Committee/Council: Economic and Social Council (ECOSOC)

Issue: Implementing a legal framework for cryptocurrencies

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Introduction

Technology and law are bound to evolve together. Nevertheless, in its relationship with a technological innovation, the law faces two big challenges. First, the fact that something innovative might require new and different rules, something to which the legal framework will have to adapt to· and second, the fact that, depending on the extent to which the specific framework affects the investment climate, it should be judged by its capacity to provide innovation.[1]

Cryptocurrencies are truly an innovation that certainly has tremendous opportunities to offer as far as international trade is concerned. Nevertheless, the very same nature that renders them beneficial is suited for facilitating illicit behavior. Implementing a legal framework for cryptocurrencies, is quite a tricky task, because through it, one would try to control characteristics that aid in criminal activity without imposing costs on the characteristics that constitute the core of cryptocurrencies' generative potential. The great number of inquiries that focus on the regulation of cryptocurrencies within discrete areas of law is proof of the increasing interest in tackling this issue. However, before one can discuss the form of the legal framework, there needs to be an in-depth knowledge of this topic. One needs to be acquainted with the way cryptocurrencies function as well as with their basic concepts. That way, one can better understand their different advantages and disadvantages focusing not only on the problems that the legislation needs to tackle but also on the features it needs to sustain. All in all, one must not forget that laws ought to be fashioned taking into account the manners and conditions of the people whom they are meant to benefit, and not imposed upon them according to the simple rule of right.[2]

Definition of Key-Terms

[1] Anderlini, et al. "Legal Institutions, Innovation and Growth." *By Walter Quattrociocchi, Antonio Scala, Cass R. Sunstein: SSRN*, 15 June 2011, https://poseidon01.ssrn.com/delivery.php?ID=942094068073000108088103116092123086034008059068089043102126098104085000073090112076103052038060105029109003076065124126099026052078027028048092122018012095118025067075041022110100122075083000072085029094101005116013005102076021117003092021084093097&EXT=pdf

[2] Edmund Spencer, The Works of Mr. Edmund Spenser

Cryptocurrency

Cryptocurrency is a form of currency without a physical substance that exists only virtually. It uses coding and encryption in order to be protected and hack-proof. This currency is decentralized in the sense that no government or central organization produce or control it. Furthermore, the encryption protocols control both the production of "virtual money" and the verification of transactions.[3]

Block

A block alludes to a vast request for the same kind of security to be purchased or sold by either institutional or other big investors. There is no official size assignment comprising a block of securities· however, a normally utilized threshold is in excess of 10.000 equity shares or an aggregate market estimation of more than $200.000. Securities exchanged in block exchanges encourage transactions by institutional or other big investors that require such mass exchanges to address their needs.[4]

Genesis block

Historically speaking, the Genesis Block is the first block of Bitcoin mined by its creator Satoshi Nakamoto. The first block has 50 bitcoins in it and was mined through the span of six days in 2009. The bitcoins this block includes cannot be spent, a topic of much discussion as there are opposing opinions about this, as some people believe that it is a deliberate act on Nakamoto's part, while for some others it is just a fluke. Otherwise, referred to as Block 0.[5]

Consensus rules

The block validation rules that are followed by full nodes with the purpose of being in consensus with other nodes. It functions like a communication code between them. Only the nodes sticking to the same rules can actually “understand” each other. Moreover, any process that takes place must be in accordance with these rules, otherwise it will immediately be rejected.[6]

Node

A node is a device on a blockchain network that is in essence the foundation of the technology allowing it to work and survive. Nodes are disseminated over a widespread network and complete an assortment of tasks.[7]

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[3] Investopedia. “Cryptocurrency.” *Investopedia*, Investopedia, www.investopedia.com/terms/c/cryptocurrency.asp

[4] Investopedia. “Block.” *Investopedia*, Investopedia, 17 Mar. 2018, www.investopedia.com/terms/b/block.asp

[5] Sherry, Benjamin. “Genesis Block.” *Investopedia*, Investopedia, 3 Jan. 2018, www.investopedia.com/terms/g/genesis-block.asp

[6] Bitcoin.org, Consensus rules, https://bitcoin.org/en/glossary/consensus-rules

[7] “What Is a Node?” *Lisk*, https://lisk.io/academy/blockchain-basics/how-does-blockchain-work/nodes

Nonce

For a miner to be rewarded with cryptocurrency, he needs to solve for a specific number. That number is called “nonce” and it is a number that is added to a hash in accordance with the level of difficulty the miner is solving for.[8]

Open source code

Open source software is a software with source code that anyone can investigate, alter, and improve. "Source code" is the piece of software that most computer users never observe; it is the code computer programmers can control in order to change how a bit of software —a "program" or "application"— works. Software engineers, who have access to a computer program's source code, can enhance that program by adding highlights to it or settling parts that do not work correctly every time.[9]

Distributed system

A distributed system is a network that comprises self-governing computers that are associated utilizing a dissemination middleware. They facilitate the sharing of distinctive assets and capacities to furnish users with a solitary and incorporated cognizant network.[10]

Cryptocurrency mining

Cryptocurrency mining or cryptomining is a procedure, in which exchanges of different types of cryptocurrency are checked and added to the blockchain digital records. Also known as crypto coin mining, altcoin mining, or Bitcoin mining (for the most well-known type of cryptocurrency, Bitcoin), cryptocurrency mining has expanded both as a theme and a movement as the use of cryptocurrency has greatly spread over the last few years.[11]

Decentralized market

A decentralized market is a market structure that is composed of a system of different specialized devices that empower investors to create a commercial center without a centralized location. In a decentralized market, technology provides investors with access to different offers/ cost approaches and makes it feasible for them to bargain straightforwardly with different investors/merchants and not with a given trade.[12]

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[8] Radcliffe, Brent. “Nonce.” Investopedia, Investopedia, 23 Oct. 2017, www.investopedia.com/terms/n/nonce.asp

[9] “What Is Open Source?” *Opensource.com*, https://opensource.com/resources/what-open-source

[10] “What Is a Distributed System? - Definition from Techopedia.” *Techopedia.com*, www.techopedia.com/definition/18909/distributed-system.

[11] Stroud, Forrest. “Cryptocurrency Mining.” *The Five Generations of Computers - Webopedia Reference*, www.webopedia.com/TERM/C/cryptocurrency-mining.html

[12] Staff, Investopedia. “Decentralized Market.” *Investopedia*, Investopedia, www.investopedia.com/terms/d/decentralizedmarket.asp

Encryption

Encryption is the process of utilizing a calculation to change data and make them garbled for unapproved users. This cryptographic technique secures touchy information, for example, credit card numbers by encoding and changing data into mixed up figure content. This encoded information may only be decrypted or made cleared with a key. Symmetric-key and asymmetric-key are the two essential sorts of encryption. Encryption is fundamental for guaranteed and confided in conveyance of delicate data.[13]

Proof of Work system

Proof of Work (PoW) is the first consensus algorithm in a Blockchain network. In the Blockchain, this calculation is utilized to affirm exchanges and create new blocks to the chain. With PoW, miners go up against each other to perform exchanges on the network and get compensated. The PoW system is used in order to avert a decrease in value of the currencies by miners assembling heaps of blocks, as the task is made harder to lead. Moreover, in PoW, when a user wants to be chosen as a "leader", in a sense that he can choose which will be the next added block, one has to find the solution of a specific mathematical problem. For that, the user will utilize a hash function —whose purpose is to take a group of characters and portray it to a specific value—[14] and due to it being cryptographically secure, there is only one way to solve the problem, i.e., by trying every possible combination. This is what prevents the devaluation of the cryptocurrencies.[15] [16] [17]

Proof of Stake system

The Proof of Stake (PoS) idea expresses the fact that a person can mine or approve block exchanges as indicated by the number of coins he holds. This implies the more cryptocurrencies a miner owns, the more mining power he has. The first cryptocurrency to embrace the PoS method was Peercoin. Nxt, Blackcoin, and ShadowCoin went with the same pattern soon after.[18]

Cryptocurrency wallet

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[13] "What Is Encryption? - Definition from Techopedia." *Techopedia.com*, www.techopedia.com/definition/5507/encryption

[14] "What Is Hash Function? - Definition from Techopedia." *Techopedia.com*, www.techopedia.com/definition/19744/hash-function

[15] Konstantopoulos, Georgios. "Understanding Blockchain Fundamentals, Part 2: Proof of Work & Proof of Stake." *Medium*, Augmenting Humanity, 8 Dec. 2017, https://medium.com/loom-network/understanding-blockchain-fundamentals-part-2-proof-of-work-proof-of-stake-b6ae907c7edb

[16] Tar, Andrew. "Proof-of-Work, Explained." *Cointelegraph*, Cointelegraph, https://cointelegraph.com/explained/proof-of-work-explained

[17] "What Is Cryptocurrency Mining?" *IT PRO*, IT Pro, 25 Apr. 1970, www.itpro.co.uk/digital-currency/30249/what-is-cryptocurrency-mining.

[18] Momoh, Osi. "Proof of Stake (PoS)." *Investopedia*, Investopedia, www.investopedia.com/terms/p/proof-stake-pos.asp.

A cryptocurrency wallet is an application enabling the users of cryptocurrencies to store and recover their computerized resources. As with customary currencies, where one does not need to have a wallet to perform a transaction, it facilitates one to keep everything in one place. At a point when one secures cryptocurrency, for example bitcoins, one can store it in a cryptocurrency wallet and from that point on utilize it with the purpose of performing transactions.[19]

Altcoin

Altcoins are the different cryptocurrencies propelled after the triumph of Bitcoin. Most of them choose to project themselves as better substitutes than Bitcoin· it was its success as the primary peer-to-peer digital currency that paved the way for the rest of the cryptocurrencies to take after it. The different altcoins try to focus on the one hand on Bitcoin's disadvantages and on the other hand on their own operational advantages. As the plural in the term 'altcoins' implies, there are many different altcoins, which are not Bitcoin. [20]

Initial Coin Offering (ICO)

A medium that is not regulated and which raise funds for a new cryptocurrency wander. Newly formed companies utilize an Initial Coin Offering (ICO), additionally called Initial Public Coin Offering (IPCO), in order to evade the thorough and managed capital-raising procedures required by investors or banks. In an ICO campaign, an amount of cryptocurrency is sold to early benefactors of the undertaking in return for legal tender or other cryptocurrencies, yet as a rule, for Bitcoin.[21]

Silk Road

Silk Road was an online marketplace designed by Roos Ulbricht for having a market outside of every government's control, which, in essence, undermined the very fabric of the state. Operating exclusively as a Tor hidden service, every communication between Silk Road users were thought to be mostly anonymous and thus, transactions on the platform could only be performed through the use of Bitcoin that, although not anonymous in its entirety, still offered anonymity at a level far greater than different forms of currency or credit cards.[22]

Deep web

[19] "Cryptocurrency Wallet Definition." *Bankrate*, Bankrate.com, www.bankrate.com/glossary/c/cryptocurrency-wallet/

[20] (ICFAI), Prableen Bajpai CFA. "Altcoin." *Investopedia*, Investopedia, www.investopedia.com/terms/a/altcoin.asp

[21] Momoh, Osi. "Initial Coin Offering (ICO)." *Investopedia*, Investopedia, www.investopedia.com/terms/i/initial-coin-offering-ico.asp

[22] "The History of Silk Road: A Tale of Drugs, Extortion & Bitcoin." *Blockonomi*, https://blockonomi.com/history-of-silk-road/

Often referred to as the invisible Web, the deep Web is the greater part of the Internet that one cannot access by conventional search engines. As far as its content goes, it can include emails, chat messages, private content on social media websites, electronic bank statements, electronic health records and generally, any type of content that can be accessed through the internet but is not crawled and indexed by conventional search engines.[23]

Dark web

Additionally referred to as the darknet, the dark web is a portion of the internet that search engines do not index and is characterized by encryption. It is considered a subsection of the deep web, as neither deep nor dark web pages can be found when using conventional search engines. The difference between them lays in the fact that whoever knows the URL of a deep web page can access it, while for visiting a dark web page, the correct decryption key in addition to a special software, access rights and knowledge of where to find the context are required.[24]

Cypherpunk

A person utilizing the technique of encryption while getting to a computer network, having as an end goal the safekeeping of privacy especially from government authorities.[25]

Laissez-faire capitalism

Laissez-faire is an economic theory that was prominent mostly during the 18th century. The driving guideline behind laissez-faire, a French expression that can be interpreted as "leave alone" (literally translated as "let you do"), is that the less the government is associated with the economy the more efficient businesses will be and consequentially the society as a whole. Laissez-faire economics are a key part of free market capitalism.[26]

Pyramid scheme

A pyramid scheme is an illicit venture trick in view of a hierarchical setup. Newcomers constitute the lowest part of the pyramid and give the subsidizing, or so-called returns, the prior investors/recruits above them get. A pyramid scheme does not include the offering of items. On the other hand, it depends on the consistent

[23] "What Is Deep Web? - Definition from WhatIs.com." *WhatIs.com*, https://whatis.techtarget.com/definition/deep-Web

[24] "What Is Dark Web (Darknet)? - Definition from WhatIs.com." *WhatIs.com*, https://whatis.techtarget.com/definition/dark-web

[25] "Cypherpunk | Definition of Cypherpunk in English by Oxford Dictionaries." *Oxford Dictionaries | English*, Oxford Dictionaries, https://en.oxforddictionaries.com/definition/cypherpunk

[26] Staff, Investopedia. "Laissez-Faire." *Investopedia*, Investopedia, www.investopedia.com/terms/l/laissezfaire.asp

inflow of cash from extra investors that a participant works its way to the highest point of the pyramid.[27]

Fintech

Fintech is a portmanteau of financial technology that describes a rising financial services sector in the 21st century. Initially, the term applied to technology connected to the back-end of established consumer and trade financial institutions. During the second decade of the 21st century, the term has extended to incorporate any mechanical advancement in the financial sector, incorporating developments in budgetary proficiency and instruction, retail banking, venture and even cryptocurrencies like bitcoin.[28]

Distributed ledgers

A distributed ledger is a database that is consensually shared and synchronized across network spread over various sites, establishments or geographies. It enables transactions to have open "witnesses" making a cyberattack more difficult. The participant at every node of the network can access the recordings shared over that network and can possess an identical duplicate of it. Furthermore, any changes or additions made to the ledger are reflected and replicated to all participants in a matter of seconds or minutes. Underlying the distributed ledger technology is the blockchain, which is the technology that underpins bitcoin.[29]

Peer-to-peer (P2P)

Peer-to-peer (P2P) is a decentralized model by dint of which two participants with similar capacities can start a correspondence session or exchange goods directly. Unlike the customer/server model, in which the latter satisfies a demand by the customer, the P2P network model enables every node to work as both a customer and a server.[30]

Background Information

Basic concepts of cryptocurrency

Nodes

[27] Staff, Investopedia. "Pyramid Scheme." *Investopedia*, Investopedia, www.investopedia.com/terms/p/pyramidscheme.asp

[28] Investopedia. "Fintech." *Investopedia*, Investopedia, 7 Dec. 2017, www.investopedia.com/terms/f/fintech.asp

[29] (ICFAI), Prableen Bajpai CFA. "Distributed Ledgers." *Investopedia*, Investopedia, 15 Sept. 2016, www.investopedia.com/terms/d/distributed-ledgers.asp

[30] "What Is Peer-to-Peer (P2P)? - Definition from WhatIs.com." *SearchNetworking*, https://searchnetworking.techtarget.com/definition/peer-to-peer

One can divide nodes in two categories: full nodes and miners. The miners are basically in charge of receiving the transactions full nodes have decided are valid and, in return, they give back blocks —files in which transaction data are stored— to the full nodes and then, the full nodes decide whether those blocks are valid for broadcasting. At this point, it is important to note that miners do not determine the validity of the consensus rules· they just sequence the specific transactions into a block. It is the job of the full nodes to determine the validity of the consensus, as they should not broadcast incorrect information. On the other hand, full nodes fundamentally propagate transactions and blocks. Full nodes possess a key role in the cryptocurrencies network, as each one of them must act authoritatively?, meaning something that will verify every single transaction and block that the network has been, irrespectively of the action of other full nodes, using the same "communication code". Further analyzing the functions of a full node, it firstly needs to take the transaction data and, at the same time, to independently verify all of the transaction's aspects and then merge with its own copy of the ledger in an authoritative manner. The purpose of this is to determine whether or not the funds pertaining to the transaction have already been spent and, as such, the transaction is invalid. In the case that a node receives a transaction that is characterized as invalid, not only will it reject the transaction but it will also stop "communicating" with the user that issued the transaction, as in a network nodes do not trust each other. To give an illustration, if a full node tries to broadcast information that is not correct, it will quickly be isolated from the nodes it tries to communicate with, as they will not only disconnect from it but also will ban it —most of the time.

Mining

A new cryptocurrency is released through the process of mining, meaning the process, through which transactions are verified and added to the public ledger, more commonly known as the blockchain (a chain of the aforementioned "blocks"). Mining is a process, in which everyone can participate, as long as one has access to the internet and the suitable hardware and is willing to spend a lot of money on electricity. In this way, if miners build many blocks the cryptocurrency could easily be devaluated, as the person that "constructs" the block is awarded with some of that cryptocurrency. In order to prevent that, the proof of work system comes into use, in the sense that each miner has to solve complicated mathematical problems that escalate in difficulty as more blocks are added to the blockchain. For a block to be created it needs to be followed by a cryptographic hash —an algorithm that will transform data of any arbitrary size into a fixed numerical string—, while the most practical way for one to reach a hash is to try calculating the most probable until one gets the matching hash. As there are many miners simultaneously trying to calculate

as many hashes as they can in order to reach the right one and be rewarded, mining is, in essence, a competition between many miners trying to hit the correct hash first.[31]

Public ledger (Blockchain)

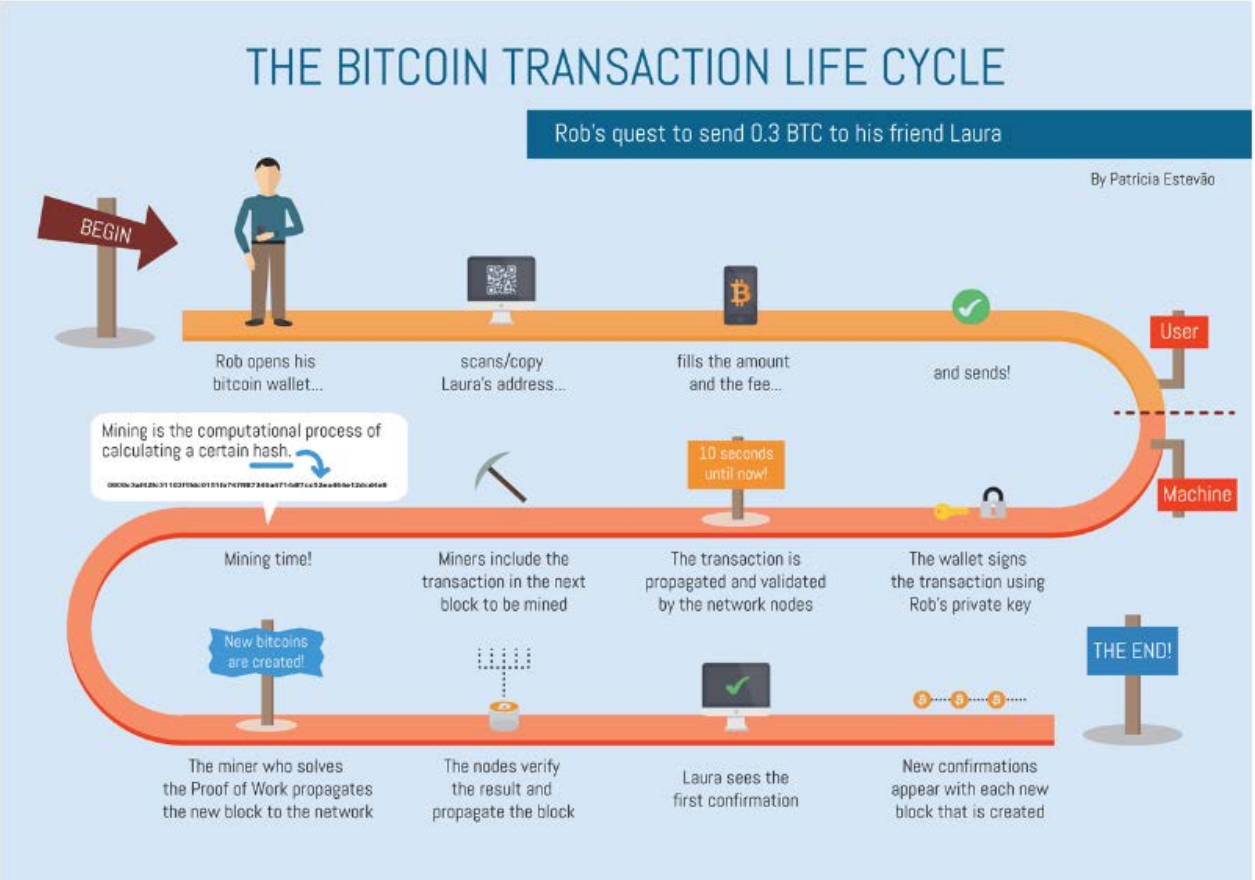
The Blockchain is, in essence, a database distributed among the existing nodes· however, no node has the power to control the blockchain, which means that neither a person nor an organization can ever turn off a blockchain. Through the blockchain, the nodes can validate transactions, as every transaction that has gone on the blockchain is recorded making them transparent and public. On the other hand, if one wishes to stay anonymous while using the blockchain, one can do it. Finally, notwithstanding the fact that blockchain was designed to be politically and architecturally decentralized, it still remains logically centralized as all communication occurring in it can be characterized as P2P, because every miner can act both as a server and as a customer.[32]

Transactions

When one sends a cryptocurrency to another, one's wallet client using an encrypted electronic signature creates a single data structure. It is then broadcasted to the node network, where miners try to discover a block by "cracking" its hash code. The full nodes then verify the data and append the block to the blockchain.

[31] "What Is Cryptocurrency Mining?" *IT PRO*, IT Pro, 25 Apr. 1970, www.itpro.co.uk/digital-currency/30249/what-is-cryptocurrency-mining

[32] "How Blockchain Technology Works. Guide for Beginners." *Cointelegraph*, Cointelegraph, https://cointelegraph.com/bitcoin-for-beginners/how-blockchain-technology-works-guide-for-beginners#can-you-use-a-blockchain-as-normal-database



#1 How Bitcoin transactions work, Source: "The Bitcoin Transaction Life Cycle." Bitcoin Designed, www.bitcoindesigned.com/infographics/the-bitcoin-transaction-life-cycle/

Decentralization

One can easily conclude that cryptocurrencies are part of a network centric system operating by simple mathematical rules decided upon by any participant in the specific network (the "consensus"), because they are essentially a standard, meaning a protocol and thus, aren't owned by anyone. Because of this pretty simple mechanism, cryptocurrencies are capable of operating within a network of computers that is decentralized.

Encryption

In the case that a cryptocurrency is used as a medium of exchange, there are two separate keys used for encryption and decryption rather than a single key for both. The user in a way that they are mathematically linked to one another generates the keys. There is a public key and a private key used for encryption and decryption respectively. Moreover, as far as a public key is concerned, it is shared, meaning it is used as a wallet for payment and that everyone with its address can send encrypted information —be it those bits of data or an altcoin— to another party. After the information has been encrypted, only the corresponding private key can decrypt it.

Basic cryptocurrencies

Bitcoin

Bitcoin has always been the most commonly used cryptocurrency. It was the first crypto coin that was used at such a level, while it currently has the highest market cap, meaning that it has the highest cost out of all the cryptocurrencies. Bitcoin prices have been growing over the time, from 225$ in June 2015 to approximately 5.000$ in September 2017. Nevertheless, Bitcoin remains the safest and thus, the best choice when a new participant wants to enter the cryptocurrency market, as it is the most familiar and invested-in coin.

#2 The symbol of Bitcoin, Source: "Promotional Graphics." Hash - Bitcoin Wiki, https://en.bitcoin.it/wiki/Promotional_graphics

Litecoin

Litecoin is one of the most important digital coins, having the third highest market cap in June 2015 and even though it is now closer to the seventh, mining Litecoin is still possible and profitable. It is well-known — although it might not be as commonly used as Bitcoin—, while, in essence, it uses the same technology with Bitcoin and costs between 1/50th-1/100th of what the latter does, depending on the day. It is very similar to Bitcoin before the Silk Road controversy, while the general belief is that "a Litecoin is like a Bitcoin except for its value, which is closer to what a reasonable person would expect a digital coin to have in a rational market"[33].

[33] Chirag Kathuria, What do you mean by Cryptocurrency? Need to know more!, 2017

#3 The symbol of Litecoin, Source:
"ライトコインがTenXと提携、デビットカード作成へ."
仮想通貨で90%以上の暴落を味わった猫のブログ,
www.bitcoin77777.com/2018/04/21/100000.

Ethereum

Ethereum is probably the second most important coin after Bitcoin. On the one hand, it does not have Litecoin's resilience to stay at the top and on the other hand, it has some unique features that, in addition to its market cap, make it a real contender. Because it has a cost far less intimidating than Bitcoin's, while simultaneously having the second highest market cap, most initial coin offerings (ICOs) use Ethereum. It is important to note at this point

#4 The symbol of Ethereum, Source:
"Ethereum." Wikipedia, Wikimedia Foundation, 1 Sept. 2018,
https://eu.wikipedia.org/wiki/Ethereum

that Ethereum is a fork, i.e., a spin-off of Ethereum classic.

BitcoinCash and Bitcoin Gold

Both BitcoinCash and Bitcoin Gold are Bitcoin's forks. BitcoinCash was voted on and implemented by the Bitcoin community for having faster transactions, while Bitcoin Gold was created to be mined with a GPU (Graphics-Processing-Unit). Even though they are interesting altcoins having

currently a high market cap, it is unlikely to ever challenge Bitcoin, because, apart for being so regularly used, it is important to keep an eye on all of its forks.

Darkcoin (Dash)

Previously known as Xcoin and as Dash since March 2015, Darkoin has a unique functionality. Evan Duffield originally wanted to improve Bitcoin but he lacked the necessary pull to do so and thus, he developed his own coin. What is unique about Dash, is that it needs less energy to be mined, a very important element, as the process of mining is generally pretty wasteful. Nevertheless, the wasteful mining process remains the key to the security and stability of all cryptocurrencies using a proof-of-work system, as it prevents people from mining too fast, which environmentally is a sheer nightmare.

Tether

Tether was created for reflecting the price of the US Dollar and, even though there is some criticism, Tether is one of the best choices if one wants a relatively stable coin for temporary use. In essence, Tether is not an investment· rather, a place to park one's value in cryptocurrency when in-between coins.

IOTA

IOTA has a large supply, which makes it a generally popular coin. Many big-name companies, like the Samsung Group or Cisco Systems Inc. to name a few, embrace the tech behind IOTA. Due to that, it currently has one of the highest market caps.

Ripple (XRP)

Ripple, or more commonly known as XRP, has a relatively stable price too because of its large supply. It has always been a popular and speedy alternative to Bitcoin, being less volatile than other Altcoins.

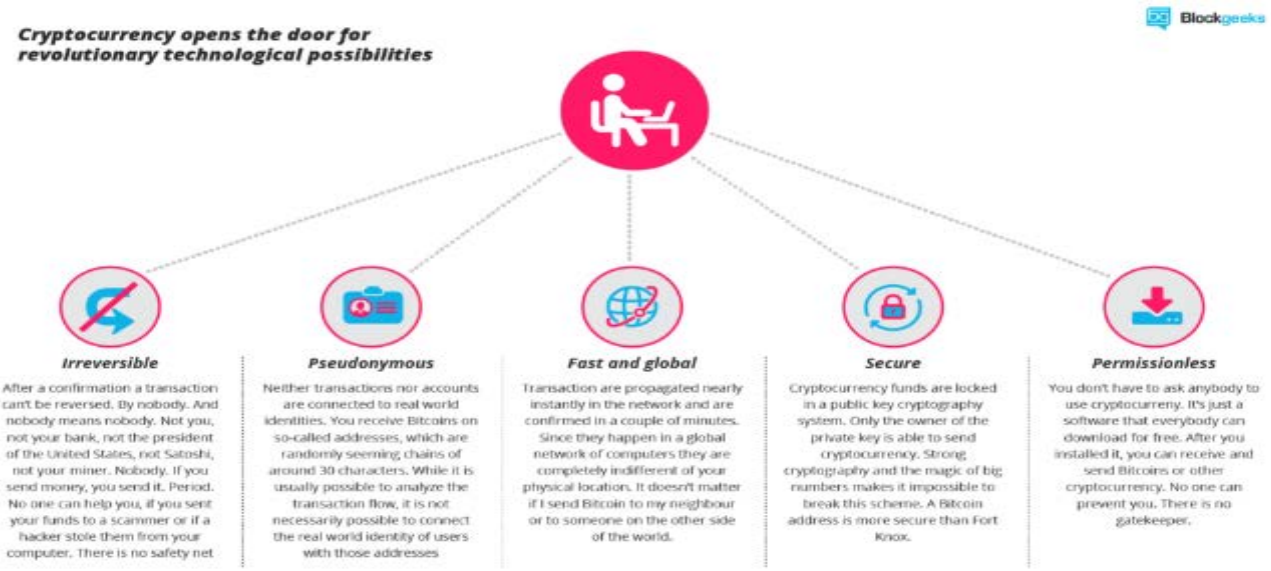
Cryptocurrency advantages and disadvantages

Cryptocurrency has been a disputing subject for a long time. Many claim that it is the best financial system ever invented, while others point to incidents

similar to Silk Road so as to convince people that cryptocurrency is just a tool facilitating crime. For having a clearer picture of cryptocurrencies, read the table underneath with the main advantages and disadvantages of cryptocurrencies.

Advantages	Disadvantages
Cryptocurrencies are developed keeping security and privacy in mind, meaning that users performing transactions involving cryptocurrencies are expecting them to be secure and private.	Transactions that are secure and private might facilitate skirting the law, as the third parties involved in the cryptocurrency market —most commonly, those producing wallets and exchanges— do not always promise the same security.
Cryptocurrencies have low transaction costs in comparison to other digital payment methods.	Only certain vendors accept Cryptocurrencies, something that, in combination with the fluctuating prices makes the money saved in transaction costs negligible.
Through the process of mining, which secures cryptocurrency transactions, anyone having access to a computer and the internet can essentially make money by mining coins.	Cryptocurrency mining, at least in proof-of-work systems, is a CPU intensive process, requiring an extraordinary amount of resources for the sole purpose of regulating coin creation and encryption.
Cryptocurrencies can be a high reward —albeit a high risk— investment, as the cryptocurrency market is volatile.	Because of the cryptocurrency market's volatility, the value of each coin can change drastically in a limited time frame.
Because of it being a decentralized currency, cryptocurrencies facilitate international trade, in this way opening up financial options for the people that do not have access to financial services, while simultaneously not being under the risk of inflation because of the central government's choices.	The lack of a central bank control adds to the cryptocurrencies' volatility, as an "invisible hand" is incapable of correcting the markets.

As far as cryptocurrencies are concerned, transactions are quick, irreversible and almost impossible to fake, thus limiting many of the fraud issues banks usually deal with.	If something goes wrong with a transaction or should a coin get lost, there is no way to recover it, meaning that if someone were to steal coins, there would be no way to rectify the issue.
There is no entity controlling one's money or its value.	There is no centralized system in place protecting the value of the coin.



Cryptocurrencies are not inflationary, in the sense that there is a set amount of coins that will ever be created.	Cryptocurrencies lack the flexibility of a centralized currency.

#6 The advantages of cryptocurrencies, Source: Dmitry Buterin. "How Bitcoin Payments Are Taking Over & Why You Should Care." Blockgeeks, 7 Dec. 2016, https://blockgeeks.com/how-bitcoin-payments-are-taking-over-why-you-should-care/

Cryptocurrencies are private.	Cryptocurrencies are private but not anonymous, which means that the blockchain may provide others with insight concerning one's previously unknown activity.

The need for a legal framework

Bitcoin, the first ever cryptocurrency, was created as an act of rebellion, a reaction to the traditional financial markets' state of affairs. The whole nature of Bitcoin is opposed to the concept of regulations, while even the people constituting the Bitcoin community usually have libertarian and anti-establishment political stances.[34]

In his book "Denationalization of money", Hayek essentially portrays what cryptocurrencies came to be. Embodying Laissez-Faire capitalism in its purest form, the cryptocurrency market steadily developed, while more and more international "players" entered it, Bitcoin became an international superstar and the community's demography expanded. The notion of stateless currency that is issued by "everyone and no one in particular" makes cryptocurrencies attractive to a certain demographic group, in addition to the fact that neither a governmental body nor any authoritative figure has the jurisdiction to control it.

Most of the news one reads about the blockchain are not positive: criminals using cryptocurrencies to fund different kinds of illegal activities, the Initial Coin Offering (ICO) space being full of different frauds or the blockchain per se is being full of pyramid and pump and dump schemes. To sum up, there seems to be close to zero customer protection and a complete lack of legal security, when it comes to cryptocurrencies, something that in the end only stifles growth and innovation in the market.

Besides that, many governments fear that "new generation" blockchains, for example Dash, facilitate tax evasion, as they make the tracking of the transactions extremely hard and even virtually impossible. This would leave the governments powerless and politics would essentially become a colony of the economy. Obviously, nothing good would come out of governments losing their grip on the fundamental levers of control and power.

For all the above reasons, there is a need for the cryptocurrency community to be cognizant of the fact that legislation for cryptocurrencies is inevitable, as the specific domain is basically trying to redefine how commerce —a building block of civilization— is being conducted.

Different regulatory approaches

Because of their decentralized form, no one at this point can speak of any harmonization of law and uniformization of practices for the implementation of

[34] Stefan Stankovic, An Introductory Guide to Cryptocurrency Regulation, 2018

a legal framework regulating cryptocurrency market. In combination with the fact that they only exist in a digital realm, cryptocurrencies are really hard to be controlled. In light of being a more and more common means of exchange, governments around the globe have taken different approaches in accordance with their legal traditions and practices. The aforementioned approaches can be summed up in the following four categories.

The wait-and-see approach

At this point, it is the approach of choice, as far as the regulation of blockchain technology and cryptocurrency market goes on an international level. The idea behind this approach is to let this novel phenomenon unfold, but not without paying the necessary attention to the direction it is taking and the problems it might solve or create.

This approach has many advantages. It gives lawmakers a time allotment adequate for educating themselves and comprehending the underpinnings of cryptocurrencies in depth, which is necessary seeing that blockchain technology is developing at a staggering rate, while there are many different cryptocurrencies and models of blockchains that have diverse purposes and implications.

On the other hand, this type of approach needs to be accompanied by the insurance of either formal or informal guidance, opinions or statements about the way legal frameworks might apply to Initial Coin Offerings (ICOs), the legal classification of cryptocurrencies, and the blockchain technology in general. The aforementioned guidelines dictating the way those frameworks will apply need to be not only clear but also decisive so that they leave no room for public uncertainty, ambiguity and misinformation.

The sandboxing approach

This approach is an administrative procedure that enables lawgivers to create a fertile testing environment for pioneers in the Fintech world, which is planned in such a way so as to support the safe experimentation with technologies not regulated by any existing law or supervised by any regulatory institution for the time being. In essence, the crypto regulatory sandbox is an environment that is used for testing live-like situations and check for the security of the financial operations the blockchain includes as well as for ensuring that it complies with the set regulations. To give an illustration of this, before any major update is launched in an application, its functions must be tested in an environment that is isolated and controlled. The said environment is the

sandbox, in the sense that, when talking about a sandboxing approach concerning cryptocurrencies, one is referring to an environment where different cryptocurrencies are checked for both their functions and their security.[35]

Sandboxing is a very suitable approach as it pertains to novel technologies and markets. It is beneficiary not only for the regulators but also for the regulated· providing time for further observation and facts in accordance with the recent developments in the field, sustaining good relations between the industry's stakeholders and the regulators, and producing security within the boundaries of the already set legal framework.

Governments cognizant of the economic advantages of the expansion of blockchain technology usually choose this method, while it is, in fact, a race between nations to become the 1st blockchain capital of the world.

New affirmative legislation

Many governments aiming to attract new blockchain capital and innovation have issued a new blockchain-friendly legislation. The idea behind the insurance of new and affirmative regulations at times that can only be described as chaotic is that legal certainty is created and the governments are taking a stance on both cryptocurrencies and distributed ledgers technologies (DLTs).

There are chances, however, that this strategy will create adverse effects. Due to a combination of two issues —the industry still evolving in a manner that is unpredictable and the overly detailed rules—, start-ups can be deterred from entering the market and held back from experimenting with the technology. Furthermore, constant amendments to the already existing laws and regulations may be proven harmful for the economy and the legal certainty of a nation, while issuing new regulations can at this time be counterproductive.

The outright ban approach

There will always be governments opposed to the nature of cryptocurrencies and this stance may lead to the outright banning of cryptocurrencies. Their actions, however, have proven to be futile

[35] Seth, Shobhit. "Crypto Regulatory Sandbox." Investopedia, Investopedia, 23 July 2018, www.investopedia.com/terms/c/crypto-regulatory-sandbox.asp

keeping in mind the decentralized nature of cryptocurrencies. No government has —or even can have— any control of cryptocurrencies, just because they are decentralized, encrypted and thus, recognize no state boundaries. In essence, cryptocurrencies are plainly bits of information, nothing but a code, while the latter is nothing but a language and, if history has ever taught us anything, is that no one can police the use of language and that ideas cannot be simply "killed".

Issues with the regulation of cryptocurrencies

A major problem governments face when it comes to cryptocurrencies is the user's anonymity. Many of the new cryptocurrencies on the market make the user's identity tracking virtually impossible. Attempts to stop illicit activities made using cryptocurrencies a very insource-intensive and expensive task, while outlawing will not have a remarkable impact on the extent of their use.

In addition, there are many legal, economic and social problems that remain unsolved and that neither legal scholars nor economists can reach a consensus on. There are questions about whether a cryptocurrency is a currency, security or commodity, about its categorization and how it can be regulated without being outlawed, to name a few.

Major Countries and Organizations Involved

Japan

Currently, the biggest market for Bitcoin, as almost 50% of the digital currency's daily volume is traded in the country's currency[36]. Japan was also the first nation to adopt a national system for regulating cryptocurrency trading after Japanese exchanges were subject to some well-known breaches. Finally, Japanese regulators have issued punishment notices to many exchangers, forcing many of them to stop business altogether. Overall, Bitcoin is legal, but for a transaction to be legal, it has to be registered with the Japanese Financial Sevices Agency.

United States of America (USA)

In the United States, Bitcoin does not have a legal tender status· however, cryptocurrency exchanges may be legal, depending on each state's legal framework. USA handles the second largest volume of Bitcoin, while U.S. regulators differ on their definitions of both Bitcoin and Altcoins. The Security and Exchange Commission has stated that it views digital currency as a security, furthermore focusing on ICOs and making efforts to police them through subpoenas. Then, the Commodity Futures Trading Commission views Bitcoin as a commodity, while its

[36] Cryptocompare

Commissioner is advocating a "do-no-harm" approach to ledger technologies. Finally, the Internal Revenue Service accepts cryptocurrency as property rather than as a currency and has thus issued guidance on how it should be taxed, while the Treasury's Secretary General has often been vocal about Bitcoin's ability to facilitate illicit activities and how the main focus with cryptocurrencies should be on preventing that.

United Kingdom (UK)

In the UK, only the sterling is a legal tender, but if a cryptocurrency exchange is registered with the Financial Conduct Authority and meets the anti-money-laundering counter-terrorism standards as well as those of other financial institutions according to the Bank of England, it is considered legal. Even so, the Financial Conduct Authority has called cryptocurrencies "high-risk, speculative products".

South Korea

In 2013, South Korean financial authorities stated that neither Bitcoins nor Altcoins are legitimate currencies in the country, while the government was considering a shutdown of all cryptocurrency exchanges. At this point though, cryptocurrencies are legal as long as anonymous bank accounts for virtual coin trading are not used and the transactions are registered with South Korea's Financial Services Commission. In 2017, the latter prohibited the trading of Bitcoin futures by local finance firms and the use of anonymous bank accounts, although it stated that it does not plan to shut down domestic exchanges completely. Finally, even though the government has stated that it will not ban bitcoin exchanges and will put ICOs and futures under scrutiny, an official suggested that the government is still unsure about how to regulate the related market.

China

Trading cryptocurrencies in China is technically illegal, while in 2017 the government also banned ICOs and shut down domestic cryptocurrency exchanges. Nevertheless, activity in cryptocurrencies has carried on through alternative channels, such as, but not limited to, mining, while Chinese authorities are trying to put a halt even to these practices.

Country[37]	Buying	Selling	Mining
Iceland	Prohibited	Prohibited	Prohibited
Vietnam	Prohibited for financial	Prohibited for financial	Allowed

[37] For a detailed description of the situation of cryptocurrencies in many countries, one can visit https://en.wikipedia.org/wiki/Legality_of_bitcoin_by_country_or_territory and find the respective country.

	institutions	institutions	
Kyrgyzstan	Allowed, but cannot be used as a means of payment	Allowed, but cannot be used as a means of payment	There are no official data concerning a legal ban, but there is a mention of "negative consequences for violation of the law"
Bangladesh	Prohibited	Prohibited	There are no official data concerning a legal ban
Bolivia	Prohibited	Prohibited	Prohibited
China	Prohibited for financial institutions	Prohibited for financial institutions	allowed
Ecuador	Prohibited	Prohibited	There are no official data concerning a legal ban
Nepal	Prohibited	Prohibited	Prohibited
Lebanon	Prohibited	Prohibited	There are no official data concerning a legal ban
Indonesia	Prohibited	Prohibited	There are no official data concerning a legal ban

<u>European Union (EU)</u>

With the exception of the Fifth Anti Money Laundering Directive, the European Union has chosen to create an EU Blockchain Observatory and Forum aiming to identify and provide an analysis of the technological and organizational trends in the blockchain industry. For the European Union, it is clear that this issue

needs to be addressed at a federal level and is thus making the necessary plans to tackle it in the near future.

Group of 20 (G20)

All the members of the G20 agree that cryptocurrencies constitute an innovation both in the economy and in social organization at a time when the digital age and the economy are intertwined. While they all agree that cryptocurrencies are not to be prohibited, they strongly believe regulations should be establish that will mainly focus on the taxation of cryptocurrencies and will not prevent technological breakthrough[38].

Timeline of Events

Date	Description of events
August 18th, 2008	The domain name bitcoin.org is registered.[39]
October 31st, 2008	Satoshi Nakamoto, the creator of Bitcoin, publishes a paper entitled "Bitcoin: A peer-to-peer Electronic Cash System".
January 12th, 2009	The first Bitcoin transaction occurs, when Satoshi Nakamoto sends Hal Finney, a computer programmer, 10 Bitcoins.
August 15th, 2010	Bitcoin is hacked exposing the major vulnerability of the system.
2010	The inaugural bitcoin sale takes place enabling the attachment of a monetary value to a cryptocurrency for the first time.
2011	Rival cryptocurrencies, as Litecoin, Namecoin and Swiftcoin, are making their debut. Bitcoin is severely criticized after claims that it is being used on the "dark web" and especially in sites, such as Silk Road.[40]
2012	Cryptocurrencies begin to enter popular consciousness· to give an example, an episode in the 3rd season of popular US drama "The Good Wife" is entitled "Bitcoin for Dummies".

[38] "10 Takeaways: A Cryptocurrency Summary from G20." CCN, 1 Apr. 2018, www.ccn.com/g20-an-sumary-with-10-topics/

[39] Bigmore, Rosemary. "Cryptocurrencies: a Timeline." *The Telegraph*, Telegraph Media Group, 18 May 2018, www.telegraph.co.uk/technology/digital-money/the-history-of-cryptocurrency/

[40] "Bitcoin's Timeline - Most Historical Events." *Crush The Street*, 28 Sept. 2017, www.crushthestreet.com/articles/digital-currencies/bitcoins-timeline-historical-events.

2013	Bitcoin holders fail to agree on a new rule for transactions and thus, bitcoin "forks" are created, while the blockchain literally splits in two. For six hours, there are two networks operating at the same time, with two different versions of transaction history leading to an inevitable drop in value. -Thailand bans bitcoin declaring that trading in the cryptocurrency is illegal. Germany's ministry of finance would not accept it as an official currency but rather as a "unit of account" paving the way for establishing in the future a framework to tax bitcoin-based transactions. The People's Bank of China prohibits financial institutions from using bitcoins at all prompting another drop in value. In Vancouver, Canada, the first bitcoin ATM is launched.[41]
2014	Cryptocurrency trading exchange Mt Gox, which is based in Japan, goes offline and files for bankruptcy protection leaving investors out of pocket. -As an illustration of bitcoin's growing popularity, Microsoft allows users to buy games with the currency.[42]
2015	-New cryptocurrencies emerge including Ethereum, while Coinbase raised $75m in a funding round, the largest amount for a bitcoin company. -Bitstamp, a European based bitcoin exchange, is the victim of a security breach after being hacked, but resumes trading a few days later assuring customers that they have not lost their funds.
2016	Cryptocurrencies continue to become more mainstream. The number of bitcoin ATMs rises from around 500 at the beginning of the year to just under 900 by the end of the year. Uber in

[41] (62), mooncryption, et al. "Happy 9th Birthday Bitcoin! A Timeline of Cryptocurrencies - Steemit." - *Steemit*, steemit.com/bitcoin/@mooncryption/happy-9th-birthday-bitcoin-a-timeline-of-cryptocurrencies.

[42] "Cryptocurrency Timeline." *CryptoQ8*, https://cryptoq8.com/cryptoq8-portal/cryptocurrency/cryptocurrency-timeline/

	Argentina switches to bitcoin payments. The Swiss national railway and software website Steam are among new users accepting the currency. -The Decentralized Autonomous Organization (DAO) is founded in May, a stateless venture capital fund on the Ethereum blockchain and the largest crowdfunded project to date. It is hacked by users a month after its launch and a third of its assets are siphoned off. As a result, a "fork" takes place in Ethereum, which splits into Ethereum and Ethereum Classic.[43]
2017	The much-anticipated "Bitcoin cash hard fork" occurs, which splits bitcoin in two derivative cryptocurrencies: BTC and bitcoin cash.[44] Japan passes a law to accept bitcoin as a legal payment method. Skandiabanken in Norway integrates bitcoin accounts and recognizes bitcoin as an investment asset and payment system.
2018	Samsung confirms it is making chips to mine coins. Various European governments join forces to cooperate on cryptocurrency regulation. Many cryptocurrencies continue to launch innovative partnerships with high-street names including Ripple's 2018 app launch with Santander for international money transfers.

Relevant UN Treaties, Resolutions and Events

Draft Report of the Forty-first Meeting of Heads of National Drug Law Enforcement Agencies in Asia and the Pacific, UNODC/HONLAP/41/L.1/Add.5, November 28th 2017

In this Draft Report, there are many observations, conclusions and recommendations for Member States to follow concerning the role of the internet in addressing drug trafficking, and abuse, while there are some sub-clauses referring

[43] "Hobbes' Blockchain Timeline 0.1." *Hobbes' Internet Timeline - the Definitive ARPAnet & Internet History*, www.zakon.org/robert/blockchain/timeline/

[44] "CryptoCurrency Timeline & History." *CryptoTimeiline*, https://cryptotimeline.com/

especially to how cryptocurrency facilitates similar illicit activities and how governments should act.

Report on the meetings of the Working Group on International Cooperation and the Working Group of Government Experts on Technical Assistance held in Vienna from 9 to 13 October 2017, CTOC/COP/WG.2/2017/4–CTOC/COP/WG.3/2017/4, October 23rd 2017

This report makes mention of using the cryptocurrencies in money laundering, while it also talks about the need of implementing a legal framework for cryptocurrencies.

Report of GA2- Macroeconomic policy questions: promotion of international cooperation to combat illicit financial flows in order to foster sustainable development, A/72/418/Add.6, December 8th 2017

Again, this report is referring to the use of cryptocurrencies in money laundering and the need of implementing a legal framework for cryptocurrencies so as to foster sustainable development through the promotion of international cooperation.

Chief Executives Board for Coordination-Report of the High-level Committee on Programmes at its thirty-fifth session, CEB/2018/4, May 11th 2018

This report talks on the one hand, about the role of technology in rapid urbanization and on the other hand, about some implications that data security and digital identity might cause, as well as about the potentials of blockchain and cryptocurrencies among others.

Previous Attempts to solve the Issue

There have been many attempts to regulate cryptocurrencies, although most of them, have up to this point, failed. The United States, the United Kingdom, Brazil and the International Monetary Fund (IMF) have taken the most recent action concerning regulations for cryptocurrencies.

Firstly, in a note from the Financial Crimes Enforcement Network, an agency of the U.S. Treasury, it was suggested that ICOs were held to higher standard of Know Your Customer (KYC) and anti-money laundering (AML) laws. By this change, the ICO process would be qualified as a “money transmitter” and introduced to a host of obligations meant to prevent aiding illicit activities, while simultaneously facilitating the investigation of customers and the reporting of suspicious transactions to the authorities.

Then, the United Kingdom government launched a cryptocurrency task force responsible for the assessment of the risks and the potential benefits of cryptocurrencies. On the one hand, this would focus on the potential to leverage the underlying blockchain technology to help financial firms meet regulatory requirements. On the other hand, it struck a mindful note about cryptocurrencies, but also a general affirmation of the potential for blockchain applications to enhance financial transparency and consistent adherence.

Moreover, the Brazilian National Bank for Economic and Social Development tokenized the country's national currency through Ethereum's public blockchain to increase transparency. This project will run as a proof-of-concept for a while and if it is successful, it might eventually lead to its —or other similar projects— adoption in other countries. It is overall exciting, seeing governments experimenting with blockchain technology as a means to increase transparency and trust.

Finally, the IMF reiterated its concern regarding the potential for cryptocurrencies to be used for money laundering. In a post on the IMF's blog, written my Christine Lagarde, it is made clear that the IMF is deeply worried about cryptocurrencies potentially enabling bad actors· however on the same post it is also acknowledged that notwithstanding their significant risks, the technology underlying cryptocurrencies could also be the answer to mitigating them. To conclude, the post calls for universal, coordinated endeavors so as to better comprehend and direct the cryptocurrency space.

Possible Solutions

Treating cryptocurrencies both as a commodity and as a security depending on the case

If one decides to treat cryptocurrencies as a commodity, i.e. oil, gold and other financial derivatives, one would have a significant advantage, as one could deploy the pre-existing laws and avoid the regulation of that specific asset. On the other hand, in the case of using cryptocurrencies to raise capital through an ICO, they should be treated as a security and thus, a fitting legal framework should be established.[45]

Exchanges are regulated

[45] "Bitcoin and Blockchain: How Do You Regulate Something as Intangible as a Cryptocurrency?" Imperial News, www.imperial.ac.uk/business-school/knowledge/finance/bitcoin-blockchain-regulate-something-intangible-cryptocurrency/

Unless one is a professional trader, all the transactions one makes run through an exchange that is regulated. If the flow of fiat to cryptocurrency and vice-versa is mainly through exchanges, ensuring the payment of taxes and combating illicit behavior become so much easier, but for this to happen there is first a need for banks to open accounts for exchanges. On the one hand, banks are afraid that, without tight regulation, funds can still get exploited by criminals or used for money laundering and, in case they are part of either of these processes, they are in danger of getting fined or shut down. On the other hand, this is exactly why there is a need for regulation of the exchanges, because, after it, banks will open their doors facilitating both exchanges and investors, while also benefiting themselves, as they will offer their customers more provisions to preventing them from drifting away to a more "daring" competitor.

A framework for ICOs is created

Currently, there is no set regulation on a global scale as far as ICOs are concerned. There is a need for a regulatory framework, as the key requirements of an ICO, being a fund-raising vehicle, need to be laid out. A procedure like this must possibly meet the requirements laid out for normal IPOs including, but not limited, to risk management as well as the investigation and the classification of every new ICO.

Establishment of requirements for exchanges

By setting requirements for exchanges, one could facilitate tackling the volatility of the cryptocurrency market and avoid huge crashes in the price of cryptocurrencies, notwithstanding that their price might later rise again. To give an illustration, this would work in the same way as with a bank. In order for a bank to be able to operate effectively, there always needs to be an amount reserved for any possible downturns or crushes. By the same token, having a cryptocurrency reserve, one would be able to avoid instability —a usual problem when trying to implement regulations for cryptocurrencies.

Establishing a working group of blockchain experts, economists and technocrats

Instead of leaving developers, investors and banks in the dark, a good idea would be to have a report published giving them a clear steer on how the world views cryptocurrencies as well as on the cryptocurrency market on a global scale.

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