitcoin's functionality such as the conceptual level, the level of user interaction, the level of interaction between users and merchants, and the level of interaction between users and exchanges. The implementation of these aspects provides for the official recognition of Bitcoin as an unregulated technology; the recognition of that Bitcoin users who interact directly between each other within the Bitcoin network, and Bitcoin miners are outside the scope of regulation; the reasonable application of existing legal mechanisms to Bitcoin merchants, Bitcoin exchanges, and the relations between these categories of Bitcoin stakeholders with Bitcoin users.

The implementation of the proposed strategy will substantially mitigate the risks within the usage of Bitcoin by Bitcoin stakeholders, and provide regulatory authorities with the legal tools necessary for overseeing the compliance of Bitcoin stakeholders with applicable law. The implementation of the proposed strategy constitutes the essence of the sought balanced regulation of Bitcoin.