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New Assets: an Analysis of Cryptocurrencies and their Regulation all over the World

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1 Introduction to the Thesis

We are well-accustomed and familiar with material goods. Everyone can appreciate a car, for example, not just for its use but also for its worth, for the value it has. Said value is not simply arbitrarily chosen but is instead based and measured on this or that currency. On the positive side, traditional currencies are- for the most part- stable. On the other hand, they require intermediaries to perform transactions.

Cryptocurrencies are different, in that they offer intermediary-free transactions, at the cost of being much more unstable when compared to non-digital assets, to the point where even a negative tweet from the right person could cause significant losses for even the famous Bitcoin. From this perspective, cryptocurrencies seem the opposite of traditional currencies, which has earned them suspicion from many regulations. These digital assets are so heterogenous that even the definition of "cryptocurrency" differs from one country to another, which does not help the general public.

"What is Blockchain technology? Why is Bitcoin so traded? What counts as cryptocurrency in Africa? And in America?" The purpose of this essay is to answer these questions by explaining how the technology on which cryptocurrencies are based works, what the benefits and dangers associated are, what type of users there are and, lastly, how digital assets are regulated all over the world. the material and the sources employed for the thesis are freely available on the internet, freely available for everyone. This was done to ensure that everyone would have total access to all the topics discussed, as the essay is written for all intents and purposes to also function as a guide for those unfamiliar with the topic of cryptocurrencies, which is still relatively unknown in some countries.

This intent is reflected in the overall structure and methodology of the essay, which begins with a brief explanation of Blockchain technology, which is fundamental to understand the main characteristics of cryptocurrencies. This technical explanation is followed by a more theoretical one on cryptocurrencies' users and the first remarks on legal disputes. This general introduction concludes with an analysis of the cryptocurrencies with the highest market capitalisation at the time of writing, highlighting the different uses of digital assets while noting the associated risks, such as money laundering. Following this section, the essay focuses on the different regulations all over the world- as the laws applied tells us much about a country's economic and cultural situation, such as to how the Islamic Law regards cryptocurrencies or why North Korea is reputed to be home to the “greatest robbers” of cryptocurrencies.

It should be stressed that virtually all countries are approaching digital assets because of how important they have become. They are past the point of being seen as second-rate alternatives to liquidity and have become so influential that many governments are attempting to create their own cryptocurrencies, and this without mentioning the vast amounts of investors that are supporting this new industry and the endless possibilities they offer. But before discussing the future, we must discuss the present- and what better place to start, if not the basis of cryptocurrencies- Blockchain technology?

2 The foundation of cryptocurrency

2.1 Defining Distributed Ledger Technology

The blockchain is a subset of DLT technology, used to store information and currency without requiring the presence of a representative (such as financial institutions or intermediaries), allowing its users to perform digital transactions peer-to-peer (**P2P**). David Chaum[1] was the first to conceptualise a new payment system that could offer untraceable online payments. In the 1980s, Stuart Haber and W. Scott Stornetta theorised and discussed the possibility of a "cryptographically secured chain"[2]: the two researchers wished to create a system that would create timestamps for data so that could it not be easily tampered, creating the basis of decentralised blockchain. However, it was not until 2008 that "Satoshi Nakamoto"[3] realised the first real example of distributed ledger technology by releasing the Bitcoin cryptocurrency.

Distributed ledger technology (**DLT**) is a method that consists of storing and sharing data across the ledgers, data repositories managed by the members in each network. DLTs operate through the "consensus mechanism": the network participants have to reach a consensus regarding the validity of new data insertions by following specific rules that can vary depending on the nature, purpose, and assets of the distributed ledger. Blockchain employs cryptography and uses a set of mathematical algorithms to maintain a chain of "transaction blocks" (hence the name), which serve as distributed ledgers. DLTs can be permissionless or permissioned[4], with each type having advantages and disadvantages.

- Permissionless systems are decentralised network with no central owner to controls network access. All that is needed for new participants to join the network and participate in the ledger's transactions is a computer server with the relevant software; users' identity is anonymous or otherwise protected by a pseudonym.The decentralised network helps protect the server from cyberattacks, but its limited control of the users' data and identity makes it unfit for existing legal systems. Bitcoin is an example of this category.
- Permissioned systems, on the other hand, use centralised networks where either the owner or an administrator regulate access to the server. Permissioned systems are more integrated into legal systems

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[1] A renowned American researcher specialised in cryptology; his essay "Blind Signatures for Untraceable Payments" can be found at https://link.springer.com/.

1. [2] HABER, S., & STORNETTA, W. S., *How to Time-stamp a Digital Document*. DIMACS, Center for Discrete Mathematics and Theoretical Computer Science, 1990 (last accessed in 21.09.2021)

[3] Whose real identity is still unknown.

[4] With hybrid systems also being possible.

but are more vulnerable to cyberattacks, and their entry barriers may negatively affect the system's efficacy. Corda is a famous permissioned blockchain.

In both cases, Network participants are given a private key used for signing digital messages and only known by the individual user, and a public key used to verify the identity of the sender of a digital message and identify the recipient.

Ultimately, it can be said that DLTs (and thus blockchains as well) revolve around five essential characteristics[5]:

Transparency- Data stored on a blockchain is accessible to all participants inside the blockchain network. Consequently, the data of a public blockchain is visible to everyone on the Internet.

Immutability – Due to the consensus mechanism, once new data is added to the blockchain, it cannot be changed or deleted. All transactions in the blockchain network are stored as permanent records that can easily be monitored if needed.

Consistency – Consensus mechanism and immutability ensure committed data is visible to all. For this reason, attempts to tamper with the blockchain can be easily thwarted.

Impartiality- Due to the decentralised network, every participant has the same rights to manage the blockchain. Depending on the consensus mechanism used, these rights may be weighted by the computation power or stake owned by the participant.

Availability- Every participant in the network has automatic access to a full replica of the blockchain data. Hence, the system can easily access the data as long as one "node" is in the blockchain network.

2.2 The structure of blockchain

A blockchain is a particular database where information is stored in "blocks". Each one of these contains data and a "cryptographic hash"; the latter is an algorithm that works as a virtual "fingerprint": it is unique to the block and serves to identify it.

[5] PAIK, H. Y., XU, X., BANDARA, H. M. N. D., LEE, S. U., & LO, S. K., *Analysis of Data Management in Blockchain-Based Systems: From Architecture to Governance*, found in.IEEE Access, 2019.

Blocks are connected to each other, with each block containing the hash of the previous block[6]. A vital characteristic of hashes is that they change if their block's data changes, which is one reason blockchain is so secure. In functional terms, this means that if a hacker were to meddle with the second block of a blockchain, they would change its hash as well, causing the third block and all following blocks to be invalid as they would longer recognise the second block. This feature ensures that only particularly complex recalculations of all the consecutive block could hinder the blockchain; even so, a hacker would still have to bypass the consensus mechanism.

2.3 The consensus mechanism

Like other DLTs, Blockchains require that the network members collectively reach an agreement before adding new blocks. A consensus mechanism is necessary to establish whether a particular transaction is legitimate or not, using a predefined specific cryptographic validation method designated for the network. The consensus mechanism is also relevant to handle conflicts between multiple simultaneous competing entries - for example, different participants propose different transactions on the same asset. This mechanism ensures correct sequencing of transactions and prevents poorly performing participants from overcoming the system (in a permissionless DL). Consensus mechanism can be of several types, with the most common being the "Proof of Work" and the "Proof of Stake" mechanism. In a PoW system, network participants have to solve complicated[7] but easily verifiable computations dictated by protocol to add new blocks to the blockchain. This process is referred to as "mining" and can be compared to solving a puzzle. These "puzzles" contain all the data already listed on the blockchain and the new set of transactions added to the next block.

The PoW mechanism requires a vast amount of computing resources, which consume a significant amount of electricity and discourage cyberattacks; those who solve the puzzle are rewarded with a digital form of value (or a recently mined coin in the case of cryptocurrencies) in order to incentivise the network's maintenance. The main benefit of PoWs is that they turn a permissionless system's generous size into its key to security while at the same time incentivising its members to verify new data and guaranteeing consistency. The cryptocurrencies based on a PoW consensus mechanism include Bitcoin itself, Litecoin, Bitcoin Cash and Monero.

PoS systems, on the other hand, are systems that require considerably fewer resources. Before participating in the consensus process, participants are asked to prove ownership of their assets (coins in cryptocurrencies). This process is called "forging": an algorithm will decide who will validate the next block depending on the "stakes" of the participants; therefore, PoS systems favour seniority, as those who hold higher

[6] Except for the original block, the “genesis block”.

[7] The complexity of PoWs depends on the trust participants are given; networks with pre-selected participants may have more permissive PoWs.

shares have greater deciding power in the network. The block's validator will receive a transaction fee from the parties involved in the validation. Examples of cryptocurrencies that use PoS include Cardano and Tezos.

2.4 Blockchain's other purposes

As pointed in the introduction, this essay focuses on cryptocurrencies, but this does not imply that blockchains are used exclusively in this one field. Blockchains can be and are already, in fact, useful in several areas. In the music streaming sector, blockchain-based platforms have gained renown in the last few years, as decentralised networks would give the artists more power by letting them keep most profits, which does not happen with regular platforms[8]. The blockchain-based platforms could also limit piracy and illegal downloads since blockchains' databases can be seen publicly and are very resistant to cyberattacks. In the healthcare sector, blockchain technology can be used to record a patient's medical history in a secure and easily approachable digital environment that medical practitioners can access anytime in order to provide better health care supervision to their patients[9]. Another possible application of blockchain is online voting, a field that has become even more contested after the controversial US election of 2020. There have been some attempts to make electronic voting a reality, but these have suffered from security breaches. For the reasons explained above, blockchains would bypass these issues while keeping anonymity intact: voters would be protected, and officials would not have to worry about possible interferences or fake IDs. Furthermore, making the voting process smoother and more accessible might also reduce the "voter apathy" that affects countries like the US[10].

In conclusion, blockchain's remarkable features make it a technology well suited for many areas, a quality that contributed to its rising fame in the last years. However, as we'll see in the next paragraph

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[8] DE LEON, I., & GUPTA, R. (2017, November). *The Impact of Digital Innovation and Blockchain on the Music Industry*. Found in Inter-American Development Bank, 2017(last accessed in 21.09.2021.

[9] BELL, L., BUCHANAN, W. J., CAMERON, J., & LO, O., *Applications of Blockchain Within Healthcare. Blockchain in Healthcare Today*, *1*, 1–7, 2018.

[10] MARTIN, S. (2018). *Blockchain as a Solution to the United States Voter Turnout Issue*. SSRN Electronic Journal, 1–16. Foud in https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3177523(last accessed in 21/09/2021)

blockchain’s nature also makes a powerful tool for criminal actions, which explains the diversity of measure and applications used by countries when managing cryptocurrencies.

3 The various definitions of cryptocurrency

The cryptocurrency market is, by its very nature, highly growing and volatile. It is a complex sector, and many are terms used to describe the different products that fall within its reach. Although cryptocurrencies are similar in roots, as they are primarily based on blockchain, the terminology used to define them varies from one jurisdiction to another, and even the term "cryptocurrencies" is not globally used. Some of the terms used by countries to reference cryptocurrency include digital currency, virtual commodity, crypto-token, payment token, cyber currency, electronic currency, or virtual asset.

While several countries advocate for the use and the innovations offered by cryptocurrencies, it is also common for many jurisdictions to denounce the risks of investing in the cryptocurrency markets. The central banks usually issue such warnings, designed to educate the citizenry about the difference between real currencies, issued and guaranteed by the state, and cryptocurrencies, which are not. Additionally, various government warnings note the added risk due to the high volatility associated with cryptocurrencies, how many organisations that facilitate such transactions are unregulated and that citizens who invest in cryptocurrencies do so at their own risk without legal support. It is not uncommon for these government-issued warnings to note the possibilities that cryptocurrencies create for illegal activities, such as money laundering and terrorism.

Some countries do not merely warn the citizens but have also expanded their laws on money laundering, counterterrorism, and organised crimes to include the cryptocurrency market to control it. In some cases, cryptocurrencies are outright banned[11]. Given the broadness and the vast differences between them, multiple policymakers have defined and reported cryptocurrencies differently since the emergence of Bitcoin.

3.1 European Central Bank

The European Central Bank, for one, classifies cryptocurrencies as a subset of virtual currencies. The ECB defines virtual currencies as all such non regulated digital currencies that its developers usually issue and manage. Such currencies are used and accepted among the members of a specific virtual community. In a

[11] YADAV, A. (2021). *Cryptocurrency in India: to Ban or not to Ban*. SSRN Electronic Journal. Available at https://www.mondaq.com/india/fin-tech/1045376/cryptocurrency-in-india-to-ban-or-not-to-ban. (last accessed 21.9.2021)

report released in 2012[12], the ECB divided virtual currencies into three categories, which differed from one another depending on how extensive their interaction with conventional currencies and the economy is:

- Virtual currencies utilised exclusively in a closed system, like the currencies used in many videogames.
- Virtual currencies linked to the real economy, and that users can buy that with conventional money. The purchased currency can afterwards be used to buy virtual goods and services (or tangible goods and services, although more rarely).
- Virtual currencies that are bilaterally linked to the real economy: these currencies can not only be bought but sold. Like the previous category, the purchased currency can be used by users to buy both virtual as tangible goods and services. Cryptocurrencies like Bitcoin belong to this type.

However, this classification was only temporary and was updated in 2015[13], when the ECB put forward a different and updated definition of virtual currencies. According to this second report, cryptocurrencies are "digital representations of value, not issued by a central bank, credit institution or e-money institution, which in some circumstances can be used as an alternative to money".

3.2 International Monetary Fund

A similar definition was given by the International Monetary Fund ("IMF"), which categorised cryptocurrencies as a subset of virtual currencies, defined as digital representations of value, issued by individual developers and titled according to their unit of account. Furthermore, the IMF claimed that virtual currencies cover a broader array of 'currencies' that can range from mobile coupons to virtual currencies backed by tangible assets (like the digital gold currency) and cryptocurrencies like Bitcoin.

[12] *Virtual Currency Schemes.* ECB Europe, found in. https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf., (last accessed 21.9.2021)

[13] EUROPEAN CENTRAL BANK, *Virtual currency schemes – a further analysis*. https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf , 2015(last accessed 21.9.2021)

3.3 Bank for International Settlements

The Committee on Payments and Market Infrastructures ("CPMI") is a body of the Bank for International Settlements ("BIS"). It has qualified cryptocurrencies as digital currencies or digital currency schemes. According to the CPMI, cryptocurrencies are said to exhibit the following key features:

- They are assets that are determined by supply and demand, similar in concept to commodities such as gold, yet with zero intrinsic value.
- They use distributed ledgers to allow P2P exchanges of electronic value in the absence of trust between parties and without the need for intermediaries.
- Any specific individual or institution does not operate them.

3.4 World Bank

The World Bank has classified cryptocurrencies as a subset of digital currencies, which it defines as digital representations of value denominated in their own unit of account, distinct from money, which is simply a digital payment mechanism, representing and denominated in fiat money. Contrary to most other policymakers, the World Bank has also defined cryptocurrencies as digital currencies that rely on cryptographic techniques to achieve consensus.

3.5 Financial Action Task Force

Like other policymakers, the Financial Action Task Force ("FATF") has approached cryptocurrencies as a subset of virtual currencies, defined as digital representations of value that can be digitally traded and function as a medium of exchange or unit of account. It further suggests that virtual currencies can be divided into two categories:

- Convertible virtual currencies that have an equivalent value in real currency and can be exchanged back-and-forth for real currency; these virtual currencies can be of a centralised or a decentralised nature (i.e., they can either have a central administrating authority that controls the system or no central oversight at all)
- Non-convertible virtual currencies specific to a particular virtual domain or world (like videogames), and under the rules governing its use, cannot be exchanged for fiat currency.

Cryptocurrencies like Bitcoin are virtual currencies of the first type that can, according to the FATF, be defined as math-based, decentralised convertible virtual currencies that are protected by cryptography.

3.6 Summary

The main conclusion drawn from these perspectives is that there is no generally accepted definition of the term “cryptocurrencies”. Even more, many policymakers refrain from defining the term altogether. Amongst those cited above, only the World Bank and the FATF have put forward a clear-cut definition. However, most policymakers approach cryptocurrencies as a subset or a form of virtual or digital currencies.

Suppose we try to summarise all the above definitions. In that case, a good summary could be that a cryptocurrency is:

1. "A digital representation of value that is intended to constitute a P2P alternative to government-issued legal tender."
2. A medium of exchange, independent of any central bank.
3. A currency secured by a mechanism known as cryptography.
4. Can be converted into legal tender and vice versa".

3.7 Agents involved in the cryptocurrency market

The cryptocurrency market is a new sector, with different agents all having their own agendas and roles. Therefore, it is necessary to identify the key agents concisely. Overall, seven main types of agents can be distinguished[14]: users, miners, exchanges, trading platforms, wallet providers, inventors and offerors.

3.7.1 Cryptocurrency users:

The first type of agent is the "cryptocurrency user". A cryptocurrency user is a natural person or legal entity who holds coins:

1. To purchase real or virtual goods or services from particular dealers.
2. To make P2P payments.
3. To hold them for investment purposes.

Users can acquire their coins in several ways: they might buy them from a cryptocurrency exchanger or another user. They might mine new coins through a PoW consensus mechanism or even receive them as gifts.

3.7.2 Miners

The second type of agent is the "miner", a participant in the transaction process on blockchains that require solving a cryptographic puzzle. As explained earlier, mining is related to those cryptocurrencies based on a PoW consensus mechanism: miners participate in the process using their computing power to validate the transactions and be rewarded with freshly mined coins. Miners can be cryptocurrency users themselves or, as

[14] ROBBY HOUBEN, & ALEXANDER SNYERS. *Cryptocurrencies and blockchain*. European Parliament, in https://www.europarl.europa.eu/cmsdata/150761/TAX3%20Study%20on%20cryptocurrencies%20and%20blockchain.pdf, 2018, (last accessed 21.09.2021)

is more common, be companies who mine digital coins to sell them for fiat currency (such as US dollar or euro) or other cryptocurrencies. As mining is a process that requires high computing power, it is not unusual for miners to join groups knowns as "pools of miners" to accumulate the power required.

3.7.3 Cryptocurrency exchanges

The third group of key players are the "cryptocurrency exchanges", persons or entities who offer services to cryptocurrency users in exchange for a commission. For the main part, their trade revolves around buying and selling digital coins in exchange for fiat currency; this way, they cover the role of stock markets and exchange offices as well. Some exchanges accept payments in other cryptocurrencies, usually Bitcoin, whilst others also accept payments in fiat currencies. Many cryptocurrency exchanges only allow their users to buy a particular selection of coins. In contrast, some also provide critical statistics for the market, such as trading volumes and volatility of the coins involved- and offer conversion services to traders who accept payments in cryptocurrencies.

3.7.4 Trading platforms

Similarly to cryptocurrency exchanges, trading platforms contribute to exchanging cryptocurrencies and allowing cryptocurrency users to buy more digital coins with fiat currencies. Unlike exchanges, however, they do not buy or sell coins themselves. Furthermore, they are not run by individuals or companies but are operated exclusively by software (i.e. there is no "centre" of authority). For this reason, trading platforms are sometimes referred to as "decentralised exchanges" and as "P2P exchanges". The latter nickname is owed to how trading platforms connect buyers and sellers, allowing them to conduct deals online or even locally in-person (i.e., face-to-face trade, often executed in cash).

3.7.5 Wallet providers

Wallet providers provide users with digital wallets or e-wallets used for holding, storing and transferring digital coins; in other words, they hold the user's cryptographic keys. A wallet provider typically translates users' transaction history into a more readable format, similar to a regular bank account. There are three types of wallet providers:

- Hardware wallet providers: provide cryptocurrency users with specific hardware private solutions to store their keys.
- Software wallet providers: provide users with software applications that allow them to access the network, send and receive coins, and save their cryptographic keys.
- Custodian wallet providers: as the name implies, they keep online watch of a cryptocurrency user's keys.

3.7.6 Coin inventors

Coin inventors are individuals or organisations who have developed the technical resources to develop a new cryptocurrency and set the initial rules for its use. Their identity is not always publicly known, with

some remaining involved in maintaining and improving the cryptocurrency's code and its algorithm, whilst others disappear.

3.7.7 Coin offerors

Coin offerors are individuals or organisations that offer coins to users upon the coin's initial release, either in exchange for a fee or at no charge; they do so with the intent of generally funding the coin's further development or boost its initial popularity. The coins offered to users this way were created or pre-mined before the coin's official release; they can be pre-mined/created fully or partially (which means users can still generate more coins after the release). Coin offerors usually retain coins of the former type. Not all coins might have an identifiable coin offeror; coin offerors can also be the coin inventor in some cases or might be another individual or organisation altogether.

4 Analysis of the top 10 Cryptocurrencies

There are several hundreds of coins in circulation at the time being, and more continue to appear regularly. Bitcoin is the most known cryptocurrency by far, but there are many alternative cryptocurrencies, better known as "Altcoins". As Altcoins are far too numerous to be all analysed and due to the cryptomarket's volatility, the essay shall focus on the ten cryptocurrencies with the highest market capitalisation at the time of writing. Altcoins exhibit an extensive range of different features: some are based on Bitcoin's original open-source protocol (albeit with some modifications), whilst others form entirely new platforms. Some utilise a PoW mechanism to validate transactions, whereas others employ another form of consensus mechanism. Some Altcoins are "pseudo-anonymous", but a minority of them is said to be "fully anonymous": in the latter case, the number of coins their users own, send and receive cannot be tracked through the blockchain's transaction history.

4.1 Bitcoin (BTC)

The most famous cryptocurrency, Bitcoin (or BTC), was first described in 2008 by someone using the alias Satoshi Nakamoto. As of 2020, the true identity of Nakamoto is unknown[15]. Bitcoin was launched in January 2009; according to Nakamoto's words, Bitcoin was created to allow "online payments to be sent directly from one party to another without going through a financial institution." Some concepts for a similar type of decentralised electronic currency precede BTC, but Bitcoin holds the distinction of being the first-ever cryptocurrency to come into actual use. Nakamoto eventually stopped working on Bitcoin's software; thus, many people have improved the cryptocurrency's software by fixing flaws and adding new features in his stead.

Bitcoin's most unique advantage comes from the fact that it was the very first cryptocurrency to appear on the market, creating a global community and give birth to an entirely new industry of millions of enthusiasts who create, invest in, trade and use Bitcoin and other cryptocurrencies in their everyday lives. The emergence of the first cryptocurrency has created a conceptual and technological basis that subsequently inspired thousands of competing projects; through its pioneering nature, BTC remains at the top of the market even after a decade of existence. Bitcoin remains the most prominent cryptocurrency even in 2020, with a market capitalisation that fluctuated between $100-$200 billions, owing mainly to the numerous platforms that can use it: wallets, exchanges, payment services, online videogames and more. The software limits Bitcoin's total supply, which is capped at 21,000,000 coins. At the moment of Bitcoin's launch, the reward for mining was 50 bitcoins per block: this number is halved for every 210,000 new blocks mined- a process that requires

[15] HAYES, A., *Who Is Satoshi Nakamoto?* Investopedia, in https://www.investopedia.com/terms/s/satoshinakamoto.asp, 2021, (last accessed 21.09.2021)

approximately four years. As of 2020, the block reward has been halved three times, meaning miners are now rewarded with 6.25 bitcoins per block they mine.

Bitcoin was not pre-mined, so no coins have been mined or distributed by Nakamoto before it became available to the public. However, during the first few years of BTC's existence, the competition between miners was low, which meant that the first miners of the network accumulated vast amounts of coins: Satoshi Nakamoto alone is believed to own over a million Bitcoin.

4.2 Ethereum (ETH)

Ethereum is a decentralised open-source blockchain system used as a platform for numerous other cryptocurrencies and decentralised smart contracts[16]: its stated goal is to allow users worldwide to write and run software able of resisting cyberattacks and that cannot be censored. ETH has its own currency, the Ether.

Ethereum was first described in a 2013 whitepaper by Vitalik Buterin[17]; in 2014, he and seven other cofounders secured funding for the project in an online public crowd sale and officially launched the blockchain the following year. As mentioned before, Ethereum is used as a smart contract platform. Smart contracts are computer programs used to seal agreements between several parties on the internet without using intermediaries, which reduces costs while also increasing the transaction's reliability; Ethereum's principal innovation is its platform that can execute smart contracts using blockchain technology.

ETH's blockchain does not support smart contracts only, as it hosts other cryptocurrencies called "tokens". Crypto-tokens represent assets that can be used for investment purposes, store value, or make purchases. One of the major differences between Bitcoin and Ethereum's economics is that the latter's total supply is not limited, reportedly because ETH's developers do not wish for a "fixed security budget" for the network and are prone to adjusting ETH's issuance to maintain sufficient security.

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[16] ROBINSON, P. (2019, June 13). *The merits of using Ethereum Mainnet as a Coordination blockchain for Ethereum private sidechains*. ArXiv.org., in https://arxiv.org/abs/1906.04421, 2019, (last accessed 21.09.2021)

[17]VITALIK BUTERIN.,Ethereum Whitepaper. Ethereum.org., in https://ethereum.org/en/whitepaper/, 2013, (last accessed 21.09.2021)

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4.3 Binance Coin (BNB)

Founded in 2017 by Changpeng Zhao and He Yi, BNB's stated mission is to bring cryptocurrency exchanges to the vanguard of financial activity worldwide. Binance coin initially ran on the Ethereum blockchain but has since become the native coin of the Binance chain and is characterised by a strict 200 million tokens. Binance schedules BNB burns used to permanently reduce the supply of BNB, in turn, increasing its value[18]. The amount of BNB burned is calculated based on Binance's overall quarterly trading volume. Quarterly coin burns will continue until a total of 100,000,000 BNB are destroyed, which represents 50% of the total BNB supply.

BNB is not only the biggest cryptocurrency exchange globally, but Binance's networks also host a multitude of functions for its users; amongst others, BNB has Binance Chain, Academy, Trusted Wallet and Research projects, which use blockchain technology to innovate finance worldwide. One of the biggest competitive advantages Binance has is its numerous side projects, which have allowed the company to spread in numerous sectors; since launching, the exchange has also benefited from increased investor interest in the token. BNB went through a significant price increase at the beginning of 2021, which has put it on the map of enterprise investors.

4.4 Dogecoin (DOGE)

Dogecoin is very different from the other cryptocurrencies, as its origin can attest: the name itself is based on a famous Internet meme, which features a Shiba Inu, a breed of dog common in Japan[19]. Dogecoin's founders envisioned it as a "light-hearted cryptocurrecency" meant to appeal to a vast audience thanks to its mascot and logo. This strategy has proven successful, as Dogecoin has received extreme coverage on social media, with even Tesla CEO Elon Musk claiming that Dogecoin is his favourite coin.

This currency also has an intriguing structure, very different from Bitcoin's proof-of-work protocol in several ways, thank to using Scrypt technology. Dogecoin has an extremely low block time of just 1 minute, and its total supply is completely uncapped, which means that there is no limit to the number of Dogecoin that can be mined, especially since DOGE requires much lower computing resources, to the point where Doge's miners can mine coins with a GPU.

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[18] FRANKENFIELD, J. (2021, September 8). *Binance coin (BNB) Definition*. Investopedia. https://www.investopedia.com/terms/b/binance-coin-bnb.asp.

[19] YOUNG I., *Dogecoin: A Brief Overview & Survey*. SSRN Electronic Journal, in.https://medium.com/@apocrathia/dogecoin-a-brief-overview-survey-d3fbfbccd421, 2018(last accessed

Dogecoin also sees unique uses, as its primary use is to work as a "tip" of sorts, given on social media like Reddit and Twitter to those who create or share appreciated content. Users can receive coins simply by participating in a community that uses the digital currency or receiving them from a Dogecoin faucet, a website that will give a small amount of Dogecoin for free to newcomers as an introduction to the currency.

4.5 Ripple (XRP)

XRP is the digital currency that runs on the platform called RippleNet, run by the company Ripple[20]. Uniquely between the cryptocurrencies described so far, XRP is not based on blockchain but on an open-source distributed ledger database called XRP Ledger.

The RippleNet payment platform's main function is to allow instant monetary transactions globally; while XRP is the cryptocurrency native to the XRP Ledger, all currencies can be used on the platform. The idea behind Ripple was initially conceived in 2004 by Ryan Fugger, but it was only through the participation of Jed McCaleb and Chris Larson -who took over the project in 2012- that Ripple(or OpenCoin, as it was named at the time) could become a reality[21]. XRP was created to be a quick, cheaper alternative to both other digital assets and existing monetary payment platforms.

RippleNet's network is maintained by the XRP Community, with the company actively participating. The XRP's unique ledger processes transactions roughly every three to five seconds, or whenever independent validators come to a consensus on both the order and validity of XRP transactions, a process opposed to the PoW consensus mechanism of Bitcoin (BTC). As there is no restriction on who can become an XRP validator, the list of validators is currently made up of universities, financial institutions, companies and many others.

4.6 Tether (USDT)

Tether is a company based in Hong Kong, and its currency is a stable-value cryptocurrency, which means it mirrors the US dollar price; this status as "stablecoin" is achieved by always keeping a sum of dollars in reserves equal to the number of USDT in circulation. Tether was not always named this way: when it first launched in 2014, it was known as Realcoin, a cryptocurrency token built on top of Bitcoin's blockchain through the Omni platform; Realcoin it was later renamed to USTether, and then, finally, to USDT; the currency was later updated to work on many other cryptocurrencies. The company has stated that USDT serves to combine the highly volatile nature of cryptocurrencies with the more stable value of the US dollar. For this reason, whenever the company has to issue new USDTs, it allocates the same amount of USD to its reserves.

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[20] *Global Payment Solutions - Instant Processing*. Ripple, in https://ripple.com/ripplenet

[21] *The Complete History of Ripple (XRP),* Coinloan, in https://coinloan.io/article/the-complete-history-of-ripple-xrp/, (last accessed in 21.09.2021)

As the crypto market is renowned for its volatility, USDT's properties make it among the safest options for investors who can invest in TetherTether without having to cash out into USD completely. Tether's properties grant it another competitive advantage: the company allows its users to transact a US dollar equivalent between countries via blockchain without relying on slow and expensive intermediaries like banks. That being said, the validity of Tether's claims about their USD reserves has been tested lately: on some occasions, USDT's price dropped; at one point, it went down as low as $0.88 at one point in its history. Unsurprisingly, this has led many to raise concerns, and now it is not uncommon to find articles doubting Tether and its claims[22].

4.7 Cardano (ADA)

Founded by one of Etherium's cofounders, Cardano is a PoS blockchain platform. The platform's stated mission[23] is to allow "changemakers, innovators and visionaries" to bring about positive changes in the world, redistribute power from structures to individuals, creating a more equal and secure society. Cardano was founded back in 2017, and the ADA token is designed to ensure that owners can participate in the operation of the network; all tho those who hold the cryptocurrency have the right to vote on any proposed update.

Agricultural companies use ADA to track their products, and other products built on the platform allow educational credentials to be stored in a tamper-proof way and retailers to clamp down on counterfeit goods. Thanks to the PoS system, Cardan is easy to use and access, contributing to its popularity. The team behind Cardano ensure that their developments are accompanied by peer-based research; the team believes this academic rigour helps the blockchain to be durable and stable, preventing pitfalls that other cryptocurrencies cannot avoid. Overall, the company seems to have earned a reputation as one of the greatest PoS blockchains, with great accessibility and even greater participation from its users.

4.8 Polkadot (DOT)

Polkadot is a platform used to facilitate the cross-chain transfer of any data or asset types, allowing a vastitude of blockchains to interact with each other. This interoperability contributes to the company's goal:

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[22] SILVERMAN, J., (2021, September 13). *Is Tether just a scam to enrich bitcoin investors?* The New Republic. https://newrepublic.com/article/160905/tether-cryptocurrency-scam-enrich-bitcoin-investors, 2021, (last accessed in 21.09.2021)

[23] *Discover Cardano*. Cardano, in. https://cardano.org/discover-cardano#purpose, 2017, (last accessed in 21.09.2021)

creating a fully decentralised and private web controlled by the users and simplify the creation of new applications, companies, and services.

The most interesting feature is its structure: it connects public and private chains, permissionless networks, oracles and future technologies, allowing what would otherwise independent blockchains to safely share information and transactions through Polkadot's relay chain, the platform's core. The relay chain is accompanied by "parachains", independent chains fueled by the DOT tokens and "parathreads", being more flexible than the former: both are connected to bridges through which they communicate with external blockchains; tokens are not used only to sustain these components but also to give network governance and operations.

The network is also highly flexible and customisable, allowing users to share data and have functionality similar to apps on a smartphone; communities can customise their blockchain's interactions with Polkadot based on their needs.

4.9 Bitcoin Cash (BCH)

In 2017, the Bitcoin project and its community split in two over concerns about Bitcoin's scalability[24]: this schism resulted in Bitcoin Cash, a new cryptocurrency that remains separated from the normal Bitcoin and is viewed by its supporters as the best "P2P electronic cash". Bitcoin Cash is a P2P system focused on prompt payments, small fees, privacy, and particularly large blocks. Bitcoin Cash payments are sent directly from one person to another; transactions require no intermediaries, as BCH is a permissionless and decentralised cryptocurrency. This way, the company ensures that governments or other centralised corporations cannot censor transactions; simultaneously, the absence of banks ensures that funds cannot be seized or frozen.

With a limited total supply of 21 million coins, Bitcoin Cash is scarce and quickly spent, similarly to physical cash. Bitcoin Cash has various use cases. In addition to P2P payments between individuals, Bitcoin Cash is also used to pay participating merchants for goods and services in-store and online, reduce the fees and fasten payments and cross-border trade and for some simplified smart contracts.

4.10 Litecoin (LTC)

Based on a modified Bitcoin protocol, Litecoin (LTC) is a cryptocurrency designed to provide fast, secure and cheap payments by leveraging the unique properties of blockchain technology. Litecoin has a block time of just 2.5 minutes and extremely low transaction fees, making it suitable for micro-transactions and point-of-sale payments and has been used to test improvements that later were applied to Bitcoin. For these

[24] REIFF, N., *Bitcoin vs. Bitcoin Cash: What is the difference?* Investopedia. https://www.investopedia.com/tech/bitcoin-vs-bitcoin-cash-whats-difference/, 2021, (last accessed in 21.09.2021)

reasons, Litecoin is extremely popular among merchants and is very common in developing countries, where transactions costs may be the deciding factor on which cryptocurrency to use. Litecoin has safely held a place among the top ten cryptocurrencies by market capitalisation for most of its existence and is the second most popular pure cryptocurrency, and only Bitcoin surpasses it in popularity.

5 Comparative summary of cryptocurrencies' regulation globally

The growth of cryptocurrencies has been met with various regulatory and legislative responses across the national authorities, many of which have shown support for cryptocurrencies, acknowledging their potential. In contrast, others have responded with legislative limitations or even by banning the use of cryptocurrencies.

In the last years, governments have expressed a higher propensity to regulate the cryptocurrency space, a desire spurred by investors and other groups who have suffered from fraudulent or dishonest practices and, therefore, have expressed the need for protection through traditional regulatory authorities. As mentioned earlier, there is also an increasing body of evidence that cryptocurrencies can be used in money laundering or terrorist financing and other criminal activities, which further incentivise governments to intervene and regulate the use of virtual assets.

5.1 Europe

Cryptocurrency is considered legal across the EU, but exchanges differ across its member states, with variable taxation. In 2018, the EU's financial institutions warned citizens because virtual currencies were not fully regulated and their risky nature. On March 8 of the same year, the European Commission prepared a "FinTech Action Plan" focused on blockchain technology and other technological developments in the financial sector.

In a decision made by the Court of Justice of the European Union, it decided that the exchange between cryptocurrency and other national currencies should be exempted from VAT. Nowadays, cryptocurrencies are subjected to normal Anti-money laundering directives (AMLD). Cryptocurrencies were first subjected to the EU's 5th Anti-Money Laundering Directive(5AMLD)[25], which made cryptocurrency/fiat currency exchanges under the range of EU anti-money laundering legislation, requiring exchanges to perform background checks on their customers and to perform standard reporting requirements. These benefits were welcomed, but the EBA still emphasised that further regulation was needed to minimise the risks posed by cryptocurrencies. The

[25] *Anti-money laundering (AMLD V) - Directive (EU) 2018/843*. European Commission, in https://ec.europa.eu/info/law/anti-money-laundering-amld-v-directive-eu-2018-843_en, 2020, (last accessed in 21.09.2021)

5AMLD was followed by the 6AMLD[26], which came into effect in late 2020. Among other effects, this directive added cybercrime to the list of money laundering predicate offences. Among the countries most receptive to cryptocurrency activities are Switzerland[27] and Malta[28], where the development of cryptocurrencies is strongly encouraged, and regulation studies are regularly carried out.

5.2 America

The laws for cryptocurrencies in the United States of America differ between states and government agencies; institutionally speaking, the Ministry of Treasury classifies cryptocurrencies as decentralised virtual currency that can be exchanged, whereas the Securities Exchange Commission (SEC) includes them in the commodity class if certain conditions are met.

While cryptocurrencies have yet to be fully legalised, measures are being taken for their use in commercial life, with many studies being carried out in most North American countries.

On the other hand, in South American countries, cryptocurrency has received a somewhat colder welcome, as it was outright banned in Bolivia. Other countries have been more welcoming; Venezuela, which has relatively high inflation, aims to trade with Petromoneda (Petro), a cryptocurrency indexed to oil through which the Venezuelan government hopes to back up the country's oil and mineral reserves. As of 2020, Petroneda is now used to document services and fuel planes flying international flights.

Mexico has also been rather progressive towards the crypto market by enacting the Fintech Law, the first important step regarding digital assets. According to the experts, the law covers payment services,

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[26] *6AMLD: 6th anti money Laundering Directive*. ComplyAdvantage, in https://complyadvantage.com/knowledgebase/6th-money-laundering-directive-6amld/, 2021 (last accessed in 21.09.2021)

[27] ALLEN, M., *Swiss law reforms make crypto respectable*. SWI swissinfo.ch., in https://www.swissinfo.ch/eng/business/swiss-law-reforms-make-crypto-respectable/46024124, 2020(last accessed in 21.09.2021)

[28] *Crypto regulations in Malta*. ComplyAdvantage, in https://complyadvantage.com/knowledgebase/crypto-regulations/cryptocurrency-regulations-malta/, 2021(last accessed in 21.09.2021)

crowdfunding activities and digital assets, but it may not contain sufficient regulations to prevent digital assets from mediating crime. Other countries in the South are following Mexico's example: in Brazil, a working committee for digital currencies' regulation has been successfully established, Şile's authorities are working on blockchain technology, and in Colombia, the government is carrying out studies for tax implementation using cryptocurrencies.

5.3 Africa

Cryptocurrencies are not recognised as currencies in circulation in Africa and were welcomed with scepticism in the North. When cryptocurrencies were introduced in the Islamic countries, there was a great tumult in the countries initially as Islamic scholars debated on whether cryptocurrencies were "Haram" (illegal) or "Halal" (permissible) according to the Islamic Law (Sharia)[29]. According to some scholars of the Sharia, anything that is being used as a medium of the transaction (as a replacement of cash) is Halal, and it is sharia-compliant, so buying, selling and investing in Bitcoin is Halal; however, hoarding and earning interest is strictly prohibited.

Countries such as Morocco, Algeria, and Libya have directly banned cryptocurrencies, and many governments have warned their citizens of the risks that cryptocurrencies carry and have taken a vigilant approach. There are exceptions to this rule, like Mauritius and other southern countries. Mauritius, in particular, has enacted a "regulatory sandbox license" that offers investors the possibility to handle a business activity for which there exists no legal framework or adequate preparations under existing local legislation. Thanks to Mauritius's efforts, South Africa might be among the closest countries to putting cryptocurrencies in a legal framework. The countries attract blockchain technology in the region, and research continues for regulation studies in many countries where Cryptocurrencies are favoured, especially to avoid the sanctions of the United States. In Iran, where VISA and Mastercard transactions are not easily accessible, and inflation is kept at high rates, the national currency value is constantly changing; this ensures that cryptocurrencies are followed with keen interest by individuals across the country. In particular, companies providing financial services in South Africa receive many requests from their customers regarding cryptocurrency products and indicate that transactions with cryptocurrencies are on the rise.

Especially notable are the "Initial coin offering" (ICO) activities initiated in South Africa in 2018 to support the country's financial and trade system. Soluna has initiated other ICO studies: the company aims to bring a clean and sustainable alternative to the current cryptocurrency mining approach, which carries out

[29]AKINYELE-YISAU, *Cryptocurrency: An Islamic Law Perspective*, 2021(last accessed in 21.09.2021)

renewable energy and cryptocurrency mining activities and is currently building a wind-powered blockchain computing infrastructure in Morocco[30].

While it is believed that the situation of the crypto sector will stabilise only when governments will take steps into officially regulating cryptocurrencies, it is noteworthy that even with cryptocurrency's ongoing conflict relationship with law and regulation, actions are being taken to cooperate with regulatory organisations. This cooperation is especially remarkable in the light of realising that the institutional structures' regulation will not always have restrictive consequences for cryptocurrencies but might also aid in their spreading. As a matter of fact, the Diem Association (once known as Libra Association) has issued a "Libra White Paper"[31], calling for cooperation between policymakers in regards to cryptocurrencies' regulation. Several companies such as Visa, Mastercard, Paypal, eBay, Uber, Lyft, Spotify, and Vodafone and Facebook have adhered to this initiative.

5.4 Asia

Most cryptocurrency trade is carried out through Asian countries. Cryptocurrencies are legal and defined as money in Japan, and the Payment Services Act has regulated cryptocurrency exchange businesses operating in the country since 2019. According to the Act, cryptocurrency exchange businesses have to be registered, keep records of transactions, take security measures, and protect customers from risks; the Act also determines cryptocurrency as limited to property values stored electronically on electronic devices, not a legal

[30] *Soluna is launching the world's First Utility-Scale Blockchain infrastructure company powered by its own private renewable energy resources in the Kingdom of Morocco.* Business Wire, in https://www.businesswire.com/news/home/20180727005498/en/Soluna-is-Launching-the-World%E2%80%99s-First-Utility-Scale-Blockchain-Infrastructure-Company-Powered-by-Its-Own-Private-Renewable-Energy-Resources-in-the-Kingdom-of-Morocco, 2018(last accessed in 21.09.2021)

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[31] *White Paper*. Diem Association,in https://www.diem.com/en-us/white-paper/#cover-letter (last accessed 21.9.2021)

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tender, and also defines "cryptocurrency" as a property value. Altogether, the regulation of cryptocurrencies in Japan is very strict but has been motivated by the "MtGox incident"[32].

MtGox was a cryptocurrency exchange based in Tokyo that was extremely successful, to the point where it was responsible for more than 70% of bitcoin transactions at its peak and gave MtGox incredible authority in the sector. The site, however, eventually started to suffer from technical problems: in 2014, many customers expressed had problems withdrawing their funds; furthermore, technical bugs had prevented the company from having a firm grasp of transaction details. These issues escalated when a bug in the bitcoin software allowed users to alter transaction IDs. In early February 2014, the company suspended withdrawals after claiming suspicious activity in its digital wallets. The news of the suspension resulted in the price of bitcoin plunging by 20% and cost the company than 650,000 bitcoins, the value of which was estimated at over $450 million. The company had no choice but to file for bankruptcy in the Tokyo District Court and was ordered to liquidate in April 2014.

Although cryptocurrency trading is banned in China[33], as a result of its work for nearly three years, the Central Bank of China has established a "Digital Money Institute" unit within the Central Bank and started working to issue its digital currency. Bitcoin is legal but discouraged in Jordan, Saudi Arabia, and Lebanon. In Israel, despite digital currencies not being accepted as valid currency by the central bank, the Israel Tax Authority stated that the use of virtual currencies should be seen as a "virtual payment tool" and should be taxable. In South Korea, a regulation has been introduced to ensure that cryptocurrencies are processed only through real person bank accounts to combat money laundering and to monitor tax regulations, and thus, cryptocurrency trading with anonymous bank accounts is prohibited. The KYC process is handled by the bank and the exchange, which verify the customers' identity and enforce other anti-money-laundering provisions.

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[32] BLOOMBERG, *'Trillion Dollar' Mt. Gox Demise as Told by a Bitcoin Insider*. Bloomberg.com, in https://www.bloomberg.com/news/articles/2021-01-31/-trillion-dollar-mt-gox-demise-as-told-by-a-bitcoin-insider, 2021(last accessed in 21.09.2021)

[33] *China bans Financial, payment institutions from cryptocurrency business*, in. https://www.reuters.com/technology/chinese-financial-payment-bodies-barred-cryptocurrency-business-2021-05-18/., 2021 (last accessed 21.9.2021)

Singapore has become a very popular country for ICO activities[34]. As long as the country's competent monetary authority (Monetary Authority of Singapore - MAS) considers a digital asset as a capital market instrument, it regulates activities such as clearing and ICO related to the digital asset. Thus, platforms and brokerage houses that transact with tokens that can be traded, such as capital market instruments, must fulfil their registration and license obligations, subject to the country's Capital Market Law (Securities and Futures Act - SFA).

With the Securities Commission's guide on January 15, 2019, various regulations regarding digital assets have been made in Malaysia. Different definitions have been made to recognise these assets within the framework of the country's regulations on securities. Accordingly, the Securities Commission's digital asset platforms operating in the country must be approved, and ICO activities will not be carried out unless approved by the commission. In March 2019, a new consultation report was published to regulate ICO activities subject to various criteria.

In Thailand, digital assets and cryptocurrencies are regulated separately. There are two different regulatory frameworks in the country for the taxation of transactions with these assets and the income derived from these transactions. Accordingly, ICO platforms must obtain approval from the SEC to operate in the country and separate approvals for each ICO project, and the SEC may choose whether to refuse or to approve ICO projects it deems clashing with public order. Thailand is not the only country to partake in ICO activities. Depending on certain criteria, Japan can evaluate digital assets and ICO transactions within the range of securities regulations. The Japan Virtual Exchange Association, established under the Payment Services Law in Japan, has also made several ICO activities regulations.

China was for a long time one of the countries where the use of cryptocurrencies was most intense, but also one of the countries with the strictest regulations. In 2019, the People's Bank of China issued a statement highlighting the risks of cryptocurrency trading. The bank declared it would block access to all domestic and foreign cryptocurrency exchanges and ICO websites. In Beijing, crypto exchanges have been banned since 2017, and authorities have increasingly focused their efforts on bitcoin mining as the process requires powerful computers and vast amounts of energy, both of which can be easily accessed in China.

However, they contribute to pollution and contrast China's intentions in being eco-sustainable[35];

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[34] *ICOs in Singapore*, Sleek in https://sleek.com/sg/resources/icos-in-singapore/, 2020(last accessed in 21.09.2021)

[35] ANNA HOLZMANN, *"Greening" China: An analysis of Beijing's sustainable development strategies*, 2021 (last accessed 21.9.2021)

therefore, in May 2021, the government has increased their efforts in monitoring cryptocurrencies and has ordered a halt to mining in many of its regions.The ban has prompted extreme crashes across the crypto market, nearly crippling even important cryptocurrencies such as Bitcoin, which at around $31,500 is currently worth less than half its all-time high of nearly $64,000 in April.

5.5 The CBDC phenomenon

Central bank digital currencies[36](CBDC) are, essentially, centralised cryptocurrencies: they use electronic records or digital tokens to represent the national unit of account and are issued by the corresponding monetary authorities of the country. CBDCs can be designed for use either among financial intermediaries exclusively (wholesale CBDCs) or by the wider economy (retail CBDCs):

- Wholesale CBDCs are to be used by financial institutions that hold reserve deposits with a central bank to improve payments and securities settlement efficiency and reduce counterparty credit and liquidity risks similarly to decentralised cryptocurrencies. These CBDCs would replace or complement reserves at the central bank with a restricted-access digital token; these tokens count as "bearer asset", meaning that the sender sends to the receiver without needing intermediaries during the transaction. The wholesale CBDC is especially desirable to central banks because of the potential to make existing wholesale financial systems faster, inexpensive, and safer while being much more easily monitored than decentralised cryptocurrencies[37].
- Retail CBDCs will be issued for the general public and are anonymous, traceable and easily accessible. These CBDCs are very popular in emerging economies, mainly because of their contribution in leading the rapidly emerging fintech industry, quickening the shift to a cashless society and reducing cash printing costs.

While no country has officially launched a central bank-backed digital currency, many central banks have launched programs and research projects to determine a CBDC's viability and usability. Among the banks

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[36] SETH, S., *Central Bank Digital Currency (CBDC)*, in https://www.investopedia.com/terms/c/central-bank-digital-currency-cbdc.asp, 2021 (last accessed 21.9.2021)

[37] GUPTA, N., *What are retail and Wholesale central BANK digital Currencies (CBDCs)*. Medium, at https://medium.com/akeo-tech/what-are-retail-and-wholesale-central-bank-digital-currencies-cbdcs-5c49d81dbbcc, 2020 (last accessed 21.9.2021).

working on these proposals, we have the Bank of England[38], the first bank to sustain these projects- the People's Bank of China, the Bank of Canada, Thailand, Sweden, and Singapore.

In recent years, Russia has been moving forward with its creation of a CBDC, with Putin's critics speculating that his interest in blockchain technology is due to how it makes it easier to discreetly send money without worrying about sanctions placed on Russia by the international community. This theory gained further traction when Sergei Glazyev, one of Putin's closest advisors- claimed during a government meeting that the CBDCs would allow Russia to settle accounts with our counterparties with no regard for sanctions.

The statement was so controversial that President Obama placed Glazyev under sanctions to prevent him from trading in or travelling to America.

As for other countries, Venezuela has been working on a CBDC called the "petro" since 2017 and "petro gold" in 2018, allegedly fastened to the value of oil, gold, and other precious minerals., it was eventually decided that the exchange between cryptocurrency and other national currencies should be exempted from VAT.

[38] *Bank of England statement on Central Bank Digital Currency*. Bank of England,in https://www.bankofengland.co.uk/news/2021/april/bank-of-england-statement-on-central-bank-digital-currency, 2021, (last accessed 21.9.2021

6 European law: how EU and non-EU members are approaching cryptocurrencies

6.1 An overview of the "Markets in Crypto-Assets Regulation."

On 24 September 2020, the European Commission adopted a comprehensive Digital Finance Package[39], a project to improve the competitiveness of the Fintech sector and technologies while mitigating risks and ensuring the financial stability of the European economy. Notably, the new regulatory framework also includes a comprehensive new legislative proposal on crypto-assets, called "Markets in Crypto-assets" (MiCA), developed to promote DLT and virtual asset regulation in the EU whilst protecting users and investors[40].

Once adopted, the MiCA will be applicable in all EU member states and regulate all issuers and service providers dealing with crypto-assets. Due to its potential, the MiCA will set global standards for the oversight and regulation of digital, blockchain-based assets allowing the EU to attract crypto talent, businesses and investments from all over the world through the implementation of precise rules and guaranteed legal certainty. However, some critics argue that the MiCA's regulation might be too restrictive towards businesses and other uses of digital assets in the EU.

6.2 The MiCa's origin

At the end of 2017, within the framework of the FinTech Action Plan, the EU Commission told the European financial supervisory authorities (EBA, EIOPA, ESMA) to examine the applicability of EU economic law to these new types of crypto-assets[41]. According to the report, crypto-assets do not fall under common EU law to a large extent while at the same time posing extensive consumer protection and money

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[39] *Digital finance package*. European Commission, in https://ec.europa.eu/info/publications/200924-digital-finance-proposals_en, 2021 (last accessed 21.9.2021)

[40] VERMAAK, W.,*MiCA: A Guide to the EU's Proposed Markets in Crypto-Assets Regulation*, in https://www.sygna.io/blog/what-is-mica-markets-in-crypto-assets-eu-regulation-guide/ (last accessed 21.9.2021)

[41] *FinTech action plan: For a more competitive and innovative European financial sector*. European Commission, in https://ec.europa.eu/info/publications/180308-action-plan-fintech_en, 2018, (last accessed 21.9.2021)

laundering risks. Soon after the report, the Commission acted through the 5AMLD, which obliged EU's member states to act by early 2020, resulting in a veritable patchwork of national initiatives: countries such as Germany, Lithuania, Malta or France have adopted very different rules, while other states have done nothing, leading which superficially imply that the crypto sector has gotten more and more fragmented, contrasting EU's stated goals. While this fragmentation is still an issue, important companies have taken actions to better coordinate efforts in crypto assets' regulation, like Facebook, which is currently developing the cryptocurrency Diem.

This global "stablecoin" project initiated in June 2019 proves that the blockchain space has grown out of its infancy, with global corporations now being fully invested in crypto initiatives. It was then clear to EU regulators that a fully harmonized, thorough, and binding legal framework was required to prevent regulatory loopholes and an even more fragmented market. A combination of a lack of easily applicable EU law, increasing regulatory discrepancies within the EU, and the maturing crypto sector- with the lighthouse project Diem being considered by many regulators and politicians a possible threat to financial stability and national sovereignty-forced the EU to act through the MiCA.

6.3 The MiCA's structure

The MiCA includes all types of crypto-assets not yet covered by EU financial law, such as the MiFID. All assets under MiCA's regulation are divided into various regulation categories[42]:

- Crypto-assets (Bitcoins, ether, "litecoins")
- Utility Tokens (Filecoin token, Basic Attention Token)
- ART – Asset-Referenced Token (Libra Basket Coin)
- EMT – E-Money Token (USDC, Libra Euro)

The last two categories are called stablecoins, with the difference between the former and the latter being whether they are pegged by a single fiat currency, or are linked to several fiat currencies, assets such as gold, or other crypto-assets. These two "stablecoin" categories require additional requirements if a large emission volume and numerous users are expected for the token. The framework also includes many instructions for issuers of crypto assets, who are asked to publish a white paper to notify their respective national financial supervisory authority, which has the authority to authorize or prohibit the issuance of the tokens. Additionally, for particularly "significant" ART or EMT crypto-assets, the European Banking

[42] *MiCA: A Guide to the EU's Proposed Markets in Crypto-Assets Regulation*, in https://www.sygna.io/blog/what-is-mica-markets-in-crypto-assets-eu-regulation-guide/., 2018, (last accessed 21.9.2021)

Authority (EBA) is responsible for supervision and approval[43]. Different regulatory obligations and requirements are applied depending on the asset and, if they are respected, the crypto-asset will be issued and submitted directly throughout the European market.

Under MiCA, services based on crypto assets will require prior approval from national supervisory authorities to offer crypto asset services under MiCA's regulations concerning the initial capital reserves, the IT infrastructure's security and how corporate governance should be structured. The procedures necessary to licences services that use crypto assets might be simplified in countries with already existing licensed services, resulting in a significant advantage for countries pioneering the crypto sector like Germany, which will release licenses far quicker.

The MiCA's regulations extend beyond rules for crypto-asset issuers and crypto-asset service providers and introduce rules to contrast market manipulation and insider trading on crypto-asset trading platforms. For example, the MiCA contrasts the "crypto whales", activities that leverage large amounts of crypto-assets on regulated crypto-exchanges to increase prices and thereby, profit would no longer be allowed: similarly to what already happens in the traditional capital market, those activities would be prohibited in the EU thanks to the MiCA.

To summarise, the MiCA's stated goal is to create a fully harmonized European crypto-asset market. It will accomplish this by establishing legal certainty throughout the EU by classifying digital assets and providing clear frameworks. More institutional investors and resources will enter the crypto market through this new legal comprehensive framework and contribute to its growth. Most notably, considering the vast size and relevance of the EU internal market (which holds nearly 450 million customers), the MiCA can set new global standards and shape regulations internationally.

From a global perspective, the framework allows EU to assume a critical leading role; an intention backed up in June 2020 by Valdis Dombrovskis, former Commission Vice President for Financial Services, who openly announced EU's intention to lead the way in global crypto-regulation[44], particularly in light of the

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[43] BLOGS, M. S. L. S. |S. L. S., & HANSEN, P., *New Crypto Rules in the European Union – Gateway for Mass Adoption, or Excessive Regulation?*,Stanford Law School, at https://law.stanford.edu/2021/01/12/new-crypto-rules-in-the-eu-gateway-for-mass-adoption-or-excessive-regulation/, 2021, (last accessed 21.9.2021)

[44] *Speech by executive vice-president Valdis dombrovskis at the Digital Finance Outreach 2020 closing conference,* European Commission, at https://ec.europa.eu/commission/commissioners/2019-

unstable and fragmented regulatory environment in the USA which is very different from state to state and where state and federal laws may and do contradict each other. The MiCA is also far more lenient than the restrictive attitude assumed in many Asian Countries- India and China especially-towards cryptocurrencies. Hence MiCA could prove to be a critical piece towards that goal and attract crypto talent, companies, and investments worldwide and, given that other technology such as Cloud Computing or Artificial Intelligence are by now out of the EU's reach globally, the EU might be further motivated into becoming the globally leading vanguard in the blockchain sector.

6.4 An analysis of MiCA's flaws

Despite its potential, MiCA's success depends on many unknowns, and there are still some fundamental criticisms of the proposal that must be addressed or modified in the legislative procedure[45]. Aside from numerous minor technical and judicial criticisms on single articles and wordings, the significant concerns about MiCA are focused on three key areas.

- The regulation of utility tokens and the matter of technology neutrality: according to MiCA, utility tokens are described as a type of crypto asset used to provide digital access to a good or service, available on DLT, and is accepted exclusively by the issuer of that token. This definition includes non-financial types of assets such as DLT-based mobility vouchers, but, as of now, these assets do not fall under EU financial regulation (see EU directive 2016/1065). Hence, to ensure a technology-neutral policy approach, they should not be included in the scope of MiCA either simply because they are based on DLT. Instead, the Commission should reconsider the scope of the regulation here as otherwise, many interesting non-financial blockchain use cases in the real economy would be prevented due to regulatory hurdles (whitepaper), compliance costs, and tax reasons.
- The regulation of Decentralized Finance[46](Defi) and other decentralized token issuances is a problem as well, as the issuance of crypto-assets in the EU requires, amongst others, the notification to a

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2024/dombrovskis/announcements/speech-executive-vice-president-valdis-dombrovskis-digital-finance-outreach-2020-closing-conference_en, 2020, (last accessed 21.9.2021)

[45] *Member States continue MiCA review*, Regulation Tomorrow, in https://www.regulationtomorrow.com/eu/member-states-continue-mica-review/, 2020, (last accessed 21.9.2021)

[46] SHARMA, R., *Decentralized Finance (DeFi) Definition and Use Cases*, Investopedia, at https://www.investopedia.com/decentralized-finance-defi-5113835, 2021,(last accessed 21.9.2021)

supervisory authority, the establishment of a legal entity in the EU and the publishment of a white paper regarding the asset. Therefore, Defi token projects such as Uniswap, Compound, or Maker would not obey these standards. Though they might benefit from the grandfathering clause- an exemption that allows people or legal entities to carry on with activities that were approved before the implementation of new rules and that means that crypto-assets issued before the entry into force of MiCA would not need to comply (except for ART and EMT), future Defi tokens will not. Moreover, due to their incapacity to comply due to their decentralized nature, crypto trading platforms under MiCA will not be allowed to list them any longer. This limitation would also be extended for all well-known crypto-currencies such as Bitcoin, Ether, Binance if- hypothetically-they were to be issued after MiCA entered into force.

- The Defi ecosystem is one of the most crucial drivers of innovation in the crypto sector. If the EU wants to enable a prospering EU crypto market and its crypto asset service providers to be competitive, it clearly should prohibit future Defi tokens and decentralized projects. Ultimately, this matter depends on the definition and interpretation of an "issuer of crypto-assets" who, according to MiCA, is "a legal person who offers to the public any type of crypto-asset […]." Given this definition, decentralized projects do not fall under the definition of a "legal person" and, hence, the authorities should clarify that Defi projects are thus exempted from the regulatory obligations.

The main issue will be the definition and operationalization of "decentralization" criteria. Once established, though, it would clarify decentralized token issuances and decentralized financial services such as decentralized exchange, borrowing, lending, and their applicability within the framework. The regulation of stablecoins[47] in the EU is another matter to consider, as the MiCA proposes almost insurmountable challenges for these assets; for example, EMT issuers must be recognized as credit or e-money institutions and comply with e-money-institutional requirements, which are separate from the recently introduced EMT-specific requirements regarding a non-compulsory white paper authorization, redemption rights and operational responsibilities.

Most notedly, under MiCA's thresholds, most of the relevant stablecoins on the market -Tether, USDC, Dai- would count as "significant" assets since they easily exceed one billion market capitalization and 100 million daily trading volume. Therefore, they would need to meet additional requirements: Tether, for example, which has currently approximately 25 billion US Dollars backing its stablecoins, would be forced to hold at least 750 millions of its funds as significant assets are required to own at least 3% of the average amount of their reserve assets according to MiCA's regulations; with similar restrictions, the issuance of stablecoins would not be a very profitable enterprise. Considering these limits, it seems unlikely that the issuers of the most successful stablecoins on the market will be able and willing to submit to all those requirements

[47] *EU regulation may harm small Crypto players, Stablecoin users, And Elon Musk*, Crypto News, at https://cryptonews.com/news/eu-regulation-may-harm-small-crypto-players-stablecoin-users-10941.htm, 2021, (last accessed 21.9.2021)

and apply for EU licences. That means, however, that these issuers cannot be listed on EU trading platforms, dealing a heavy blow to the potential advantage EU trading platforms might obtain, especially since stablecoins have become very common: of the 30 trading pairs with the highest trading volumes of the crypto trading platform Binance, 26 include a stablecoin.

What would result is hence a mass banning of all significant stablecoins for Europe: crypto-asset service providers would thus not only significantly limit the competitiveness of EU's companies but would likely lead many EU consumers towards non-EU regulated foreign exchanges massively setting back the EU's goal of better consumer protection. Some argue[48] that it was the economic and monetary implications of the Diem project that made EU's stakeholders abandon their otherwise lenient methodology towards crypto and set an indication of political strength. This turns out to be even clearer while considering that the EU transparently acknowledges making a covering administrative structure for e-cash tokens, where both the E-Money-Directive and the MiCA apply. For any remaining crypto assets, including security tokens, where only MiFID II applies, a precise and unique regulatory handling was the explicit goal.

Further changes to the regulations might be required- namely specifically lower and more proportionate prerequisites and, for instance, changes to the meaning of "algorithmic" stablecoins with the goal that it could essentially apply to the DAI-stablecoin (as "algorithmic" stablecoins do not fall under the meanings of EMT and ART). Therefore, such changes would benefit from the grandfathering clause and lower requirements; the MiCA will suppress stablecoins and damage EU companies and customers. Even more, as a rule, the MiCA will possibly demonstrate a triumph only if the necessities for new businesses are not set excessively high. The EU commission's effect evaluation of the proposition presently gauges 35000-75000 EUR costs for the whitepaper, 2.8-16.5 EUR million oddball consistence costs for unregulated substances, in addition to 2.2-24 million intermittent consistency costs (capital stores, detailing, IT-security, administration). These monetary and managerial burdens could demonstrate outlandish for a portion of the more youthful market members. There is little point in trying to achieve locational advantage through clear administrative guidelines if there a great outward movement of inventive organizations because of too high prerequisites. During the continuous input measure, the EU Commission ought to be especially mindful of the necessities of more youthful market members to guarantee the practicality of the startup environment that moved this entire crypto industry in any case.

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[48] *EU-Countries urge tough rules for cryptocurrencies*, finews.com, at https://www.finews.com/news/english-news/42916-snb-european-union-olaf-scholz-cryptocurrencies-libra-eu-commission-snb, 2020, (last accessed 21.9.2021)

It is difficult to think about when the MiCA will be embraced and come into power, particularly thinking about the forthcoming authoritative interaction in the EU Parliament and the Council of the EU and the predicted change time of 18 months. Considering assessments from EU controllers and correlations with other EU guidelines in the monetary area, we will most likely need to stand by between two to a long time from this point until the standards apply. Notably, the conversation on crypto-resource guidelines has changed from a niche conversation to an almost mainstream position in the most elevated political foundations and levels in Europe. Also, the crypto industry is now much better organized politically in trade associations and industry representations (INABA, Bitkom) and has learned how to engage with political stakeholders and express its interests.

This maturing political ecosystem around crypto assets makes many optimistic about MiCA's chances of success, as it appears that suitable solutions for the significant concerns raised will be achieved and that the great potential of the comprehensive MiCA model will be realized.

6.5 The MiFID-Markets in financial instruments directive and its relationship with crypto-assets

As it turns out, the surge in Bitcoin's worth corresponded with another significant change in the realm of money: specifically, the execution of MiFID II in January 2018[49]. ESMA's administrative system – the Markets in Financial Instruments Directive – was pasked to advance market straightforwardness while ensuring financial backers and market members. It is possible the main piece of monetary enactment of the 21st Century. Ignoring how close the Bitcoin flood and MiFID II's issuance was, many contended that the underlying Directive lacks administrative data on digital currencies and crypto resources, with many contemplating whether the MiFID II covers crypto resources.

This is a troublesome inquiry whose answer is altogether reliant upon one vulnerability: which crypto resources, assuming any, can likewise be characterized as 'monetary instruments'[50]? The language of MiFID II is with the end goal that only elements who bargain in monetary instruments are needed to hold fast to the authoritative system it advances. On the off chance that crypto resources are not viewed as monetary

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[49] *Data reporting*, MiFIR reporting instructions, at https://www.esma.europa.eu/policy-rules/mifid-ii-and-mifir/mifir-reporting-instructions, 2020, (last accessed 21.9.2021)

[50] *The regulation of otc crypto-derivatives under Mifid II*, Bryan Cave Leighton Paisner, at https://www.bclplaw.com/en-US/insights/the-regulation-of-otc-crypto-derivatives-under-mifid-II.html, 2020, (last accessed 21.9.2021)

instruments but instead characterized as an alternate element through and through, then, at that point, in principle, at any rate, they would not fall under the dispatch of MiFID II. This is a pressing matter, and an altogether unregulated crypto resource market would be powerless against all types of market misuse. In any case, trying to help explain this issue, ESMA distributed the consequences of a study directed related to the National Competent Authorities of all EU part states in January 2019. The report was named 'Guidance on Initial Coin Offerings and Crypto Assets' and is ordinarily alluded to as 'The ESMA Advice'.

The overview and the relating report planned to more readily characterize which crypto resources ought to be viewed as monetary instruments and would hence be covered by MiFID II. This report itemized the models that should be met if a crypto resource is viewed as a monetary instrument individually, be it adaptable security, an offer in an aggregate venture undertaking, or a subordinate agreement. Despite this explanation, there is yet a decent lot of equivocalness encompassing crypto resources and monetary instruments, especially according to adaptable protections. As indicated by the ESMA Advice[51], for a crypto resource to be adaptable security, it should be the accompanying three rules:

- The crypto resource should have a place with a class of protections
- The crypto resource should not be an instalment instrument.
- The class of protections should be fit for being haggled on the capital business sectors.

The last point is where vulnerability emerges as this framework does not determine that the class of protections to which a crypto resource has a place should be exchanged, simply that it is equipped for being arranged. This phrasing is to some degree questionable and leaves a decent lot of leeway. Besides, the expression 'capital business sectors' appears to be excessively wide; it is not an exchanging scene; however, it could be perceived as, in the expressions of delegates from McCann FitzGerald, 'where purchasing and selling intrigues meet'.

6.6 Russia's regulation of crypto-assets

During the ICO period of 2016-2018, Russia arose as one of the forces to be reckoned with in the crypto business. The under-managed status of introductory coin contributions empowered new financial backers and prodded Russian new companies to investigate better approaches for incorporating crypto and blockchain innovation into ordinary practices. While a significant number of these companies have been unsuccessful, some have proceeded to become famous. Vitalik Buterin, one of the founders of Ethereum, is one of the most striking figures that bear witness to the relevance of Russians inside the crypto and blockchain

[51] *Esma library Database*, Esma Library, at https://www.esma.europa.eu/databases-library/esma-library, 2021, (last accessed 21.9.2021)

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scene. Notably, it was the achievement and extended functionalities of the Ethereum stage that, to some extent, pushed the crypto frenzy and ICO blast of the time.

As assets streamed into the crypto business in Russia, interest in other crypto adventures flooded. For one, crypto mining turned into a promising practice for amateurs and new financial backers. New companies that could effectively arrange and wrap everything up with state-claimed power plants for modest power had a higher shot at maintaining a productive mining business. One model is Bitriver, allegedly the most prominent crypto mining ranch in Russia and controlled by overabundance and modest power produced by the close by Bratskaya hydropower plant on the Angara stream.

At the pinnacle of this prospering of crypto in Russia, controllers started to make conclusive strides towards forming a structure for directing advanced resources. One high-profile second back in 2017 was when Russian president Vladimir Putin met with Buterin[52]. In the same way as other public governments, Russian officials and controllers had at first taken a removed however skeptical position towards cryptographic money while accepting their hidden blockchain innovation. Nonetheless, this started to move when decentralized digital currencies quickly turned into a perpetually well-known speculation vehicle. Presently, more prohibitive crypto guidelines are set up[53], and the Bank of Russia is dealing with giving a national bank-supported digital ruble.

Fundamentally, according to the bill it is illicit to purchase products or pay for administrations with cryptographic forms of money like Bitcoin or Ether. The bill likewise denies Russia's public authorities from claiming digital resources. Remarkably, new companies can issue blockchain-based advanced protections if they have gotten the appropriate licenses from the Bank of Russia. Additionally, since advanced resources are characterized under property, they are available. Notably, an elite crypto charge structure has been proposed by the lower place of Russia's government gathering, otherwise called the State Duma, and is scheduled to be passed into law before the end of 2021. Before this whirlwind of crypto administrative systems, there were worries that the nation would sanction draconian guidelines regarding the belonging and exchanging of digital

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[52] CASTILLO, M. DEL. (2017, June 5), *Vladimir Putin and Vitalik Buterin Discuss Ethereum 'Opportunities'*, CoinDesk, at https://www.coindesk.com/vladimir-putin-vitalik-buterin-discuss-ethereum-opportunities-recent-forum, 2017, (last accessed 22.9.2021)

[53] *Russian Federation: New Bill Defines Cryptocurrency, Proposes Tax Regulations*, the Library of Congress, at https://www.loc.gov/item/global-legal-monitor/2021-01-11/russian-federation-new-bill-defines-cryptocurrency-proposes-tax-regulations/, 2021, last accessed 22.9.2021

currencies. It was expected that new businesses and set up crypto organizations would be compelled to move seaward if there should arise a sweeping boycott.

Although existing and proposed systems explain the legitimateness and guidelines for advanced resources, Russia's methodology towards digital money leaves a few regions uncertain. There are sure pieces of a previous form of the advanced resource charge that limit crypto trade exercises to seaward exchanging stages. The public authority is unwilling to shield inhabitants from hazards related to withholding and exchanging coins on unfamiliar trades. From all signs, this mirrors the incredulous position of controllers, notably the Bank of Russia, which has straightforwardly pushed for more strong crypto limitations previously. What is more, the country's main body for financial intelligence, the Rosfinmonitoring, has revealed its plan to follow Bitcoin cashouts[54]. This way, at whatever point Bitcoin is traded for rubles, it is possible to anticipate if the bank should send the subtleties of the exchange to the Rosfinmonitoring for additional investigation.

The result of Russia's recently marked bill is that it is illicit for organizations to acknowledge digital money as legitimate delicate. Accordingly, it has not encouraged endeavouring to utilize crypto to pay for labour and products inside the Russian Federation. It is a given that crypto fans regularly discover ways around such limitations. In any case, crypto enthusiasts determined to make use of crypto work with acquirement or instalments locally should be aware that they disregard existing crypto laws and might be subject to hardened penalties.

Then again, it is legitimate for Russian residents to pay for items or administrations given by unfamiliar traders or stages situated in countries with more amicable crypto guidelines. Hence, it is possible to make cross-line instalments without falling on some unacceptable side of the law. In any case, Putin's mission is mission-driven to harden the public authority's position towards cross-line exchanges. In light of this, the public authority will probably increase its endeavours to watch cross-line crypto exchanges in future.

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[54] *Russia to Monitor All Bitcoin-Fiat Transactions:Finance Magnates*, Finance Magnates|Financial and business news, at https://www.financemagnates.com/cryptocurrency/regulation/russia-to-monitor-all-bitcoin-fiat-transactions/, 2021, last accessed 22.9.2021

6.7 CryptoRuble, Russia's cryptocurrency

Russia's President Vladimir Putin announced in October of 2017 that his nation would issue CryptoRuble[55], a state-supported crypto currency. CryptoRuble will differ from regular digital currencies as it will be dispatched and overseen by the Russian government. Many Russian banks have shown interest in testing out this government-issued crypto currency, including the Credit Bank of Moscow and Crimea's Russian National Commercial Bank. This testing is relied upon to begin in the second half of 2021.

In 2022, the bank will be required to permit residents to test the money. The idea is that CryptoRuble will assist with diminishing expenses inside the monetary framework while boosting contests among banks[56]. It must be noted however that Russia does not perceive advanced tokens or cryptographic forms of money as legal tender. On the downside, the digital currency will be centralised in nature, as the Central Bank is issuing it. The CryptoRuble is relied upon to work as the Russian ruble, simply in a programmed and scrambled structure. The crypto currency will hence have a similar value the ruble has and is intented to be traded with conventional rubles. In any case, Russia's main objective in releasing a government digital currency is, according to some, to free their financial framework from the controls applied by the Central bank (Fed), European Central Bank (ECB) and their united national banks. CryptoRuble will serve as a buffer that only the Russian government has command over with valuable data out of reach to the US and the EU.

[55] *Vladimir Putin: Russia will issue its own cryptocurrency*, Futurism, in https://futurism.com/vladimir-putin-russia-will-issue-its-own-cryptocurrency, last accessed 22.9.2021

[56] FRANKENFIELD,J.*CryptoRuble*,Investopedia., in https://www.investopedia.com/terms/c/cryptoruble.asp., 2021, last accessed 22.9.2021

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7 Cryptocurrencies in North and South America

In the United States, cryptocurrencies have received much consideration from federal and state governments. Cryptocurrency exchanges are legal in the United States and fall under the administrative extent of the Bank Secrecy Act (BSA)[57]. By and by, this implies that cryptocurrency trade specialist co-ops should acquire the essential permit from FINCEN, execute an AML/CFT and Sanctions program, keep up with relevant records, and submit reports to the specialists. In the meantime, the US Securities and Exchange Commission (SEC) has shown that it believes cryptocurrencies to be protected and applies protections laws to digital wallets completely in a methodology that will influence the two trades and financial supporters alike. Conversely, the Commodities Futures Trading Commission (CFTC) has embraced a more amicable approach, perceiving Bitcoin and Ethereum as wares and permitting other virtual and cryptocurrency subsidiaries to exchange openly on trades manages or administers.

Because of rules distributed by the Financial Action Task Force (FATF)[58] in June 2019, FinCEN has likewise clarified that it expects crypto trades to conform to record-keeping prerequisites and the "Travel Rule" by sharing data about the originators and recipients of cryptocurrency exchanges. The US places virtual cash trades in a similar administrative classification as conventional AML/CFT watchmen, monetary organisations, and cash transmitters. Appropriately, it applies similar guidelines, incorporating those set out in the 2021 revisions to the Bank Secrecy Act (which has set up its variant of the Travel Rule).While there has been a massive commitment by these organisations, minimal lawful rulemaking has happened. As a rule of thumb, Federal organisations and policymakers have adulated the innovation just like a significant piece of the US's future framework and the requirement for the US to keep the main job in the innovation's turn of events.

Numerous authorities have recognised the danger of overregulating and forewarned policymakers from passing enactment that would drive interest in innovation abroad. A few state governments have proposed or potentially passed laws influencing cryptocurrencies and blockchain innovation, with most of the action occurring in the authoritative branch. There have commonly been two ways to deal with guidelines at the state level. A few states have attempted to advance the innovation bypassing great guidelines excluding

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[57] *The bank Secrecy act & Cryptocurrency regulation in the US*. Compliance.ai., in https://www.compliance.ai/blog/bsa-cryptocurrency-regulations/, 2020(last accessed in 21.09.2021)

[58] GONZÁLVEZ-GALLEGO, N., & PÉREZ-CÁRCELES, M. C., *Cryptocurrencies and illicit practices: The role of governance,* Economic Analysis and Policy, in https://www.sciencedirect.com/science/article/pii/S0313592621001089, 2021, last accessed 22.9.2021

cryptocurrencies from state protections laws and cash transmission resolutions. These states desire to use interest in innovation to animate neighbourhood economies and work on open administrations.

One state, Wyoming, has been referenced as looking for a more extensive effect on its digital economy[i59]. In 2019, it prepared a contract for banks that bargain for the most part in computerised assets called a specific reason safe organisation. So far, the state has endorsed three applications, including one to bitcoin exchanging stage Kraken Bank and one more last month to Wyoming Deposit and Transfer. This special charter permits banks to have two sections. First, there is the traditional side, where customers can put aside cash instalments. Then, at that point, there is also the bitcoin section, where clients can store or move cryptocurrencies that might be exchanged on Kraken's trade. They can likewise store the rewards, if those exist, into the bank after it is changed over into US dollars. Thelast permits clients to all the more flawlessly put changes over bitcoin into a record without tapping a mediator like JPMorgan (JPM.N) and the extra expenses that show up with that. The Wyoming contract also gives banks the option to hold the bitcoin "key," or the special code permitting bitcoin proprietors to get to their advanced assets.

Ohio turned into the primary US state to begin tolerating charges in cryptocurrency, allowing Bitcoin to be used to pay tax bills in 2018 by using BitPay, a third-party payment service provider. In recent times, Colorado Governor Jared Polis has claimed he hopes to allow Colorado residents to pay their state taxes using cryptocurrency. Polis, a longtime supporter of digital currencies, was the first political candidate to accept Bitcoin campaign donations in 2014. He recently talked at the virtual Consensus 2021 occasion coordinated by CoinDesk, where he revealed he'd "be excited to be the primary state to allow you to pay your expenses in an assortment of cryptos."

Texas could be an ideal state for crypto organisations to flourish, as it operates its electrical network, does not have income taxes, and has begun to present a supportive crypto administration structure for crypto trades. Even though there are rivals, numerous pioneers, including Steve Stockman, a United States delegate for the 36th Congressional District of Texas, has voiced their perspective for an ideal crypto climate and hatchery of development. Texas has set up a committee, known as the Texas Blockchain Council. The chamber's leader, Lee Brachter, expressed in a meeting with Cointelegraph that "Texas will become one of the most preferred purviews for US- based blockchain business and speculations." Furthermore, he states, "we simply need to come behind these states with Texas' trillion-dollar economy, which will eventually permit us to turn into the following huge spot where blockchain advancement occurs."

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[59] LAUSEVIC,V., *Wyoming as a blockchain and crypto-friendly state*, Medium. https://vladanlausevic.medium.com/wyoming-as-a-blockchain-and-crypto-friendly-state-a9d02746ec9f, 2021, last accessed 22.9.2021

Oklahoma presented a bill approving cryptocurrency tobe utilised, offered, sold, traded and acknowledged as an instrument of financial worth inside its administrative offices. Then again, Iowa presented a bill that would deny the state and political subdivisions of the state accepting payments as cryptocurrencies. Experts in no less than ten different states, like Maryland and Hawaii, have given alerts about putting resources into cryptocurrencies.

7.1 New York's Trust Charters

Approximately six years after Bitcoin's genesis block, the New York State Department of Financial Services(NTDFS) noticed cryptocurrency businesses and established the crypto guideline called the "BitLicense"[60] in 2015. A Limited Purpose Trust Charter was likewise an accessible alternative for those searching for more noteworthy trustee power. Before the finish of 2016, a couple of BitLicenses or Limited Purpose Trust Charters had been given, and a few cryptocurrency organisations ended activities in New York. In any case, as the cryptocurrency business developed, so has the disposition toward these crypto guidelines. Today, various organisations are endorsed to work under New York crypto guidelines, and they have turned into a significant, consistent achievement for some in the cryptocurrency business.

Organisations applying for a Limited Purpose Trust Charter have extra administrative prerequisites than those with a BitLicense, applying to the New York Banking Board instead of simply the NYDFS. Beneficiaries of a BitLicense should apply for a New York cash transmitter permit, while a Trust Company can take part in cash transmission with their trust status. The advantages of the Trust Charter over the BitLicense incorporate having guardian controls that permit trust organisations to deal with their customers' assets. As crypto guidelines create and prosper, these extended guardian forces might impact what items and administrations trust organisations offer their clients.

When the New York crypto guidelines were first authorised, numerous crypto organisations discovered excessively costly and grave necessities. This prompted what some named the "Incomparable Bitcoin Exodus," with organisations including Shapeshift and Kraken choosing to quit serving clients in New York. However, the quantity of organisations that have acquired a BitLicense or Limited Purpose Trust has quickly expanded in recent years. NYDFS is still centred around providing the ideal climate for crypto development. As illustrated in their 2019 yearly report, the NYDFS has made a Division of Research and Innovation centred around inspecting the BitLicense and crypto guidelines in New York. One of the fundamental things they

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[60] *New York‘s Final 'BitLicense' Rule: Overview and changes.* Davis Polk, https://www.davispolk.com/sites/default/files/2015-06-05_New_Yorks_Final_BitLicense_Rule.pdf., 2021, last accessed 22.9.2021

intend to handle is the direction for endorsed organisations to self-guarantee new cryptocurrencies and permit listing without needing centralised permission from the NYDFS.

7.2 The bipartisan infrastructure bill

In August 2021, senators passed a bipartisan framework bill[61]: the "Framework Investment and Jobs Act", centre around interests in streets, rail lines, spans and broadband web. By and large, the bundle calls for $550 billion that will be spent in the following five years and would be financed through a blend of assets, including repurposing unspent crisis alleviation assets from the COVID-19 pandemic and reinforcing tax enforcement for cryptocurrencies. The hotly anticipated framework bill went in a different direction as of late as a bipartisan gathering of legislators recorded an amendment that would explain the cryptocurrency-related arrangements covered in the enactment. The framework bill would require crypto "dealers" to report data about crypto exchanges, for example, value focuses and client data, to the Internal Revenue Service (IRS). In its present structure, the foundation bill comprehensively characterises a "merchant" to incorporate the people who consistently offer types of assistance regarding the exchange of advanced assets and forces an IRS detailing obligation upon them. The agent arrangement has produced broad analysis, as it would bring about general incorporation of most crypto-related elements, including miners, hub administrators, and programming designers that do not approach the sort of "know your client" (KYC) data that the law would require.

Senators Wyden, Toomey, and Lummis proposed an amendment that would explain that "representatives" mean just those who go through with exchanges on trades where buyers purchase, sell and exchange advanced assets. It would exclude individuals who take part in mining or marking, selling equipment or programming that an individual might use to control a private key (otherwise called a "wallet") or foster computerised assets or comparing conventions or programming from IRS detailing. In particular, the amendment gives that "nothing in this segment will be understood to make any deduction that… any individual [is considered to be a representative on the off chance that they are] exclusively occupied with the matter of approving conveyed record exchanges, selling equipment or programming for which the sole capacity is to allow an individual to control private keys which are utilised for getting to advanced assets on a dispersed record, or creating advanced assets or their relating conventions for use by different people, given that such different people are not clients of the individual growing such assets or conventions.

Nonetheless, only one day after the Wyden-Toomey-Lummis amendment was documented, the second gathering of legislators recorded their amendment, driven by Rob Portman (R-Ohio), Mark Warner (D-Va.),

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[61] TONY ZERUCHA. *Bipartisan infrastructure bill furthers acceptance of cryptocurrencies,* Bankless Times, in https://www.banklesstimes.com/2021/08/26/bipartisan-infrastructure-bill-furthers-acceptance-of-cryptocurrencies/, 2021, last accessed 22.9.2021.

and Kyrsten Sinema (D-Ariz.). To a great extent, the Portman-Warner-Sinema amendment impersonates subsections An and B from the Wyden-Toomey-Lummis amendment, yet bars subsection C, which would subject crypto programming engineers and other essential "agreement" or convention designers, to the rigid IRS detailing commitments in the foundation bill. Subsequently, the crypto business has broadly censured the Portman-Warner-Sinema amendment as outlandish and unfavourable to advancing and improving cryptocurrencies and their connected innovations. The crypto business predominantly upholds the Wyden-Toomey-Lummis amendment, prohibiting programming engineers and other agreement or convention designers from charge revealing commitments since they contend that such engineers ought not to be thought of as "dealers" under the framework bill.

The bill characterises an advanced resource as "any computerised portrayal of significant worth which is recorded on a cryptographically gotten dispersed record or any comparative innovation as determined by the Secretary." This definition is overbroad and is intended to incorporate cryptocurrencies, for example, bitcoin, Ethereum and some other portrayal of significant worth that might be created later on. The bill does not address cryptocurrencies that are held outside of trades (self-guardianship) and put away in "cool stockpiling." The new announcing commitments would put a critical weight on any people or substances that fall under the meaning of an "intermediary." If the bill is passed as composed, anybody considered a "merchant" should conform to these revealing necessities and report to the IRS when even a tiny amount of a cryptocurrency is moved or passed on. It is conceivable that some mining tasks, hub administrators, programming engineers, or minor trades that cannot consent to the necessities would stop existing or move seaward.

In August 2021, the Senate cast a ballot to conjure cloture, which viably closes conversation of the amendments and sets the foundation bill on the way for a last vote in the Senate. Individuals from the local crypto area keep campaigning Senators for the thought of the amendments, especially the Wyden-Toomey-Lummis amendment. A third amendment was proposed as a trade-off between the Wyden-Toomey-Lummis and Portman-Warner-Sinema groups. Nonetheless, this amendment neglected to accomplish the consistent agreement needed to pass. Along with these lines, the first language of the bill characterising intermediary remains in the Senate bill.

7.3 The situation in Canada

First of all, it should be noted that Canada is one of the more preferable countries for crypto miners due to its climate and light supply[62]. Equipment utilised by cryptocurrency miners produces much warmth and

[62] STACI, K., *Canada continues to embrace cryptocurrencies*. Born2Invest, in https://born2invest.com/articles/canada-continues-to-embrace-cryptocurrencies/, 2021(last accessed in 21.09.2021)

expects cooling to forestall overheating, and is situated in a relatively cold climate like that of Canada, assists with decreasing the expenses of cooling the PCs. Besides, power rates in Quebec are among the least in North America. For modern purchasers, rates are around $0.05 each kilowatt-hour. Energy utilisation is the principal cost of cryptocurrency miners, and naturally, one of the main reasons they are attracted to Canada.

There are, however, other reasons, as Canada has been incredibly progressive in class with its authorising of Bitcoin (BTC) and Ether (ETH) trade exchanged assets 2021, permitting more standard financial backers the chance to have digital currencies exposure through their speculation accounts, including charge, advantaged enrolled retirement investment funds plans (RRSPs) and tax-exempt investment accounts (TFSAs). Canada likewise outperformed the United States by permitting computerised resource trade exchanged assets (ETFs), which needs to be serious in the area. In February, Purpose Financial LP's Bitcoin ETF aggregated more than $400 million assets under administration inside its initial two days and proceeded to cross the $1 billion imprint inside two months post-dispatch.

With a developing arrangement of speculations, one would expect that charge related concerns might emerge. Nonetheless, Canadian duty specialists have been genuinely straightforward in expense suggestions and have given good direction to financial backers en route. As of now, Canada's duty laws and rules, including the Income Tax Act, additionally apply to cryptocurrency exchanges. The Canada Revenue Agency has described cryptocurrency as a commodity and expressed that the utilisation of cryptocurrency to pay for labour and products ought to be treated as a trade exchange. Since cryptocurrency is treated as a commodity, it has forestalled the negative distorting of duties so far. Nonetheless, the scene is continually developing, so controllers should stay on top of things to keep away from crypto devotees taking a gander at the United States, Europe or Asia as alternative playgrounds, depleting Canada of the two its ability and its speculation.

7.4 The South American's regulation: Mexico, Argentina and Bolivia

Mexico has accepted cryptocurrencies and is seen as a very crypto-friendly country. The Mexican government and its financial position, the CNBV, ordered another arrangement of fintech laws in March 2018. Its most significant crypto trade, Bitsos, has more than 1 million clients on its foundation. Mexico's Federal AML Law was revised in March 2018 to incorporate exchanges with "virtual resources". Mexico's duty system for cryptocurrencies is required to change as there is no authority position. Most see cryptos as theoretical resources where gains would be charged at 30% for organisations and somewhere in the range of 2% to 35% for people. Recently, Mexico has dispatched its first-since forever local cryptocurrency called the Xoycoin[63].

[63] LESSNER, J., *Xoycoin is the first Mexican cryptocurrency and here's why people can't wait to invest in it*, We are Mitú, https://wearemitu.com/wearemitu/things-that-matter/mexican-cryptocurrency-xoycoin-investment/, 2021, last accessed 22.9.2021

The advanced money is connected to Ethereum, which, after Bitcoin, is the world's second most important cryptocurrency. As of now, the Mexican computerised cash is standing out as truly newsworthy due to its present absolute bottom costs- just 20 pesos (about $1). The Xoycoin was dispatched by a Mexican monetary organisation called Xoy Capital, situated in Guadalajara, and it is the principal Mexican cryptocurrency connected to Ethereum, the world's second most significant computerised cash. Still, aside from being the first in Mexico, the most important news is that anybody can put resources into it with just $20 pesos-about $1. That low beginning value makes it an attractive choice for people who might be new to the somewhat confounding universe of cryptocurrencies.

In Argentina[64], investing in cryptocurrencies is legal, but they are not considered legal currency or tender as the government does not issue them. Even though there are no guidelines in this sense, profits are still taxable. Laws have been proposed to make a public legitimate and administrative structure for crypto-resources as a method for instalments, ventures, and exchanges. The Argentina Securities and Exchange Commission (CNV) will be the administrative body with oversight obligations and plans to keep a public vault of activities with exchanges answered to the Financial Information Unit (FIU) for consistency with hostile to tax evasion prerequisites. Argentina's Federal Administration of Public Income (AFIP) and national bank have mentioned more data from homegrown crypto trades and banks. Gains from cryptos are, for the most part, available at a 4% to 6.5% rate on net pay for each automatic money exchange.

As for Bolivia, the government prohibited utilising cryptocurrencies, for example, bitcoin in 2014, in the conviction that it would work with tax avoidance and financial flimsiness. "It is illicit to utilise any sort of money that isn't given and constrained by an administration or an zapproved element," Bolivia's national bank (BCB) said.

[64] *Crypto is booming in economically challenged Argentina,* CoinDesk, in https://www.coindesk.com/crypto-is-booming-in-economically-challenged-argentina, 2021, last accessed 22.9.2021

7.5 Brazil and Chile

Cryptocurrencies in Brazil are, to a great extent, unregulated[65]. Lawmakers have, be that as it may, started to propose a progression of guidelines that may make up for the shortfall whenever authorised. The Brazilian Protections and Exchange Commission, or CVM, has supported two cryptos ETFs. The Brazilian government has pronounced that bitcoin is a resource and depends on capital gains charges along these lines. Brazil has said that current AML laws broaden to virtual monetary standards in a couple of settings. The Special Department of Federal Revenue of Brazil has distributed a report on cryptocurrency charges in the country.

The Chilean government has resolved to create an administrative and oversight structure for cryptocurrencies also, the developing number of cryptocurrency trades in the country. The Central Bank and the Financial Market Commission have said that existing guidelines are pertinent to cryptocurrencies without a legitimate system. The Chilean Internal Revenue Service (SII) is the just found so far to have given enactment on cryptocurrencies in Notice no 963, gave on May 14, 2018. The SII delivered an assurance on the tax collection from pay acquired from purchasing and selling cryptocurrencies. It said that Tax Form 22 would require the revelation "from the offer of unfamiliar monetary standards of lawful course or resources advanced/ virtual, like cryptocurrencies (for instance, bitcoins)".

In Colombia, there is no particular enactment managing the utilisation of cryptocurrencies. The Banco de la República, the nation's financial, trade and credit authority, and the Superintendencia Financiera de Colombia (SFC), the public authority office mindful for administering monetary guideline and market frameworks, delivered proclamations on cryptos claiming they are not legal tender or legitimate ventures, and firms are not permitted to manage them.

7.6 Ecuador and Peru

In January 2018, the Central Bank of Ecuador educated residents that bitcoin "isn't a method for installment approved for use in the country". Monetary exchanges are not controlled, administered, or

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[65] SANDALI H., *Crypto is booming in Brazil, but Regulations lag behind,* CoinDesk., in https://www.coindesk.com/crypto-is-booming-in-brazil-but-regulations-lag-behind, 2021,last accessed 22.9.2021

managed by any element in the nation, and this presents a monetary danger to the individuals who use them[66]. Notwithstanding this admonition, the Central Bank has said that "the buy and offer of cryptocurrencies -, for example, bitcoin - through the web isn't restricted".

There has been no particular enactment in Peru identified with cryptocurrencies, and no oversight is given by the Securities Market Agency (SMV), the Banking, Insurance and Pension Fund Manager Agency (SBS), or the Peruvian Central Reserve Bank (BCRP). The BCRP has said that these monetary assets are not legal tender, nor are they upheld by national banks, so they fail entirely to meet the elements of cash as a trade mechanism, unit of record and store of significant worth. The controllers in Peru have given a few public alerts about the expected dangers of misfortune in virtual monetary standards as the SBS does not regulate them and that the assets could be utilised in unlawful exercises. The SBS has said it will evaluate controlling the cryptocurrency area to forestall resource washing exercises.

7.7 Uruguay and Venezuela

There is no particular enactment on cryptocurrencies in Uruguay. Nonetheless, the Uruguayan Chamber of FinTech has declared the development of a cryptocurrency advisory group to dissect what future guidelines may resemble. The nation is broadly seen as bitcoin and blockchain-friendly without any guidelines explicitly restricting or allowing the utilisation of cryptocurrencies.

Before 2018, law implementation captured and held onto assets of bitcoin excavators; however, it has now announced cryptocurrencies, for example, bitcoin legal. The Superintendency of Crypto-assets and Related Activities of Venezuela (SUPCACVEN) is the legislative organisation accountable for crypto-assets guidelines, control, and insurance. The public authority of Venezuela has likewise made its own cryptocurrency called the Petro, which is upheld by the worth of Venezuelan oil.

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[66] *New York's Final 'BitLicense' Rule: Overview and changes,* David Spolk, inhttps://www.davispolk.com/sites/default/files/2015-06-05_New_Yorks_Final_BitLicense_Rule.pdf, 2015, last accessed 22.9.2021

8 Cryptocurrencies in Asia

With digital currencies on the rise, national banks in Asia are getting a handle on the chances. Thailand has been one of the innovators in digital payments, emphasizing prompt interbank moves among people and retail locations utilizing QR codes, versatile and account numbers. Other countries, like India or China, have been much more harsher towards cryptcurrencies.

8.1 Thailand and Cambodia's approach

Thailand was among the primary purviews in Asia to give enactment that explicitly addresses cryptocurrencies and digital assets[67]. Having produced results in May 2018, the Digital Asset Act turned into the essential piece of enactment to control the contribution of digital assets and other business exercises, including them. Specifically, the demonstration expresses that those looking to direct introductory coin contributions (ICOs) in the nation should initially enrol with the Securities and Exchange Commission (SEC), and the ICO should be held using an SEC-endorsed ICO entry, an electronic framework supplier that works with the contribution of digital tokens, which will be liable for performing due tirelessness on the tokens and the capabilities of guarantors, guaranteeing the fulfilment and exactness of the reports in question, and the equivalent for the likely financial backers.

The demonstration likewise gives precise meanings of the various sorts of digital assets and different permitting prerequisites for trades, agents and sellers to work in the nation legally. The country has seen the development of a few players in the neighbourhood market, specifically crypto trade Bitkub, which, because of the developing revenue in crypto speculations, was requested by the BoT to expand its ability before onboarding new customers, similarly as a conventional bank would be needed to have the option to support a more significant part of their clients simultaneously. In any case, challenges as to administrative ambiguities obstructions flourish.

An illustration of this is the proposed presentation of new KYC prerequisites in May 2021 by Thailand's Anti-Money Laundering Office[68] (AMLO), which would successfully drive digital trades to end their online

[67] *Cryptocurrency regulations in Thailand*, Coinpedia,in https://coinpedia.org/cryptocurrency-regulation/cryptocurrency-regulations-in-thailand/, last accessed 22.9.2021

[68] *Anti-Money laundering*. Legal Analytics & Advocacy [Thailand], in https://laathailand.com/practice/anti-money-laundering/, 2018, last accessed 22.9.2021

record creation interaction and shift to an in-person-just arrangement, where potential clients should confirm their subtleties utilizing their Thai public ID card, which contains a brilliant chip, and should go to face to face to check to utilize a smart card peruser – like the machines used to peruse chip-Visas. While the new prerequisite expects to relieve tax evasion and extortion cases, it will make extra obstacles for digital trades and those looking to utilize their administrations.

Another necessity worth examining is the SEC, which commands that backers submit broad information the board reports daily to contain a rundown of financial backers and their exchanges. The reasoning behind this is to screen the buyers' business exercises and alleviate the probability of any vindictive exercises occurring. Be that as it may, this might be disadvantageous to numerous symbolic backers, and potential trade has, as they should distribute critical measures of assets to follow these prerequisites.

Of specific worry to unfamiliar occupants are the limitations forced by the BoT concerning the development of assets out of the country. While cryptocurrency assets can be brought into one of the more significant trades in Thailand as a fiat exit ramp (method for leaving the crypto market), localizing or moving enormous sums out of the nation is vigorously limited by the BoT and will require the proprietor to look for endorsement from the bank, on top of causing obligations and charges.

The BoT and the SEC are presently drafting guidelines on capital additions from cryptocurrency exchanges. These might bear some significance with market members as this would have suggestions on charges, which are determined depending on the worth of every specific exchange. As of late, the BoT has likewise given rules for managing monetary administrations, including stablecoins (cryptocurrencies where the cost is fixed to a hold resource), especially Thai baht-sponsored stablecoins, which is delegated electronic cash under the Payment Systems Act of 2017. This issuance was made fully expecting a forthcoming guideline on national bank digital monetary forms (CBDCs) the BoT.

What is more, the BoT may likewise issue another KYC manual, explicit to CBDCs, to forestall issues encompassing extortion and other noxious exercises. Singapore has also been a pioneer in cryptocurrencies, and the Monetary Authority of Singapore (MAS) was one of the top Asian national banks to lead itemized specialized examinations on homegrown cryptocurrencies. 'Task Ubin'[69] investigated homegrown and cross-line clearing and settlement.

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[69] *Project UBIN DVP on distributed ledger technologies,* SGX, in https://www.mas.gov.sg/-/media/MAS/ProjectUbin/Project-Ubin-DvP-on-Distributed-Ledger-Technologies.pdf?la=en&hash=2ADD9093B64A819FCC78D94E68FA008A6CD724FF, 2018, last accessed 22.9.2021

With its colossal populace and low utilization of banks and cards, China has been pushing digital moment instalment and QR checking for quite a long time. AliPay and WeChat Pay each guarantee just about 1 billion dynamic clients of their ledger-based moment move frameworks - presenting some foundational hazard if both of them fizzled. National bank digital currency can build a rivalry and lessen hazard in versatile payments, accelerate digitalization to diminish cash costs, and decrease tax evasion through 'controllable obscurity'.

Notwithstanding various bits of hearsay, the intention of issuing Singapore's national bank digital currency is yet to be formally declared. In the interim, both China and Cambodia[70] have issued cryptocurrencies looking for more critical monetary incorporation, yet on boundlessly various scales.

Cambodia has declared that it will deliver a digital currency with the support of the government. Named "Task Bakong[71]," projects have been depicted as fostering a "blockchain-based, shared installment and cash move stage." The venture is intended to investigate the utilization of an elective innovation stage to improve the instalment framework in Cambodia and advance the utilization of the Cambodian Riel ("KHR").

Regardless, virtual monetary standards are not at present characterized or managed under Cambodian law. Cambodia, for the most part, directs electronic cash following Prakas No. B14-107-161 on the Management of Payment Service Provider. In any case, its arrangements are not explicitly focused on cryptocurrencies. Already, the National Bank of Cambodia, the Securities and Exchange Commission of Cambodia and the General-Commissariat of National Police in Cambodia delivered a joint proclamation giving that "the proliferation, course, purchasing, selling, exchanging and settlement of Crypto Currencies without getting permit from skillful specialists are illegal exercises." The joint assertion further cautioned that:

The proliferation, dissemination, purchasing, selling, exchanging and settlement of Crypto Currencies, for example, KH Coin, Suncoin, K coin, One-coin, Forex coin and other comparative crypto currencies which skilful specialists do not manage, will make potential dangers the public and society in the following:

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[70] FREEMAN, J.B., *Cambodia and cryptocurrency*, Freeman Law, in https://freemanlaw.com/cryptocurrency-blockchain/cambodia/, 2021, last accessed 22.9.2021

[71] *NBC officially launches ITS Bakong payment system - KHMER TIMES*. Khmer Times - Insight into Cambodia,. in https://www.khmertimeskh.com/50777909/nbc-officially-launches-its-bakong-payment-system/, 2018, last accessed 22.9.2021

- Investment in crypto currencies might bring about misfortunes because of the unpredictability of their presumptive worth.
- Facing cybercrime and misfortunes of assets because of the framework being hacked
- There is no client security instrument, and the client of crypto currencies is a mysterious individual who has no identity or chronicled records, which might cause dangers of illegal tax avoidance and financing of psychological oppression.

In this stage, the authorities bid that the publics be careful of the proliferation to prepare reserves and the tasks of purchasing, selling, exchanging and settlement of crypto currencies without getting a permit from capable specialists.

Any individual or legal entity that engenders to assemble reserves, purchases, sells, exchanges, or settles crypto currencies without acquiring a permit from skilful specialists will be punished as per appropriate laws.

8.2 India's resistance to cryptocurrencies

Before April 2018, the crypto business in India remained genuinely unregulated, representing a possible effect on the viability of money related arrangements, alongside dangers and worries about shopper assurance, market respectability and fundamental wellbeing related to managing digital cash. In any case, the issue of how to manage VCs has been waiting with the RBI since June 2013, when in its monetary soundness reports of 2013, 2015 and 2017, the controller has reliably raised worries about legal and functional dangers related to VCs and has additionally given public admonitions about the dangers related with VCs.

Somewhere in the range of 2013 and 2018[72], there was a critical ascent in the worth of numerous cryptocurrencies and rapid development in starting coin contributions (ICOs). This caused watchfulness with the controllers, setting off the constitution of a between disciplinary board in 2017, containing the Special Secretary (Economic Affairs) at the Ministry of Finance, and agents from the divisions of Economic Affairs, Financial Services, Revenue, Home Affairs, Electronic and Information Technology, and from the RBI, NITI Aayog, and the State Bank of India, to analyze the administrative and legal designs and recommend measures for managing VCs.

The report put together by the panel suggested issuance of a specific notice through open media, expressing that the public authority does not think about cryptocurrencies as either coins or monetary forms,

[72] *Cryptocurrencies-Legal and tax considerations in India*. Bloomberg Law, in https://news.bloomberglaw.com/daily-tax-report-international/cryptocurrencies-legal-and-tax-considerations-in-india, last accessed 22.9.2021

to caution financial backers to offload such monetary standards and to suggest activity against the people who, notwithstanding admonitions, enjoy purchasing or selling, or offering the stage for exchanging of cryptocurrencies. Notwithstanding, the panel explained that there is no limitation to utilizing blockchain innovation for purposes other than making or exchanging cryptocurrencies.

On 2 November 2017, a committee was set up to inspect the upsides and downsides of forbidding and managing cryptocurrencies. While presenting a draft bill known as the Crypto Token and Crypto Asset (Banning, Control and Regulation) Bill, 2018, the advisory group suggested managing private cryptocurrencies. The council accepted that prohibiting cryptocurrencies would be a drastic action and accordingly exhorted administrative devices for managing VC trades to allow the deal and acquisition of private VCs. These choices helped the appearance of the guideline of the crypto business in India.

However, an about-face to the recommendations of the inter-ministerial committee in the form of complete prohibition, by presenting the roundabout dated 6 April 2018, gave by the RBI, that disallowed banks, financial organizations and online instalment framework suppliers from managing in VCs or offering any types of assistance to individuals managing in such monetary standards with immediate impact. This way, the oxygen backing to different VC trades in India was eliminated since admittance to banking administrations in the advanced economy is fundamental, particularly considering the limitations on cash exchanges under the Income Tax Act of 1961[73].

The crypto business tested the prohibitory roundabout under the protection of the Internet and Mobile Association of India and the watchful eye of the Supreme Court. Another committee was established by the public authorities, which, by its report submitted in 2019, suggested supporting the prohibitory round with the law and forbidding private cryptocurrencies through enactment, specifically, the Banning of Cryptocurrency and Regulation of Official Digital Currency Bill, 2019. Simultaneously, the bill additionally mulled over the production of a digital rupee as legal tender by the public authority in an interview with the RBI. On 4 March 2020, the Supreme Court struck down the prohibitory roundabout gave by the RBI, naming the all-out restriction as unbalanced, while underscoring that this was done even though the public authority does not prohibit vCs, in actuality sending the working of VC trades lethargic by detaching their lifesaver, i.e., interface with the standard financial area.

The situation in India today is that no law or strategy forbid trading or interest in cryptocurrencies, yet the inquiry that worries financial backers is the vulnerability of such a situation in future. This is mainly in the

[73] *Income tax department*, Tax Laws & Rules > Acts > Income-tax Act 1961, in https://incometaxindia.gov.in/pages/acts/income-tax-act.aspx, last accessed 22.9.2021

light of the looming boycott with another bill being presented in the Indian parliament, specifically the Cryptocurrency and Regulation of Official Digital Currency Bill in 2021[74].

The bill gave an exceptionally uproarious and expansive meaning of cryptocurrency as "any data, code, or token which has a digital portrayal of significant worth, and has utility in a business action, or goes about as a store of significant worth, or a unit of record". It looked not exclusively to restrict or boycott the exchange of cryptocurrencies yet punish the mining, holding, selling, giving, moving or utilization of cryptocurrencies as culpable with a fine or detainment as long as ten years, or both. The indicates of the new 2021 bill are:

1. To make a facilitative structure for the formation of digital authority, with money being given by the RBI.
2. To disallow all private cryptocurrencies in India, consider exceptional cases to advance the fundamental innovation of cryptocurrencies (i.e., blockchain and appropriated record innovation) and their employments.

The bill looks to make a national bank digital money given by the RBI, a digital type of Indian rupee upheld by the RBI and equal worth as fiat cash. It is conjectured that the bill will be one of the world's strictest arrangements against cryptocurrencies. On the off chance that the boycott becomes law, India will be the second significant economy, after China, to make the holding of cryptocurrencies illegal, even though China has not punished the ownership of cryptocurrencies.

The bill is scheduled to be presented in the lower place of the parliament very soon, and being forced to bear the invasion has appropriately left numerous financial backers and brokers restless. The public authority has attempted to ease worries by showing that there will not be a finished cover boycott, and a window will permit and empower experimentation and investigation of developing innovative primary cryptocurrencies for examination or educating.

The public authority has recognized that fundamental crypto assets' mechanical developments can work on the productivity and comprehensiveness of the monetary framework and are beneficial in controlling misrepresentation and keeping up with protection. In any case, what has pestered the public authority and the RBI is the host of different issues regarding customer and financial backer security, illegal tax avoidance, tax avoidance, the danger to the current money related or credit framework, and militant psychological financing.

One cannot question the legitimization of government concerns regarding chances related to the unregulated utilization of VCs because of their secrecy, layering, absence of support by specific assets, and

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[74] JOHN, *Government to issue new cryptocurrency bill*, CoinHighlight, in https://www.coinhighlight.com/2021/09/government-to-issue-new-cryptocurrency-bill-know-the-details/, 2021, last accessed 22.9.2021

instability. Be that as it may, it is lopsided to force an outright boycott while disregarding certain high-level advantages of VCs, as more productive cross-line instalments and better record-keeping, particularly when cryptos are going standard with far-reaching applications. The US and European nations have additionally decided to embrace and direct private cryptocurrencies while moderating clear dangers.

A complete boycott would make the exchange illegal and push the business underground, involving an ascent in the dark showcasing misuse and double-dealing. It would likewise drive crypto-holders to take their abundance seaward. It is likewise unfeasible to boycott cryptocurrencies as they exist on the web, and it is practically difficult to carry out a boycott in the digital world.

Allowing the RBI to give its own national bank digital cash is a viable thought according to the point of view of financial power, yet the International Monetary Fund (IMF) as of late demonstrated that public cash and private cash could exist together and complete one another.

As per the IMF, this framework offers vast benefits, including development and item variety, which the private area will give, and security and productivity, as guaranteed by the public area. The IMF contends that if nations move to a national bank digital money, they should utilize private monetary standards.

At this point, it is in India and other countries' best interest to seize a double monetary related system.

8.3 South and North Korea: investors and bank robbers

South Korea is one of the world's most important business sectors for blockchain innovation organizations, with the Korean won (KRW) continually being one of the most habitually utilized money for digital cash exchanging. In March 2020, the South Korean National Assembly passed new enactment that made ready for the guideline and legalization of cryptocurrencies and crypto trades[75]. This move was made in acknowledgement of the expanding developing cryptocurrency environment even amidst the COVID-19 disease. The enactment was intended to supervise an arising industry and prevent illegal tax avoidance measures.

South Korean financial backers have been anxious to put resources into digital assets and cryptocurrency markets. As indicated by 2021 overview information, 40.4% of 1,885 labourers surveyed noticed that they had put resources into cryptocurrency. Strikingly, almost half of South Korean labourers who

[75] FREEMAN, J. B., *South Korea and cryptocurrency*. Freeman Law, in https://freemanlaw.com/cryptocurrency-blockchain/south-korea/, 2021, last accessed 22.9.2021

matured 30 to 39 years said they had put resources into cryptocurrencies. Labourers in their twenties followed with about 37.1%.

This information gives significant knowledge regarding all the earmarks of being a South Korean financial backer acknowledging blockchain and cryptocurrencies. Accepting an inspirational perspective filled the notoriety of making interests into what numerous South Koreans think about the eventual fate of the money. As cryptocurrencies took off at the finish of 2020, financial backers were taking special note of their presence in a couple of key business sectors. South Korea is one of them. In March 2020, the South Korean National Assembly passed new enactment that made ready for the guideline and legalization of cryptocurrencies and crypto trades. This move was made in recognition of the prospering developing cryptocurrency environment even amidst the COVID-19 pandemic. The enactment was intended to direct an arising industry and foster principles around against illegal tax avoidance measures.

Cryptocurrencies are famous speculations among South Korea's young age who consider them to be a way to flourishing in a setting of constantly high joblessness[76]. South Korea has for quite some time been an early adopter of innovation, and the way of life is to such an extent that individuals rush to accept new mechanical developments and openings. Digital asset are commodities that entice South Korean financial backers careful about the political environment and their vicinity to the danger presented by North Korea. The fervour shared by South Korean digital resource financial backers has not come without result—as the energy has drawn in consideration of lawbreakers and controllers the same. Therefore, South Korea is amidst a cryptocurrency crackdown planned to develop trade straightforwardness further, diminish crimes like illegal tax avoidance, and give crypto-financial backers a layer of administrative security.

The principal justification for the ubiquity of cryptocurrencies is the predominant monetary conditions in the country. Although it is genuinely enormous and prosperous, the South Korean economy experiences a young joblessness issue. In 2020, the joblessness rate went from 7.5% to 11%, proceeding with a comparative example into 2021.

Consequently, the public authority divulged a program to give little and medium-sized endeavours impetuses to employ youthful specialists. Nonetheless, after the Bitcoin bust of 2017, cryptocurrencies secured themselves as a potential method to monetary dependability in 2018 for youthful South Koreans living in a various levelled society with costly living expenses and a furiously aggressive business market.

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[76] *South Korea unemployment rate 1999-2021 Data: 2022-2023 Forecast: Calendar*. Trading Economis, in. https://tradingeconomics.com/south-korea/unemployment-rate, 2021, last accessed 22.9.2021

Knowledge of micropayment exchanges is one more justification for the fame of cryptocurrencies. South Koreans have for quite some time been early adopters of mechanical advancement, regardless of whether it is interpersonal organizations or computer games. It likewise has the world's quickest Internet speeds and an overall created media transmission framework to work with versatile instalment frameworks. This is like Japan, another country where cryptocurrency exchanging is well known.

The solid Korean gaming industry has made South Koreans much more open to digital payments, a thought that is yet to grab hold in the West. For instance, Hangame, a Korean gaming organization, had incomes of $30,000 each day on micropayments of 50 pennies each back in 2001, when online gaming was, for the most part, free. Before the year was over, a similar organization was procuring $80,000 each day, and, inside three years, it had hit $93 million for the year in revenue.

Organizations had sprung up around its games just as bootleg trades. While cryptocurrency-related organizations presently cannot see comparable incomes, they might be ready to do so since the South Korean government establishes proper guidelines.

The third justification for the ubiquity of cryptocurrencies is political vulnerability. South Korea's neighbour, North Korea, is arranged as a "condition of concern." North Korea has gained fast headway in its atomic weapons program, which it claims is essential to safeguard against a potential US intrusion. In mid-2021, the country uncovered a submarine-dispatched long-range rocket portrayed as "the world's most remarkable weapon." This uncover was supervised at a motorcade by pioneer Kim Jong-un and only days before the initiation of Joe Biden as US president. Since Bitcoin is not connected to any state, it requests financial backers who are careful about North Korea's goals.

Most notably,the North Korean system has been deemed associated with cryptocurrencies to collect assets that can evade authorizations and limitations. North Korea has been supposed to get mining equipment to create new Bitcoins and other crypto tokens, with some accepting that the public authority to be behind a few ransomware assaults, hacks, and robbery of cryptocurrencies[77].

The innovative procedures utilized by North Korea to use cryptocurrency went to the front in February 2021 when government specialists reported that "three North Korean software engineers have been arraigned for directing a progression of cyberattacks to endeavor to take and coerce more than $1.3 billion in real money and cryptocurrency from monetary organizations and organizations."

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[77] *'World's leading bank robbers': North Korea's hacker army*. MSN, https://www.msn.com/en-us/news/world/world-s-leading-bank-robbers-north-korea-s-hacker-army/ar-AAKnBNd, 2021, last accessed 22.9.2021

The US Department of Justice said the software engineers were necessary for a North Korean military insight organization with a background marked by evil dabblings. Another strategy used was to create and market a fake blockchain stage, called the Marine Chain Token, in 2017 and 2018. The Marine Chain Token permitted financial backers to purchase proprietorship interests in marine delivery vessels with blockchain innovation and, as indicated by the Department of Justice, "permitted North Korea to covertly get assets from financial backers, control interests in marine transportation vessels, and sidestep US sanctions."

North Korea's criminal cryptocurrency exercises have been so grievous that their programmers have earned the moniker of being "the world's leading bank robbers".

8.4 Singapore: the city-state's regulation

In Singapore, cryptocurrency trades and exchanging are legal, and the city-state has taken a more amicable situation on the issue than a portion of its local neighbours[78]. Although cryptocurrencies are not viewed as legal tender, Singapore's duty authority regards Bitcoins as "merchandise" thus applies Goods and Services Tax (Singapore's adaptation of Value Added Tax). The Monetary Authority of Singapore (MAS) has embraced a nonpartisan situation on the development of cryptocurrencies: in 2017, it explained that, while it would not look to manage virtual monetary standards, it would control digital instalments tokens (DPT) if those tokens were delegated "protections". Despite cryptocurrencies being deemed relatively reliable by Singapore's authorities, in 2020, MAS generally admitted to people the dangers of putting resources into cryptocurrency items.

MAS' by and large, delicate way to deal with cryptocurrency trade guidelines has driven it to apply existing legal structures where conceivable. In January 2018, MAS gave an official statement cautioning people about the dangers of hypothesizing with cryptocurrency, while Deputy Prime Minister Tharman Shanmugaratnam expressed that cryptocurrencies are dependent upon similar AML and CFT measures as conventional fiat monetary forms. After a year, the Payment Services Act 2019 (PSA) was passed, bringing trades and other cryptocurrency organizations under the administrative authority of MAS from January 2020 and expecting them to get a MAS working permit.

8.5 China: cryptocurrencies’ greatest supporter and enemy

In 2019, China restricted ICOs. In 2021, as per Reuters, the nation moved forward its crackdown on cryptocurrency by prohibiting monetary establishments and instalment organizations from giving

[78] DUTTA, S., *Singapore cryptocurrency Regulations 2021*, Coinfirm, in https://www.coinfirm.com/blog/singapore-cryptocurrency-regulations/, 2021, last accessed 22.9.2021

cryptocurrency exchange benefits and cautioned financial backers against speculative crypto exchanging. These were endeavours by China to cinch down on the digital exchanging market.

Considering China's hostility, many would be surprised by how the country is important in the crypto sector. Regardless of the nation's endeavours to wean its economy off of cryptocurrencies, the country significantly impacts costs. As per Eminetra, the total market capitalization of the crypto business is $1.47 trillion, and China represented over 90% of all exchanging volume before the presentation of administrative measures and limitations in 2018. Notwithstanding Bitcoin's guarantee of being a decentralized cryptocurrency based all over and no place, about 65% of the world's Bitcoin mining happens in China.

Before the public authority's volte-face in 2017, China was among the most punctual nations to excitedly accept cryptocurrencies[79]. In 2013, a Chinese cause started tolerating bitcoin, and a rush of organizations stuck to this same pattern by tolerating cryptocurrencies. Indeed, even Baidu, China's web crawler goliath, started tolerating bitcoin for site security administrations. Miners set up for business promptly after that. Bitcoin's legislative issues to the side, Chinese financial backers are fascinated with cryptocurrencies and their capacity to rise above borders-an additional fascination is that bitcoin exchanges are liberated from government control.

One manner by which China applies an effect on bitcoincosts is through its trades. Before founding a boycott against Bitcoin trading 2017, China represented more than 90% of exchanging volumes of cryptocurrencies by charging low expenses. While there could be a broad scope of variables that incited China's crackdown, one thing was made over and again exceptionally clear by specialists: Bitcoin's wild value moves are a danger to the country's monetary and monetary steadiness. The public authority said cryptocurrencies disturb monetary request and that it will "unfalteringly forestall the transmission of individual dangers to the more extensive society," as indicated by the State Council's Financial Stability and Development Committee, which held a gathering led by Vice Premier Liu He, President Xi Jinping's top agent on the monetary and monetary issue. Albeit ensuring China's financial development is an essential worry of Beijing, examiners accept the more profound explanation that the public authority completed the unexpected crackdown on Bitcoin because cryptocurrency generally addresses a danger to state money related to power. In this view, the more well-known Bitcoin becomes among a nation's residents, the less force their administration needs to shape financial strategies. On account of China, in any case, the issue goes past simple

[79] MINING, W. *The landscape of cryptocurrencies in China*. Everything you need to know about Bitcoin mining, in https://www.bitcoinmining.com/landscape-cryptocurrency-china/, 2021, last accessed 22.9.2021

financial matters[80] because the public authority's political authenticity is vigorously dependent on the achievement of the country's economic development.

It then, at that point, turns into a somewhat natural choice for the public authority and controllers to distance the probable few million individuals in China that are implied with crypto as opposed to hazard disturbing the whole economic system.

[80] BROWNE, E., *China cryptocurrency crackdown explained as prices crash,* Newsweek. https://www.newsweek.com/china-ban-crypto-bitcoin-crash-cryptocurrencies-crypto-crackdown-explained-1592747, 2021, last accessed 22.9.2021

9 The future of Cryptocurrencies in Africa

Unstable local currencies and expanding out of control inflation plays had a critical influence on cryptocurrency reception in Africa. Zimbabwe experienced extreme, excessive inflation a little more than a decade ago, with swelling rates increasing to almost 89.7 sextillions in 2008; this waited on through to 2016. This constrained many individuals to leave the country's legal tender for a bin of global monetary standards initiated by the US dollar. However, because of intense dollar deficiencies, many individuals directed their concentration toward Bitcoin, following the ascent of Bitcoin in the last decade.

The case for cryptocurrency and blockchain achievement in nations like Zimbabwe can't be overemphasized[81]. As per the World Economic Forum, undeniable cryptocurrency reception in Zimbabwe will make exchanges unviolable. Not simply that, an undeniable cryptocurrency reception will save the country an astounding $90 million every year.

9.1 North Africa's hostility

Cryptocurrencies have an unreliable reputation in the Northern region of the African continent[82]. In mid-2018, the Central Bank of Libya reported that virtual monetary standards, for example, Bitcoin are illegal and that no legal security will be stood to anybody utilizing or exchanging them. The Central Bank of Libya clarified that virtual monetary standards were prohibited as "these monetary forms might be utilized to complete crimes and infringement of laws like illegal tax avoidance and financing of psychological warfare." The Central Bank of Libya exhorted that anybody anticipating utilizing virtual monetary standards must "get a permit and an earlier approval to do exercises, give banking as well as financial administrations.

In November 2017, Morocco's Office des Changes (Foreign Exchange Authority) gave an assertion forbidding the utilization of cryptocurrencies in exchanges inside Morocco as such lead would straightforwardly disregard Morocco's present enactment. In an articulation delivered presently, the Bank Al-Maghrib upheld this, the country's national bank, by depicting cryptocurrencies as "a secret installment framework that isn't sponsored by an association, the utilization of virtual monetary standards involves critical

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[81] REPORTER, S., *An overview of cryptocurrency growth in Africa*, The Star, in https://www.the-star.co.ke/business/markets/2021-04-23-an-overview-of-cryptocurrency-growth-in-africa/, 2021, last accessed 22.9.2021

[82] *Research summary: The state of crypto in Africa*. Luno, in https://www.luno.com/blog/en/post/research-the-state-of-crypto-in-africa, 2020, last accessed 22.9.2021

dangers for their clients." Notwithstanding this, Brookstone Partners, a New York-based private value firm, has bought 37,000 acres of a wind farm in Dakhla, Morocco, to control a server farm and mine bitcoin. The breeze ranch will be created by Soluna, a 'green' blockchain organization, after its ICO, where it desires to raise US$ 100 million to fund the undertaking.

As for Algeria, the Parliament has passed the Finance Act, 2018 (FL2018)[83], which precluded buying, dealing, using, and owning virtual cash. FL2018 gives that any infringement of this arrangement will be rebuffed as per the laws and guidelines in power in Algeria, criminal sanctions included. The boycott follows concerns raised by parliamentarians that cryptocurrencies are utilized basically to lead illegal exercises, for example, fear-based oppressor financing, drug dealing, illegal tax avoidance and tax avoidance. In 2015, Tunisia dispatched its public cash, the eDinar, on the blockchain. As an enormous extent of Tunisian grown-ups is unbanked, eDinar is worked through the Tunisian Post Office. Jointly claimed by Tunisia and Saudi Arabia, the Tunisia Economic City (TEC), which is at present the biggest Mediterranean city project, will be supposedly collaborating with the Locus Chain Foundation to apply blockchain innovation as its settlement cash and administration stage. It is perceived that the TEC, which covers a total space of 90 square kilometres on the eastern landmass of Tunisia at the expense of US$ 50 billion, will execute the blockchain stage as the base innovation and settlement cash for the whole city's development projects, including different businesses like money, correspondence, clinical, shopping, programmed vehicles and artificial intelligence. When finished, the TEC is set as Africa's entryway to Europe, the Middle East and Asia.

In mid-2018, the Tunisian government closed a concurrence with Devery.io[84], a blockchain-put together beginning up centred concerning the production network of the executives, to carry out a blockchain-based production network to follow the conveyance of snacks to younger students in Tunisia. The plan expects to take care of 400,000 oppressed Tunisian younger students in 6,000 schools. Maria Lukyanova, the United Nations World Food Program Representative for Tunisia, who has been helping the Tunisian government with its taking care of program, remarked that "(t) his venture is permitting us to investigate how supporting

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[83] SYLLA, A.,*Regulating cryptocurrencies In Africa and China – Where are we now? - technology - France*. Welcome to Mondaq, in https://www.mondaq.com/france/fin-tech/897732/regulating-cryptocurrencies-in-africa-and-china-where-are-we-now, 2020, last accessed 22.9.2021

[84] *Devery.io - a Blockchain Powered, Open-Source, product Verification Protocol*. Bitcoinist.com,https://bitcoinist.com/devery-io-blockchain-powered-open-source-product-verification-protocol/, 2018, last accessed 22.9.2021

advancement, through the presentation of arrangements dependent on blockchain innovation, can add to fortifying the adequacy and proficiency of the Tunisian public school dinners program.

9.2 Botswana and Kenya

The Bank of Botswana has not delivered any guideline on cryptocurrencies or the use of blockchain innovation and has allegedly expressed that it presently has no aim of directing cryptocurrencies[85].

The XinFin Organization, a non-benefit association that liaises with various worldwide governments to lessen the current hole in the global framework, met with Botswana government authorities in 2017 to examine the expected utilization of blockchain innovation in the foundation business.

Notwithstanding this, Botswanan government authorities were cited as uncertain about the utilization and advantage of cryptocurrency and blockchain innovation in their country. As of now, there are no cryptocurrency trades in Botswana, and this way, bitcoin exchanging is restricted to private Whatsapp and Facebook gatherings. Bitcoin trade, Belfrics, has declared designs to dispatch in Botswana after its fruitful dispatch in Kenya in 2017. Notwithstanding the absence of guidelines, there have been somewhere around three blockchains based new businesses in Botswana:

- The Satoshi Center, established in 2014, goes about as a blockchain centre point and intends to instruct business furthermore, the government in Botswana about the troublesome innovation
- Plaas, dispatched by the Satoshi Center, expects to foster a portable application that empowers ranchers and cultivating cooperatives to oversee day by day cultivating creation and stock on the blockchain.
- Kgoboko, a monetary biological system, means to address the necessities of the unbanked in developing business sectors.

Kenya doesn't yet have a blockchain administrative structure set up. Nonetheless, Kenya's Public Land Commission has invited the utilization of the blockchain network in making straightforwardness of land ownership, as it will help prevent possible deceitful deals of land and disarray. Land Layby Group permits people to safely buy property in Kenya by precisely reflecting the Government Land Registry frameworks on a blockchain network. Potential buyers would now be able to survey the precise proprietorship records of the Government Land Registry frameworks on a carefully designed mechanical structure. Land Layby Group accepts that by utilizing blockchain to distribute the land records on the web, the danger of various titles for a similar real estate parcel will be killed. The Law Society of Kenya has allegedly documented a claim trying to slow down the execution of digitizing title deeds utilizing blockchain innovation on the premise that the

[85]LIELACHER, A, *The state of Bitcoin in Botswana*. BitcoinAfrica.io, in https://bitcoinafrica.io/2017/12/10/state-of-bitcoin-in-botswana/, 2017, last accessed 22.9.2021

Kenyan lawmaking body has not yet passed any laws which would support a particular drive, hence opening up the likelihood that any advancement could be turned around by a progressive chief. A great many land proprietorship cases at present, under the steady gaze of the courts, could be prevented by a computerized record purportedly demonstrating possession before the question being appropriately settled by the legal executive. One more drive in the private area is the dispatch of TMT Global Coin, a blockchain fueled coordinations organization that desires to further develop load coordination internationally by utilizing blockchain innovation through savvy agreements to work on the straightforwardness and genuineness of records in imports and fares.

The National Transport and Safety Authority has reported its expectation to carry out an electronic engine vehicle recognizable proof help in Kenya. All cars will have an electronic sticker put on the windshields, discernible just using the utilization of particular innovation, consequently aiding the recuperation of used vehicles. The organization will be run on a shared blockchain stage which will caution different government offices of the burglary, including entomb Alia, the Kenyan Revenue Authority and the Kenyan Police.

9.3 Nigeria's heated debate

The Central Bank of Nigeria (CBN) warned banks and monetary establishments, cautioning that exchanges in and working with instalments for cryptocurrency trades were disallowed[86]. The CBN further guided all banks and monetary establishments to distinguish and close records related to people or elements that complete exchanges in cryptocurrencies and work cryptocurrency trades. As indicated by the bank, this was a suggestion to the order it gave in 2017.

Defending the order, the CBN lead representative, Godwin Emefiele, expressed that cryptocurrencies were being utilized to work with tricks and illegal tax avoidance, which were profoundly hostile to the economy and could additionally debilitate the naira.

The order got the support of Nigeria's enemy of debasement offices, the Economic and Financial Crimes Commission (EFCC), the Independent Corrupt Practices and Other Related Offenses Commission (ICPC) and the Nigerian Financial Intelligence Unit (NFIU).

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[86] *Effects of CBN ban on cryptocurrency in Nigeria, What next?* The Piece, in. https://www.withinnigeria.com/piece/2021/07/08/effects-of-cbn-ban-on-cryptocurrency-in-nigeria-what-next/, 2021, last accessed 22.9.2021

The EFFC, through its administrator, Abdulrasheed Bawa, sees cryptocurrencies as roads through which crooks wash the returns of wrongdoing and illegal monetary exchanges, saying that the Commission had recuperated cryptocurrencies worth about $20 million from cybercriminals.

Also, Bolaji Owasanoye, the director of ICPC, accepts cryptocurrencies could be utilized to finance rebellions, adding that the #EndSARS fight was to a great extent funded through the cryptocurrency. The counter join offices unveiled that they have various cases connected to cryptocurrencies yet have been unable to follow the suspects, taking note that it will be hard to settle cases including cryptocurrencies because the job players were obscure.

Therefore, the Securities and Exchange Commission (SEC) suspended the endorsement of cryptocurrencies and related items in Nigeria. This came after its prior sign to acknowledge bitcoins. The capital market controller will allow such advanced monetary standards to work financial balances inside the Nigerian financial framework.

However, a hurricane of responses from the inside and outside the cryptocurrency local area has kept on following the order of the summit bank, causing fears that the boycott could unfavourably affect fintech and upset the rising possibilities of the Nigerian economy[87].

The CBN later clarified that its admonition didn't banish Nigerians from executing in cryptocurrencies or holding computerized monetary standards; however, it was pointed toward shielding the financial area from the exercises of cryptocurrencies. While tolerating that it precluded cryptocurrency exchanges in the financial framework, the money related controller kept up with that it didn't put any limitations on cryptocurrencies overall, nor is it deterring people or substances from exchanging them.

In the meantime, the CBN has reported designs to start issuing the computerized cash, an electronic model of money notes and coins that can be put away in the advanced wallet before this year runs out. The bank said this would work with smooth worldwide settlements to Nigeria. With the state-controlled digital currency, Nigeria would have the option to give its own sovereign advanced money to supplement cash notes and coins. This would assist with addressing CBN's feelings of trepidation over the helplessness of cryptocurrencies to criminal maltreatments and develop monetary consideration. Right now, when the cryptocurrency is acquiring worldwide ubiquity and acknowledgement, the summit bank should find ways to make open doors for discourse and coordinated effort with cryptocurrency merchants and trades.

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[87] ONUBEDO, O., *What cbn's new ban on crypto means for Nigerian users and the industry*. BENJAMIN DADA | Impressive reporting on tech in SSA, in https://www.benjamindada.com/cbn-nigeria-ban-crypto/, 2021, last accessed 22.9.2021

In this manner, it is significant for banking/monetary area controllers to zero in additional on elevating human well-disposed strategies to empower more Nigerians to exploit the developing cryptocurrency market to accomplish financial advancementKenya's general wellbeing area is additionally endeavouring to introduce a savvy stage in all open clinics making a common blockchain centre point where patients' data and clinical history may be shared. This will likewise empower attendants in rural regions to treat patients dependent on a specialist's recommendation acquired somewhere else. Moreover, the Kenyan government is looking to connect the National Registration of Persons Bureau data set to the shut circuit TV cameras monitored by the Kenyan Police, subsequently empowering face acknowledgement employing blockchain technology.

9.4 Mauritius and its CBDP proposal

In May 2017, Mauritius gave an open call to trend-setters to exploit its new Regulatory Sandbox License. Candidates should show that their undertaking is creative, advantageous to the Mauritian economy and can't be obliged to trailblazer's home purview because of legal or administrative holes. Specifically, the Government of Mauritius is trying to draw in fintech new businesses and endeavours to be considered to become known as the "Ethereum Island." • The President of the Republic of Mauritius declared in November 2017 Mauritius' expectation to make the Mauritius Blockchain Center of Excellence (the MBCE) by January 2018.

In February 2018, the Fintech and Innovation-driven Financial Services Regulatory Committee met interestingly to make suggestions to the Government of Mauritius on the need to present new arrangements of guidelines for fintech and advancement.

In June 2018, it was reported that a Mauritian state possessed the substance, State Informatics Limited, finished up an essential participation concurrence with a South Korean-claimed organization called the Locus Chain Foundation to acquaint blockchain innovation with general society and private area IT frameworks of Mauritius and a few African nations, by presenting a 'fourth era' blockchain stage which is equipped for directing "start to finish exchanges in under two seconds".

Chief, originator and director of the Locus Chain Foundation, Mr Sangyoon Lee, expressed that he accepts that presenting the blockchain stage as a framework and settlement cash in African nations will roll out a vast improvement to how exchanges are finished up and potentially "add to monetary advancement by upgrading public (economies).

Mauritius is outfitting to present a Central Bank Digital Currency (CBDC)[88], and everyone's eyes are currently on the Bank of Mauritius (BoM) as it plans to rejuvenate this innovative venture.

Considering the government's drive to make a CBDC, a pile of administrative changes were presented in the Finance Act 2020 to incorporate another meaning of "advanced cash", to explain that the national bank must give this and that the national bank will decide its division, plan, structure and way, with the simultaneousness of the Minister. The Finance Act also gives that cash to the national bank, including computerized money, which will be legal tender in Mauritius.

Remarking on the ramifications of this new system, Managing Director of Digital Associates and FinTech legal counsellor Jessica Naga says, "In regards to the CBDC, in contrast to most purviews, Mauritius has effectively tended to the greatest financial law and strategy question. Mauritius is done discussing whether it will or won't have a CBDC and how the option to give CBDC ought to be outlined."

She recommends that there are two principle designs that CBDC could take, to be specific record based or token-based, the two of which can be incorporated or decentralized. Jessica says, "A unified record based CBDC will be simpler to carry out and control for the BoM. As the law stands, the BoM would already be able to open and keep up with represents monetary establishments, like banks, and people like the Governor, Deputy Governors and individuals from the staff. A CBDC, contingent upon the plan picked, could offer many, if not all, of the advantages of cryptocurrencies but somewhat simultaneously temper a significant number of the negatives and would, critically, still permit national banks to carry out general critical financial approaches.

9.5 The situation in South Africa

In December 2014, the South African Reserve Bank (SARB) gave its position paper on virtual monetary standards whereby it affirmed that the SARB has the sole right to provide legal tender and that decentralized convertible virtual economic measures don't comprise legal tender in South Africa[89]. The SARB expressed "any vendor or recipient might reject [virtual currencies] as a method for installment." This was

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[88] *Bank of Mauritius Plans CBDC pilot in 2021,* CoinDesk, in https://www.coindesk.com/markets/2021/05/26/bank-of-mauritius-plans-cbdc-pilot-in-2021/, 2021, last accessed 22.9.2021

[89] FREEMAN, J. B., *South Africa and cryptocurrency,* in Freeman Law. https://freemanlaw.com/cryptocurrency-blockchain/south-africa/, 2021, last accessed 22.9.2021

affirmed again by the SARB in its assertion in 2017, where it confirmed that it doesn't perceive cryptocurrency as "money" or "legal tender" in South Africa. In any case, SARB has exhorted that any instalments used to buy virtual monetary forms would add to a singular's use of the "single optional remittance (R1 million) or potentially individual unfamiliar capital recompense (R10 million with a Tax Clearance Certificate), each schedule year."

Subsequently, the Minister of Finance noted in mid-2017 in Parliament that "the National Treasury along with the SARB, [Financial Intelligence Centre], and [Financial Services Board] have likewise settled an Intergovernmental Fintech Working Group in December 2016, to foster a methodology and reexamined strategy position towards fintech, including crypto-monetary forms, and to manage quick arising fintech matters in the monetary area, such as crowdfunding, roboadvice, AI and elective installment stages." The Fintech Working Group has as of late dispatched Project Khokha, which explores different avenues regarding appropriated record advances (DLT) as a team with ConsenSys (a New York-based blockchain innovation organization) and the South African financial industry. Venture Khokha intends to foster a proof of idea to "reproduce the interbank clearing and settlement on a DLT which will permit the SARB and industry to together evaluate the expected advantages and dangers of DLTs." The South African expense authority, the South African Revenue Service (SARS), has been more vocal. In an articulation this year, it expressed that cryptocurrencies are "neither authority South African tender nor broadly utilized and acknowledged in South Africa as a mechanism of trade." However, although SARS does not view cryptocurrencies as money for annual duty purposes or capital increases charges, cryptocurrencies are regarded by SARS as a resource of a theoretical nature. It at present creates the impression that any citizen who deliberately overlooks to announce their benefits or benefits will be punished by up to 200% of the sum owed in addition to revenue, as per segment 223 of the Tax Administration Act, 28 of 2011. SARS contends that cryptocurrencies ought to be burdened relying upon the expectation with which it is held. Subsequently, gains or misfortunes comparable to cryptocurrencies can be extensively ordered as having three expected outcomes:

- a cryptocurrency can be obtained through mining; however, until the recently procured cryptocurrency is sold or traded for cash, the excavator will hold it as "exchanging stock."
- financial backers purchasing and selling cryptocurrencies on trades will be at risk for the capital additions acquired by the financial backer
- where labour and products are traded for cryptocurrencies, the typical deal exchange rules will apply.

Interestingly, two standard brands (Takealot.com and Pick 'n Pay) have recently acknowledged bitcoin as a technique for instalment, although it is dubious whether these two retailers still this strategy for instalment. Lately, a cryptocurrency ATM was opened in Randburg, Johannesburg. It is guaranteed that this is one of just four cryptocurrency ATMs in the entire of Africa. South Africa, as of late, passed new enactment which will control the monetary area in what is known as a "Twin Peaks Model." This model accommodates two new economic controllers in South Africa. Along these lines, almost certainly, the prerequisites to enlist with monetary controllers will become more severe.

The Deputy Governor of SARB expressed that the "Twin Peaks model of monetary area guideline, which is currently being carried out, means setting up an administrative structure that better reacts to the

powerful idea of the monetary area, including fintech." This year, two beginning coin contributions (Ico's) were dispatched only in South Africa, two of which expect to add to the monetary prosperity of the country.

The first is 'Rhino Coin', a cryptocurrency pointed toward controlling the legal offer of rhino horn inside South Africa. Presently the cryptocurrency is esteemed at one coin: 1 gram of Rhino horn. In this manner, holders of the Rhino Coin can either trade the cryptocurrency until it expansions in worth or, subject to consistency with the legal necessities of buying the Rhino horn. Any cash raised from the ICO will be spent on Rhino protection endeavours. The second is 'Safcoin'[90], which was opened only to South Africans for just ZAR 70(about 4,90 US dollars) a token before being accessible to the remainder of Africa. The reason for Safcoin is to "turned into a generally acknowledged type of installment across the whole African web-based exchanging local area. We need to support African trade and improve on the cross-line instalment measures between nations by dispensing with formality and cumbersome exchange measures." In 2018, the National Treasury's Taxation Laws Amendment Bill was introduced to Parliament proposing the accompanying corrections to burden enactment, which, in addition to other things, will change how cryptocurrencies are characterized in South Africa:

- 'monetary administrations' as described in segment 2 of the Value Added Tax Act, 89 of 1991 (VAT Act) will incorporate "the issue, securing, assortment, purchasing or selling or move of responsibility for cryptocurrency."

- the consideration of cryptocurrencies as a 'monetary help' in the VAT Act will imply that the deal or supply of cryptocurrencies will be absolved from VAT, providers of cryptocurrencies won't be qualified for registration for VAT purposes, and VAT may not be deducted from expenses caused corresponding to such exercises

- the meaning of 'monetary instrument' in the Income Tax Act, 58 of 1962 (ITA) will incorporate "any cryptocurrency" and segment 20A of the ITA will likewise be revised to incorporate "the procurement or removal of any cryptocurrency" in this way ring-fencing the evaluated misfortunes of any average individual gaining or discarding cryptocurrencies and setting off such misfortunes against any pay accumulated from such trade.

[90] *SAFCOIN, Africa's crypto, pleased to meet you,* SAFCOIN, in http://www.safcoin.africa/, 2021, last accessed 22.9.2021

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10 Final conclusions and personal considerations

It seems clear that cryptocurrency has profoundly shaken up many systems, proving the potential of digital assets. Investors focusing on cryptocurrencies and their future uses are now driving the vast majority of the current market capitalization; this will probably stay the case until cryptocurrencies' values steady up and they obtain acknowledgement from the market. As for the value, one should not consider only the "official" cost of cryptocurrency, since those who put resources into it also rely on the apparent "innate worth" of cryptocurrency: this worth incorporates the innovation and the network itself, the safety of the cryptographic code and the benefits a decentralized network can offer.

Considering all these factors, we can see why the blockchain public record innovation (which forms the backbone of cryptocurrency) has upset many transactions and the payments systems as a whole. This is true for incorporate stocks, securities, and other monetary assets for which records are put away carefully, all of which require a trusted intermediary for the exchange. Considering the way blockchain works, it also seems clear then the cryptocurrency market will develop at speed set by the key participants, represented by a growth linked to the legitimacy cryptocurrencies will acquire with the market. For the market to reach the following stage in its advancement toward standard acknowledgement and stable extension, every category of members will assume a key role.

For customers, cryptocurrencies offer less expensive and quicker distributed instalment alternatives than those presented by customary cash administrations organizations, without them needing to provide personal information. While cryptocurrencies keep acquiring some acknowledgement as a payment choice, price instability and the chance for speculative tests lead users not to utilize cryptocurrency to buy labour and products but instead exchange it.

To corporations, cryptocurrencies offer low transaction expenses and lower unpredictability hazards coming about because of almost immediate settlement. They dispense with the chance of chargebacks (the interest by a Visa supplier that a retailer follows through on the departure of a false or questioned exchange).

Cryptocurrencies have also been rather intriguing for technology developers, who have dedicated their endeavours to cryptocurrency mining. In contrast, others have zeroed in on more pioneering pursuits like creating trades, wallet administrations and elective cryptocurrencies. It seems the cryptocurrency market has begun to draw the talent the market centre requires to take the business to a higher level. For the need to acquire standard acknowledgement, be that as it may, customers and partnerships should consider cryptocurrency an easy-to-understand answer for their regular trades. Likewise, the business should foster network protection innovation and conventions.

For the most part, financial backers seem, by all accounts, to be confident about the changes related to cryptocurrencies and cryptography. The "innate worth" of the hidden innovation mentioned above gives these

financial backers valid justification to be hopeful. Subsequently, some of the more settled cryptocurrency organizations pulled in institutional financial backers and Wall Street consideration.

Generally, banks have associated those with cash with the individuals who need it. Be that as it may, as of late, this go-between position has been weakened, and disintermediation in the financial area has advanced quickly. This has come about because of the ascent of Internet banking, expanded shopper utilization of elective instalment techniques like Amazon gift vouchers, Apple Pay and Google Wallet, and advances in portable instalments. Government mentalities throughout the planet are conflicting with regards to the characterization, treatment and legality of cryptocurrency. Guidelines are additionally developing at various speeds in various districts.

To sum up, I think that cryptocurrency addresses the start of another period of innovation-driven business sectors that can disturb traditional market methodologies, longstanding strategic approaches and set up administrative viewpoints-all to the advantage of purchasers and more extensive macroeconomic proficiency. Cryptocurrencies convey significant potential to permit shoppers admittance to a worldwide instalment framework(anyplace, whenever)in which cooperation is confined exclusively by admittance to innovation, instead of by variables, for example, having a record as a consumer or a ledger.

Ultimately, we should not ask ourselves *if* cryptocurrencies will endure but rather *how* they will develop and *when* they will fully mature.

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