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Crypto currencies Regulation with emphasis on bitcoin

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Abstract

About a decade old, bitcoin and other crypto currencies have had a major social impact and And they are a unique challenge for law enforcement in payment systems around the world. Technological changes in the world, such as the Blockchain, the foundation of Bitcoin cryptography, go beyond the development of rules and regulations. Currently, the bitcoin market Cap is about $ 1242 billion, which is 43% of the total market value of crypto currencies. But Bitcoin regulation is still unclear. Few countries have accepted it .Most of the world community has either taken a passive stance against it or chosen to ban and restrict it. This paper will look at Bitcoin from a legal and regulatory perspective.

Keywords

Crypto currency, Bitcoin, regulatory.

1. Introduction

No longer relegated to relative anonymity, the seemingly limitless potential of decentralized virtual currencies such as Bitcoin has captured the imagination of the public at large.(V. Tu & Meredith, 2018) since 2009 Bitcoin has continued to gain popularity and is increasingly used as a digital currency by consumers and businesses making payments with Bitcoin for everyday activities such as buying a coffee or simply making a transfer from one account to another. (Westhuizen, 2017)

Although Bitcoin has increasingly become an attractive alternative to legal tender currencies, it suffers from fundamental flaws that are detrimental to its widespread adoption. First and foremost, governments are highly concerned about Bitcoin's susceptibility to criminal activity. Because Bitcoin offers varying degrees of anonymity to its users, digital currencies have been increasingly associated with money laundering and other criminal activities. One of the most prominent examples is Silk Road, a digital black market where Bitcoin was used exclusively to buy and sell illegal drugs.

More than a technological innovation or a view of the future, Bitcoin is poised to threaten the very foundation upon which fiat currency and monetary policy rest: centralized control. Bitcoin is unnerving precisely because "a world where it is used for all transactions is one where the ability of a central bank to guide the economy is destroyed, by design.(Sonderegger,2015)

As cryptocurrencies gain popularity, the issue of how to regulate them becomes more pressing. The attractiveness of cryptocurrencies is due in part to their decentralized, peer-to-peer structure. This makes them an alternative to national currencies which are controlled by central banks. Given that these cryptocurrencies are already replacing some of the "regular" national currencies and financial products, the question then arises: should they be regulated? And if so, how?(Jabotinsky, 2019)

Therefore, a key aspect of this research is to review the latest main regulatory projects and industry-wide consultations in the main economic countries where distributed ledgers.

2. Literature Review

2.1. Virtual currencies

Basically, virtual currencies can be divided into two categories: (i) the convertible (or open) virtual currencies (e.g. bitcoin), which have "an equivalent value in real currency and can be exchanged back-and-forth for real currency"; and (ii) the nonconvertible (or closed) virtual currencies, which are "intended to be specific to a particular virtual domain or world (e.g. Q Coins), and under the rules governing its use, cannot be exchanged for fiat currency. The terminology of "virtual currency" encompasses the concept of "crypto-currency" which refers to "a distributed, open-source, math-based, decentralized convertible virtual currency that is protected by cryptography and that has no central administrating authority, and no central monitoring or oversight" Examples:Bitcoin and LiteCoin.(Blemus, 2017)

2.2. Bitcoin

Bitcoin is the world's first decentralized currency that is not linked to any real world currency or commodity. Bitcoin refers both to the Bitcoin Payment System (Bitcoin), which is a peer-to-peer network that does not rely on any central government authority to function,as well as the denomination of the currency (bitcoin). The Bitcoin payment system relies on a collective network that issues, transacts, processes and verifies all bitcoin transactions. This process is termed a "proof-of-work system." Each time a transaction occurs, users must solve a mathematical puzzle to verify the transaction. Once it is verified, the transaction is recorded within the network on what is called a "block-chain." The purpose of the Bitcoin payment system, according to the founder of Bitcoin, Satoshi Nakamoto,is to overcome today's "trust based model." Nakamoto authored a paper when he launched Bitcoin describing the weaknesses of today's so-called "trust model," which relies on trusted third party financial institutions to process payments. Inherent in Nakamoto's argument is a critique of the reversibility of current transactions. Trusted third parties are unable to avoid mediating disputes or guarantee finality in each payment, which inevitably increases users' transaction costs. The possibility of reversal heightens the need for trust and causes a certain level of fraud to become acceptable in the system.

A better system, Nakamoto argues, is based on cryptographic proof that allows any two parties to transact with each other without the need for a trusted third party." Transactions that are computationally impractical to reverse, Nakamoto argues, will protect sellers against fraud and eliminate the need for third parties. The Bitcoin system overcomes a need for third party intervention mainly through a combination of a process called mining and a shared public ledger (the block-chain). The shared public ledger is a block-chain, which chronologically records every transaction in the system, and forms the backbone of the Bitcoin verification network. Every time a transaction is confirmed, it is included in the blockchain and recorded on every node, or in other words, on every computer, in the Bitcoin network.to ensure both privacy and validity, each Bitcoin user has a secret private key used to sign the transactions. Each user also has a public key or account number that is visible to other users. The signature provides a mathematical proof that the transaction has come from a particular Bitcoin user, and it prevents the transaction from being altered once it has been issued. Each transaction, as briefly mentioned above, is verified through a distributed consensus system (or proof of work system) called mining.Mining essentially entails solving a series of complex mathematical puzzles that create additional blocks in the blockchain. Because Bitcoin is decentralized and lacks a verifying centralized authority, Bitcoin transactions are confirmed through this mining process.(Sonderegger,2015)

Nakamoto says in his paper "We define an electronic coin as a chain of digital signatures. Each owner transfers the coin to the next by digitally signing a hash of the previous transaction and the public key of the next owner and adding these to the end of the coin. A payee can verify the signatures to verify the chain of ownership.

The problem of course is the payee can't verify that one of the owners did not double-spend the coin. A common solution is to introduce a trusted central authority, or mint, that checks every transaction for double spending. After each transaction, the coin must be returned to the mint to issue a new coin, and only coins issued directly from the mint are trusted not to be double-spent. The problem with this solution is that the fate of the entire money system depends on the company running the mint, with every transaction having to go through them, just like a bank. We need a way for the payee to know that the previous owners did not sign any earlier transactions. For our purposes, the earliest transaction is the one that counts, so we don't care about later attempts to double-spend. The only way to confirm the absence of a transaction is to be aware of all transactions. In the mint based model, the mint was aware of all transactions and decided which arrived first. To accomplish this without a trusted party, transactions must be publicly announced, and we need a system for participants to agree on a single history of the order in which they were received. The payee needs proof that at the time of each transaction, the majority of nodes agreed it was the first received.(Nakamoto, 2009)

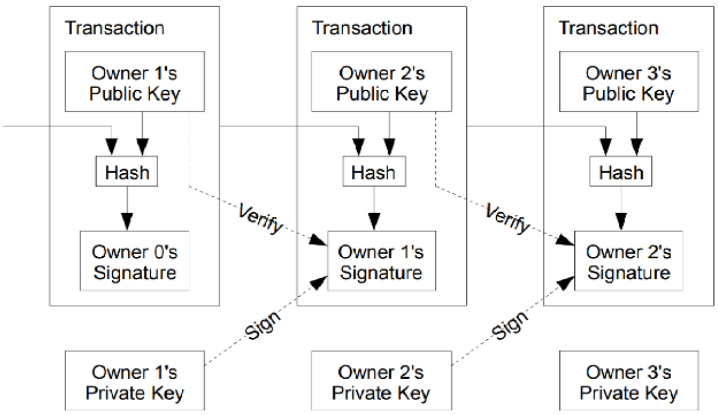

Figure 1 depicts as to how a bitcoin transaction works using the public and private keys.(Fletcher et al.,2021)

2.3. Blockchain

In its simplest form, a blockchain is defined as a platform where information is stored and/or processed. As such, it is an alternative way of storing information, i.e., a database. However, it differs from other methods of storing information in one crucial way; it is completely immutable. Immutable means that the content stored on a blockchain cannot be changed or tampered with in any way at any time. The key to immutability lies in cryptography. (Buchwalter , 2021)

The Encryption Process

The encryption process always produces an output that has the same length in terms of total numbers of characters and digits. If only a single input changes, the output is completely altered. There is no limit as to how many or which kind of elements can be stored, e.g., pictures, audio files, text files, and movies. (Buchwalter, 2021)

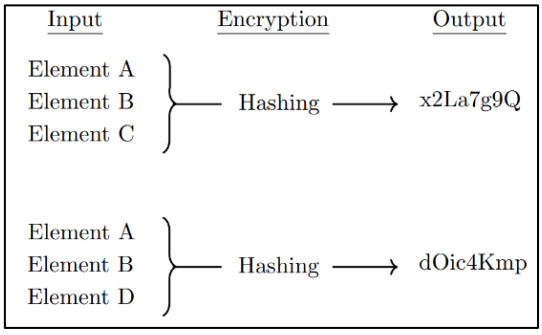

Figure 2

Each output of the encryption process is nothing but a block of information. Since the output crucially depends on the components of the block (see Figure 2), the output is also referred to as the name (or identity or fingerprint) of a block. These terms capture the idea that the output uniquely identifies its contents. The blockchain, which we defined above as a platform where information is stored, is, from a technical perspective, a series of blocks containing compressed information. Figure 3 graphically illustrates how the different blocks are linked together. Each block on the chain (except the first one) contains the following elements: the information to be stored and the name of the previous block as well as a random number called nonce. All these elements are then compressed into a new output, as shown in Figure 2. This newly created identity, together with the new information as well as the new nonce, then constitute the content of the next block. As each block contains a reference to the identity of the previous one, it literally chains the blocks chronologically together; hence, it is called the blockchain (see Figure 4). The reference can be seen as a bookmark. That is, not all of the information of block n − 1 is stored in block n. Instead, block n simply contains the name of the previous block.

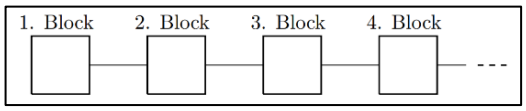

Figure3:

Figure3: Graphical Illustration of a Blockchain The first block of any blockchain is referred to as the Genesis Block. This block is created and put into circulation by the developing team of a given blockchain. All of the following blocks can be added by any participant of the network. (Buchwalter, 2021)

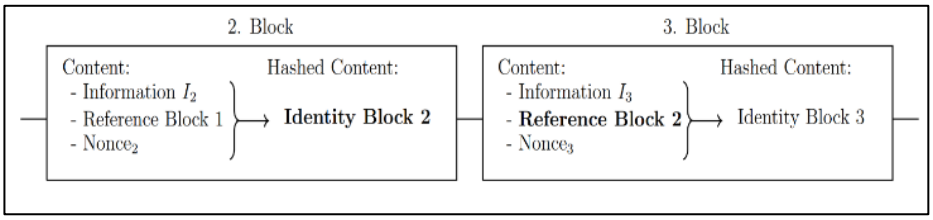

Figure 4: A Chain of Blocks

2.4. Virtual currencies regulations

By the start of 2018, the challenge of regulating Bitcoin and other virtual currencies is widely recognized. Yale professor and director of the Zvi Meitar Institute for Legal Implications of Emerging Technologies Dov Greenbaum writes, "until governments figure out a coherent response to this technology, each regulatory agency will tend to move independently and inconsistently.(Trautman, 2019)
SEC Commissioner Hester M. Peirce observes, "innovation is always a challenge for regulators. We are used to the way things have been done. Our rules have grown up in response to past technologies. Figuring out whether and how they apply to new ideas is difficult.(Trautman, 2019)

To a considerable extent, the market for Bitcoin and virtual currencies is worldwide. Although subject to change at any moment, many developing countries appear to have embraced Bitcoin. Several industrialized countries such as Germany and Japan have welcomed Bitcoin. However, many nation state financial market regulators are sounding alarm, such as Canada; China; and South Korea. Regarding recent technological innovations, SEC Commissioner Hester M. Peirce states, "if these concepts were free to develop in whatever way the market dictated, without being . . . labeled as 'security' or, as 'commodity,' 'currency,' 'asset,' 'forward contract,' there comes a point where regulatory uncertainty is a greater roadblock than confinement within a particular regulatory regime." (Trautman, 2019)

From a regulatory perspective, the threshold question seems to be, Is a virtual currency to be regulated as a currency, security, or commodity? The simple answer appears to be yes. Money is more than just crumpled bills still carried around by some. As SEC Commissioner Hester Peirce observes, "it also means any number of ways of storing and redeeming value. It's money not because of its form, but because of its function." SEC Commissioner Peirce continues:

The idea that a thing can have many forms but still represent the same function, and therefore be subject to the same regulation, is just the beginning. The inverse is also true in the financial world. A thing might seemingly have one form but in fact support many functions, each requiring a different regulatory regime. A mortgage can be a loan, but also an income stream to be used to fund a collateralized debt obligation. Gold is an asset, but gold futures are derivatives. Creating and deploying new ways of holding and trading assets and their attendant risks is the creative heart of the financial world. Given our federal system's considerable array of financial regulators, defining the function of a product or transaction is always essential to determining its proper regulatory regime. Such an analytical approach—defining an instrument by its function not its form—can be useful when we're confronted with something that seems entirely new and difficult to categorize. (Trautman, 2019)

Bitcoin has been characterized as a virtual commodity, digital asset, digital currency and virtual currency by other international regulatory bodies. Since December 2013, regulators in jurisdictions including the United States, the United Kingdom and Switzerland have provided greater regulatory clarity, while Chinese, Russian, Icelandic and Vietnamese government officials have taken steps to limit the participation of their respective financial services sectors from directly interacting with the Bitcoin ecosystem, creating additional regulatory uncertainty in those countries. In May 2014, the Central Bank of Bolivia banned the use as currency of digital assets including bitcoin, while the government of Ecuador took steps to limit the use of bitcoin in advance of the issuance of a proposed state-backed Digital Asset. In April 2015, the Japanese Cabinet approved proposed legal changes that would reportedly treat bitcoin and other Digital Assets as included in the definition of currency. These regulations would, among other things, require market participants, including exchanges, to meet certain compliance requirements and be subject to oversight by the Financial Services Agency, a Japanese regulator. These changes were approved by the Japanese Diet in May 2016 and are expected to be effective beginning in 2017. In July 2016, the European Commission released a draft directive that proposed applying counter terrorism and anti-money laundering regulations to virtual currencies, and, in September 2016, the European Banking authority advised the European Commission to institute new regulation specific to virtual currencies, with amendments to existing regulation as a stopgap measure. (Trautman, 2019)

2.4.1. The US regulation of virtual currencies

In the United States of America, virtual currencies are regulated at the federal level and at the state level. In March 2013, the first US federal statement on virtual currencies was issued by the Financial Crimes

Enforcement Network ("FinCEN") through the publication of an interpretive guidance to clarify the application of the US Bank Secrecy Act to "convertible virtual currencies" . While FinCEN has defined a currency as "the coin and paper money of the United States or of any other country that (i) is designated as legal tender and that (ii) circulates and (iii) is customarily used and accepted as a medium of exchange in the country of issuance", in contrast the FinCEN has defined virtual currencies as "a medium of exchange that operates like a currency in some environments, but does not have all the attributes of real currency. In particular, virtual currency does not have legal tender in any jurisdiction." According to the FinCEN, the acceptance and transmission of some convertible virtual currencies (e.g. bitcoin), considered as "value", should be subject to the US money-laundering rules. In March 2014, the US federal fiscal agency Internal Revenue Service ("IRS") has published a notice on virtual currencies

which remains the official position of the IRS. For the US tax federal institution, virtual currencies are to be "treated as property for US federal tax purposes", and are therefore not treated as a foreign currency. Few months later, in August 2014, the Consumer Financial Protection Bureau ("CFPB") has pointed out in a report the "critical" issues that the use of virtual currencies do represent for consumers "yet to be resolved", and accepted to study since then complaints from users related to virtual currencies. But the two most awaited federal analysis were the ones of the two main US financial regulators: the CFTC and the SEC. The futures, options and derivatives markets' US federal regulator (i.e. the Commodity Futures Trading Commission or "CFTC") has ruled by a settlement order in September 2015 that virtual currencies – such as bitcoin – "are encompassed in the broad definition and properly defined as commodities ", covered by the Commodity Exchange Act, and not as "real" currencies. While the CFTC has opted for the same definition of "real" currencies the FinCEN provided in 2013, the CFTC has defined virtual currencies with more potential uses than the FinCEN did: i.e. "a digital representation of value that functions as a medium of exchange, a unit of account, and/or a store of value, but does not have legal tender status in any jurisdiction." Finally, the other US federal financial regulator, the Securities and Exchange Commission ("SEC"), has published its longawaited guidance in July 2017.

The SEC has determined that certain types of virtual tokens can be considered as "securities" under the Securities Act of 1933 and the Securities Exchange Act of 1934. (Blemus, 2017) The importance of this decision is substantial, as it has already impacted a significant number of other regulators' decisions outside the US. This is important since if an instrument is considered a security, then the offering of that instrument is subject to securities regulation, which means it must be registered under the Securities Act of 1933 (the "Securities Act") unless it falls under one of the exemptions offered by the law.(Jabotinsky, 2019)The definition of "virtual currencies" by the SEC is also the most substantial so far drafted by a US federal regulator: "a digital representation of value that can be digitally traded and functions as: (1) a medium of exchange; and/or (2) a unit of account; and/or (3) a store of value, but does not have legal tender status (i.e. when tendered to a creditor, is a valid and legal offer of payment) in any jurisdiction. It is not issued or guaranteed by any jurisdiction, and fulfils the above functions only by agreement within the community of users of the virtual currency.(Blemus, 2017)

If Bitcoin were classified as a security, it would likely be analyzed under the Howey Test detailed below. What makes classifying Bitcoins as a security complex, however, is that many of its characteristics point in either direction. For instance, the test's first prong, investment of money, is easily satisfied if one views it as a user purchasing bitcoins on an exchange. On the flip side, bitcoins are also acquired through mining and therefore only require an investment of computer processing power rather than money If this is the case, Bitcoin would fail the first prong of the test. Furthermore, Bitcoin users do not gain profits from a single promoting entity because the system lacks a central authority, however, users do enter the network with the common goal of continuing the block chain. Moreover, whether there is a common expectation of profits also depends on whether Bitcoin is used as a payment mechanism or system of exchange, or rather, as a speculative vehicle. The latter would satisfy the Howey Test, while the former would fail it. Finally, the last prong may actually be the most certain in indicating Bitcoins non-classification as a security. That is, the Howey Test requires an expectation of profits derived from the efforts of another. Bitcoin's very framework prevents any one person from exercising managerial control over the entire system. Consequently, Bitcoin's status as a security remains unclear, but will likely continue to be a source of

potential regulation depending on Bitcoin's further development.(Sonderegger,2015)

2.4.2. The EU regulation of virtual currencies

While Bitcoin is larger by many degrees of magnitude, there does not seem to be any indication from regulators and central banking authorities in Europe that there will be a crackdown on Bitcoin over its legal status. Europe has already in place a legal framework for the regulation of electronic money, which could be used to cover virtual currencies such as Bitcoin. (Guadamuz and Marsden, 2015)

In October 2012, the European Central Bank (ECB) expressed its views on the topic of virtual currencies and provided a narrow definition by assuming that it is "a type of unregulated, digital money, which is issued and usually controlled by its developers, and used among the members of a specific virtual community. This ECB report was followed by a statement by the European Banking Authority (EBA) in December 2013 and an EBA opinion addressed to the EU institutions and national regulators released in January 2014 which called for a comprehensive virtual currency regulatory approach for the long term. The EBA opinion adopted a critical tone on the virtual currencies' economic benefits and pointed out numerous potential risks.

the EBA invited EU legislators and regulators to take immediate measures in the short-term, and in particular to declare virtual currency market players, such as virtual currency exchange platforms and custodial wallet providers, as "obliged entities" that must comply with the EU Anti Money Laundering Directive. This EBA recommendation was approved by the European Commission (EC), which proposed in July 2016, in a political context dominated by terrorist threats, to extend the scope of the EU Fourth Anti-Money Laundering (AML) Directive to cover the virtual currencies' market players , mostly to reduce the anonymous nature of virtual currencies and to monitor more efficiently the transactions carried out in these digitalized assets. Under these EC proposed rules, the new obliged entities under AML Directive would have to process personal data information (i.e. by performing customer due diligence) when exchanging virtual for real/fiat currencies. Thus, the EC proposed the same definition of "virtual currencies" than the EBA opinion of 2014 (which is broader than the ECB's): "virtual currencies means a digital representation of value that is neither issued by a central bank or a public authority, nor necessarily attached to a fiat currency, but is accepted by natural or legal persons as a means of payment and can be transferred, stored or traded electronically.(Blemus, 2017)

Even though there is no existing EU-level legislation on virtual currencies, this does not mean that they are not regulated nationally under existing laws in the EU member states. But no specific adhoc regulations have yet been adopted in one of the member states. In France, for example, the positions of public. officials on virtual currencies have been somewhat circumspect until 2016. As soon as 2011, the French financial intelligence unit (Tracfin) created with other French regulators a working group on the new alternative means of payment, and then a specific working group on virtual currencies in 2013, notably to clarify its tax treatment. And in December 2013, the French central bank (the Banque de France) has publicly warned users of virtual currencies about the risks associated with these new assets. In this public stance, the French central bank analyzed that while a virtual currency such as bitcoin has been created to fulfill the three basic functions of a currency (i.e. a means of payment, a measure of value and a store of value), it can neither be defined as legal tender under French law, nor as means of payment under the French Monetary and Financier Code, nor as "electronic money" under the European Electronic Money Directive 2009/110/EC. In June 2014, the French Virtual Currencies Working Group Prudential Supervisory and Resolution Authority (ACPR) issued its position and encouraged the establishment of a legal framework to limit the use of virtual currencies and to ensure that AML requirements would prevent the use of virtual currencies for fraudulent purposes and money laundering. In 2016, the French central bank has slightly softened its tone, by describing virtual currencies as a parallel mechanism of monetary creation.(Blemus, 2017)

3. Research Methodology

This research is a library research. Library research is research that obtains all the necessary information from sources in books, writings, and previous research in the organization's libraries or archives, without the need to refer to individuals and conduct questions, observations, or interviews. Library reviews are performed to collect comprehensive scientific and

research documents, written or non-written, that a researcher should be inspired by in relation to a particular research. Books, magazines, newspapers, conference proceedings, doctoral theses, dissertations, publications of government agencies, etc., are the sources of this data. The reason for conducting library reviews is for the researcher to ensure that none of the variables that have had any effect on the research issue or question are unknown.(Zohoori, 1999)

4. Review of research background

Mahmoudi in his article entitled "Analysis of Virtual Currencies in the Light of Jurisprudence, Law and Comparative Studies" in 2019 argues that in the face of virtual currencies, a policy of absolute prescription or rejection should not be adopted, but to counter the restrictions or sanctions that the United States pursues, Be beneficial for Iran.(Mahmoudi, 2019)

Roshan et al. In 2019 in his article entitled "Study of the jurisprudential and legal status of Bitcoin" with Considering that bitcoin is money in nature or a means of payment that is distinct from money They concluded that bitcoin could Perform certain functions that traditional money and electronic money play in the economy, in the real world and it does not even seem to contradict the laws of Sharia and Islamic principles. Therefore, it is accepted as a virtual currency, but it faces problems and challenges in this regard, which should be a reliable and trustworthy tool in exchanges with the establishment of appropriate rules and strict supervision.(Roshan et al, 2018)

Soleimanipoor et al. in 2017 in their article entitled "Jurisprudential study of virtual money" concluded that recognizing the different dimensions of virtual money can be an opportunity to create financial innovations and boost the economic life of the community that Passive approach to it will leave irreparable damage. Given the transnational and virtual nature of this form of money, the design of a national and international legal system that guarantees the public interest is an inevitable consideration for the use of virtual money. (Soleimanipoor, 2017)

Hazen argues in 2018 in his article entitled "Virtual or Cryptocurrencies and Securities laws " argues that the initial public offering of tokens should be treated like the initial public offering of securities. The SEC and the courts agree that initial coin offerings involve an offering of securities and thus are subject to SEC regulation. By applying the Supreme Court's test of what type of investment qualifies as a security, many if not all virtual or crypto currency transactions warrant scrutiny under the securities laws.(Hazen, 2018)

Jabotinsky in 2018 in her/his article entitled " The Regulation of Cryptocurrencies - Between a Currency and a Financial Product " argues that different types of cryptocurrencies behave very differently from one another. Although the technology underpinning most cryptocurrencies is very similar, the logic behinds them differs. Some cryptocurrencies function like regular national currencies and possess traits of traditional currency. As such, they provide a medium of exchange, unit of account, and/or store of value. Other cryptocurrencies, however, may represent other rights as well. This interesting phenomenon actually leads to some cryptocurrencies being viewed as closer to real national currencies while others as closer to financial products (such as securities or derivatives). Some tokens such as Bitcoin really do resemble currency and should therefore only be regulated to ensure that fraudulent behavior is prevented. These types of cryptocurrencies should be more carefully regulated in case they increase systemic risk in the general financial system. Other tokens, like DAO, Ether and Libra, resemble securities and should be regulated accordingly. The main distinction between the two types of cryptocurrencies relates to the question of whether or not their value is dependent on the efforts of others.(Jabotinsky,2018)

V. Tu & Meredith in 2015 in their article entitled "Rethinking Virtual Currency Regulation in the Bitcoin Age" concluded that current efforts in the U.S., which can be characterized generally as pursuing such a limited approach to clarifying the treatment of virtual currency under existing frameworks, runs the risk of coming up short. Instead of narrowly focusing on the technical question of whether and how an existing law applies to virtual currency, we encourage a more holistic approach. Specifically, we contend that the development of an efficient regulatory regime necessitates greater interagency communication about the spectrum of regulatory considerations raised by virtual currency and the pursuit of cohesive if not unified action. To that end, we posit that there is much to learn from: (1) divesting from attempts to define or conceptualize virtual currency via established constructs for payment systems or investment vehicles, and (2) evaluating the policy goals (not the statutory language) of existing law as applied to the unique nuances of virtual currency. In doing so, policymakers can identify the considerations unique to virtual

currency and develop appropriate regulatory requirements to mitigate the actual risks raised by virtual currency free from self-imposed constraints. (V. Tu & Meredith, 2015)

Fletcher et al. in their 2021 article entitled "Countering money laundering and terrorist financing: A case for bitcoin regulation" concluded that there has developed an international mosaic of jurisdictional inconsistencies, with classification split mostly between a currency or an asset, and regulation ranging from an outright ban on Bitcoin usage to passive tolerance. This study compares the existing US legal frameworks – the BSA(the Bank Secrecy Act), the CEA(the Commodities Exchange Act), the Securities Act of 1933, the Securities Exchange Act of 1934, and the IRS' 2014 Guidance – against the discussed framework for Bitcoin regulation. The effectiveness of these frameworks will be evaluated according to two criteria: how well they account for the unique properties of Bitcoin and how well they address AML/CFT (Anti Money Laundering/ Combating the Financing of Terrorism)concerns. Within the U.S. itself, there has emerged a bureaucratic turf war between FinCEN, the CFTC, the SEC, and the IRS over how best to conceptualise and regulate Bitcoin. In examining the existing legal frameworks imposed by each entity – respectively, the BSA, the CEA, the Securities Act of 1933 and the SEA, and the 2014 Guidance – it is clear that none truly account for the unique properties of Bitcoin nor do they effectively address AML/CFT concerns. They argued that Bitcoin should be classified as a technology with financial components and regulated as a part of the growing FinTech industry. As such, regulation should rest primarily with private sector technology companies. The W3C (World Wide Web Consortium), considering its membership and mission, is poised to assume such a role. Regulation will occur through a three-tiered framework according to shared community standards and rules for best practices. At the bottom in the first tier are individual users who are subject to regulation by Bitcoin companies, which represent the second tier. These Bitcoin companies are, in turn, regulated by the W3C(World Wide Web Consortium) with support from state governments. (Fletcher et al, 2021)

5. Discussion (the latest achievements of Bitcoin regulation)

several regulatory bodies in the United States (U.S.) have endeavoured to establish regulatory jurisdiction over Bitcoin transactions, namely the Financial Crimes Enforcement Network (FinCEN), the Commodity Futures Trading Commission (CFTC), the Securities and Exchange Commission (SEC) and the Internal Revenue Service (IRS). All four entities view Bitcoin differently and have attempted to regulate Bitcoin accordingly, by imposing their relevant legal frameworks. For example, FinCEN views Bitcoin as a currency and has determined regulation according to the Bank Secrecy Act (BSA). The CFTC regards Bitcoin as a commodity, citing the Commodities Exchange Act (CEA) as the appropriate regulatory framework. The Securities and Exchange Commission (SEC) considers Bitcoin to be a type of security and advocates regulation under the Securities Act of 1933 and the Securities Exchange Act (SEA). Finally, the Internal Revenue Service (IRS) issued a Guidance in 2014 determining that Bitcoin is a property for federal tax purposes.

Fletcher et al. in their study in 2021 compared the existing US legal frameworks – the BSA, the CEA, the Securities Act of 1933, the Securities Exchange Act of 1934, and the IRS' 2014 Guidance – against the discussed framework for Bitcoin regulation. The effectiveness of these frameworks will be evaluated according to two criteria: how well they account for the unique properties of Bitcoin and how well they address AML/CFT concerns.

5.1. FinCEN: the BSA

In 2019 FinCEN issued a Guidance claiming that any entities dealing in convertible virtual currencies (CVC), which includes Bitcoin, were considered MSBs under the 'money transmitter' provision (Financial Crimes Enforcement Network 2019). FinCEN argued: 'as money transmission involves the acceptance and transmission of value that substitutes for currency by any means, transactions denominated in CVC will be subject to FinCEN regulations regardless of whether the CVC is represented by a physical or digital token, whether the type of ledger used to record the transactions is centralised or distributed, or the type of technology utilised for the transmission of value'. In this way, entities that accept and transmit Bitcoin are required to register as an

MSB under the BSA, and they are therefore subject to BSA reporting requirements, which include filing CTRs and SARs. Within this framework, Bitcoin is considered to be a currency. This is problematic for several reasons. First, 'Bitcoin is not issued nor sanctioned by the US, or by any government' and therefore cannot be considered legal tender . In other words, it cannot be accepted 'for all debts, public charges, taxes, and dues' and therefore does not operate like traditional fiat currencies (U.S. Department of the Treasury 2011). Second, the production of bitcoins is capped at 21 million, after which no more bitcoins will be 'minted', or mined. This arguably undermines its effective use as a currency, as it is restricted in use unlike fiat currencies, which can be widely and infinitely used and exchanged. Third, Bitcoin categorically does not fit the three main functions of money: a medium of exchange, a unit of account, and a store of value. As a medium of exchange, Bitcoin must be recognised by others as an acceptable mechanism for which people can exchange goods, services, or assets. This is partially true for Bitcoin; in some cases, Bitcoin 'is actually used to exchange goods and services, to allow a trade without direct use of goods.

Indeed several countries have outright banned the use of Bitcoin altogether, including Algeria, Bolivia, Egypt, Iraq, Morocco, Nepal, Pakistan, the United Arab Emirates, and Vietnam. This excludes a plethora of countries – among them China, Saudi Arabia, Iran and Colombia – where there is an 'implicit ban' on Bitcoin usage. These bans have most likely contributed to the fact that only a handful of major retail companies accept payment in Bitcoin, which is indicative of the fact that it is not an appropriate or effective medium of exchange.

As a unit of account, Bitcoin must place a value or price on goods, services, or assets. This is undermined significantly by the extreme degree to which the price of Bitcoin fluctuates. Because Bitcoin's price fluctuates so quickly and so dramatically, it is difficult for vendors to establish a valid reference point for setting consumer prices.

Finally, as a 'store of value', Bitcoin must work to 'preserve purchasing power or wealth in the private sector for investment purposes, or by governments in official foreign exchange reserves'. While once procured, bitcoins technically do not have to be spent immediately and therefore can maintain value, the significant fluctuation of their value undermines their ability to retain their purchasing power over time with a good deal of certainty. FinCEN argues that Bitcoin can be considered a medium of exchange that can operate like currency but does not have all the attributes of 'real' currency including legal tender status.

5.2. The CFTC: the CEA

Indeed, Bitcoin has many similar attributes to other commodities, such as gold. For example, both are not regulated by a federal government, both have a finite supply, and both of their prices fluctuate much more when compared to fiat currencies. Moreover, it appears Bitcoin can be used like other commodities. As such, it can be effectively traded for other goods and services or currencies.

Market analysis also demonstrates that Bitcoin does not consistently operate like other commodities. For example, a key attribute of gold is acting as hedge and safe haven against assets such as stocks, bonds, and [the] US Dollar. Hedges and safe havens are financial instruments that enable investors to mitigate some financial risk during times of market turbulence. Thus if Bitcoin is a true commodity akin to gold, it should act as a hedge or safe haven by enabling investors to maintain or even gain value during times of market distress.

5.3. The SEC: The Securities Act of 1933 and the SEA

There arise several issues when classifying Bitcoin as a security and attempting to apply the regulatory frameworks under the Securities Act of 1933 and the SEA. First, the SEA defines a security broadly and includes in its definition stocks, bonds, notes, and investment contracts. Taking into consideration the unique properties of Bitcoin, it would appear that Bitcoin does not directly fit into any of these categories, perhaps with the exception of investment contracts. Bitcoin does not fit the definition of a stock, as Bitcoin are found not to carry a right to a declared dividend, a right to vote on an issuer's affairs or conduct and any kind of right to participate in the economic success of a juridical entity. In addition, Bitcoin neither constitutes a note nor a bond, as transactions for or in Bitcoins do not themselves result in any continuing obligation of one party to pay another. Instead, there is a possibility that Bitcoin could be representative of an investment contract.

an investment contract requires four features: a person must invest money, the money must be

invested into a common enterprise, a person must expect to profit from the investment, and these expected profits must be generated solely from the efforts of the promoter or a third party. The SEC itself issued a 'framework' for guidance in determining whether Bitcoin, ICOs of Bitcoin in particular, constitutes an investment contract.

5.4. The IRS: 2014 Guidance

In 2014, the IRS issued a Guidance stipulating that Bitcoin is considered a property for federal tax purposes.

Under this framework, Bitcoin is considered a type of property. This is problematic, for several reasons. First, it would seem the properties of the Bitcoin system clash significantly with property law. For example, property law ensures there is an agreement between the sender and the recipient of a transfer. Second, while Bitcoin can operate like a property, as discussed it can also function notably as a currency. More specifically, Bitcoin acts like a property in the sense that holders often trade and barter with it, however it also acts like a currency in so far that it can be used to directly purchase goods and services.

There are significant issues with placing jurisdiction over Bitcoin regulation with the IRS, especially in regards to preventing money laundering and terrorist financing. First, the IRS is concerned primarily with tax reporting and tax evasion, and therefore does not have mechanisms in place to directly address AML/CFT concerns. With this being said, however, the IRS has implemented reporting requirements to ensure 'taxpayer compliance'. As such, Bitcoin users must now comply with the information reporting requirements applicable to other forms of property such as Form 1099-B, which requires taxpayers to disclose transactions with third parties that surpass a certain dollar amount in miscellaneous income. Second, under this framework, the onus is on the consumers to report taxable income resulting from their use of Bitcoin. This is problematic, as the majority of people using the virtual currency for illicit transactions have not reported Bitcoin as part of their taxes. This is complicated by the fact that Bitcoin is pseudo-anonymous, which exacerbates the IRS' ability to determine 'what gains or losses are realised from the Bitcoins'. Thirdly, the extreme fluctuation in the price of Bitcoin obscures users' ability to determine its fair market value and basis. This is exacerbated by the fact that users can purchase bitcoins from different vendors at different rates and at different times. This confusion has emboldened some criminals from under-reporting or otherwise manipulating 'the amount of Bitcoin that is eventually reported to the IRS', enabling them to evade taxes and hide a portion of income that can be used for money laundering or terrorist financing. Moreover, because Bitcoin is pseudo-anonymous, it would be extremely difficult for the IRS to track down the records required to sufficiently audit the taxpayer. Finally, as a property, a user's bitcoins could be protected under the Fifth Amendment, which grants individuals rights to personal property.

This research goes beyond the existing legal frameworks in arguing that Bitcoin should be classified as a technology with financial components and regulated as a part of the growing FinTech industry. As such, regulation should rest primarily with private sector technology companies. The W3C, considering its membership and mission, is poised to assume such a role. Regulation will occur through a three-tiered framework according to shared community standards and rules for best practices.(figure 5) At the bottom in the first tier are individual users who are subject to regulation by Bitcoin companies, which represent the second tier. These Bitcoin companies are, in turn, regulated by the W3C with support from state governments. Safety and efficiency need not be zero-sum. Therefore, further research is needed to see how best to integrate the emerging global regulatory standards of the United States, the European Union and China as they vie for universal, or near universal, adoption. Classifying Bitcoin as a technology and implementing an international, bottom-up, regulatory framework will enable the international community to more effectively counter terrorist financing and money laundering. . Table 1 summarises the main points analysed in this section (Fletcher et al., 2021)

Table 1 summarises the main points analysed in their research

Evaluating regulatory frameworks.

Frameworks	FinCEN: BSA	CFTC: CEA	SEC: Securities Act of 1933 / SEA	IRS: Guidance
Bitcoin properties	Bitcoin is a currency Is not an effective medium of exchange, a unit of account, or store of value Undermined by 21 million cap and extreme price fluctuations Bitcoin is still not accepted at some major retailers	Bitcoin is a commodity Not federally regulated, has a finite supply, can be traded Does not consistently act like a hedge or safe haven	Bitcoin is a security Bitcoin does not fit the definition of securities such as stocks, bonds, notes and investment contracts An ICO is similar to an investment contract, but in most circumstances fails the Howey Test	Bitcoin is a property Bitcoin properties complicate several factors of property law including making agreements on transfers and voiding fraudulent or mistaken transfers
AML/CFT concerns	CTRs and SARs can deter criminals BSA applies to money transmitters, not users Criminals can evade reporting requirements by transacting in smaller amounts	Subject to the BSA, the same loopholes apply CFTC does not have jurisdiction over Bitcoin exchanges for cash	Subject to the BSA, the same loopholes apply Private and limited offerings do not need to register with the SEC	Does not directly address AML/CFT concerns despite reporting requirements Price fluctuations may cause under-reporting Relies on self-reporting, which can be abused by criminals

Note: The x-axis lists the potential regulatory frameworks. The y-axis lists the evaluation criteria.

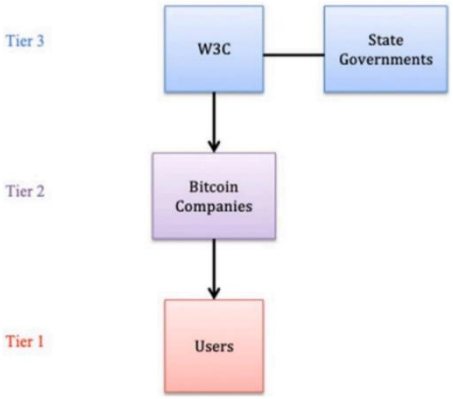

Figure 5

6. Conclusion

cryptocurrency regulation is a big challenge in its infancy. The legal and economic ambiguities of virtual currencies, initial public offerings (ICOs), smart contracts, and blockchain technology remain.

In fact, for months, policymakers have been trying to make the most effective regulation of this new technology with the influence they get from each other, and there is still no clear vision of its impact on the global economy.

El Salvador recently announced that it would accept bitcoin as the official currency and medium of exchange in the country. Other countries continue to either restrict or prohibit the use of cryptocurrencies. Also the First U.S. bitcoin futures ETF launched recently. The United States has also indicated that it is accepting cryptocurrencies such as Bitcoin by launching bitcoin futures ETF.

Our country can also take action in this regard while monitoring global measures regarding currency regulation and use the benefits of the currency code to

circumvent oppressive sanctions. of course, the use of cryptocurrency must be done with a solution to all its legal challenges.

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