

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Languages



Bachelor Thesis

**Cryptocurrency – As a Mean of Future Exchange.
Myth or Real?**

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BACHELOR THESIS ASSIGNMENT

Özkan Bülbül

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Thesis title

Cryptocurrency as a Mean of Future Exchange – Myth or Real?

Objectives of thesis

The final goal of the following thesis is to come up with a particular conclusion on whether the cryptocurrency can, at some point in the nearest future, become a real mean of exchange and fully substitute the physical money that is being used on daily basis. The side objective of the following thesis is to come up with a particular theory based on the induction method, this theory will try to categorize the nature of the domestic economy of El Salvador following their acceptance of cryptocurrency as an official mean of exchange.

Methodology

The main methodological method of the following thesis lies in splitting the work into two separate sections – the theoretical part and the practical one.

The author takes an insight into the background of cryptocurrencies and recent studies related to them. In the practical part, the author will perform a case study on the country “El Salvador” and assess if the economy is better or worse after accepting the cryptos as legal tender. Also, the author will conduct a series of personal interviews with people from El Salvador in order to come up with a relevant theory on the way how cryptos really changed the welfare of ordinary people.

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Declaration

I declare that I have worked on my bachelor thesis titled "Cryptocurrency – As a Mean of Future Exchange. Myth or real? " by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break any copyrights.

In Prague on 15.03.2023

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Cryptocurrency – As a Mean of Future Exchange. Myth or Real?

Abstract

The final goal of the following thesis is to come up with a particular conclusion of whether the cryptocurrency can some point of time in the nearest future become a real mean of exchange and fully substitute the physical money that are being used on daily basis. The side objective of the following thesis is to come up with a particular theory based on the induction and deduction method, this theory will try to categorize the nature of the domestic economy of El Salvador following their acceptance of cryptocurrency as an official mean of exchange.

The main methodological method of the following thesis lies in splitting the work into two separate sections – theoretical part and the practical one.

The author takes an insight into the background of cryptocurrencies and recent studies related to it. In the practical part, the author will perform a case study on the country called “El Salvador” and assess if the economy is better or worse after accepting the cryptos as legal tender. Also, the author will conduct the series of personal interviews with people from El Salvador in order to come up with relevant theory on the way how did cryptos really changed the welfare of the ordinary people.

Based on the case study of El Salvador, the author concludes that the decision of adoption Bitcoin was a bad decision and the country should revert it as soon as possible unless it will have to call a technical default due to diminishing amount of reserves available to the country. Consequently, the author also concludes that as of 2022-2023, there is no way for cryptocurrencies to substitute fiat money.

Keywords: cryptocurrency, fiat money, legislation, economics, welfare, exchange

Kryptoměna jako prostředek budoucí výměny. Mýtus nebo skutečnost?

Abstrakt

Konečným cílem následující práce je přijít s konkrétním závěrem, zda se kryptoměna může v určitém okamžiku v nejbližší budoucnosti stát skutečným prostředkem směny a plně nahradit fyzické peníze, které jsou denně používány. Vedlejším cílem následující práce je přijít s konkrétní teorií založenou na indukční a dedukční metodě, tato teorie se pokusí kategorizovat povahu domácí ekonomiky Salvadoru po jejich přijetí kryptoměny jako oficiálního směnného prostředku.

Hlavní metodologická metoda následující práce spočívá v rozdělení práce na dvě samostatné části – teoretickou a praktickou.

Autor nahlíží do pozadí kryptoměn a nedávných studií s nimi souvisejících. V praktické části autor provede případovou studii o zemi s názvem "Salvador" a posoudí, zda je ekonomika po přijetí kryptoměn jako zákonného platidla lepší nebo horší. Autor také provede sérii osobních rozhovorů s lidmi ze Salvadoru, aby přišel s relevantní teorií o tom, jak cryptos skutečně změnil blaho obyčejných lidí.

Na základě případové studie Salvadoru autor dospěl k závěru, že rozhodnutí o přijetí Bitcoin bylo špatné rozhodnutí a země by jej měla vrátit co nejdříve, pokud nebude muset zavolat technické selhání kvůli klesajícímu množství rezerv, které má země k dispozici. V důsledku toho autor také dochází k závěru, že od roku 2022-2023 neexistuje způsob, jak by kryptoměny nahradily fiat peníze.

Klíčová slova: kryptoměna, fiat peníze, legislativa, ekonomický, sociální, výměna

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List of abbreviations

DeFi ...	Decentralized Finance
BTC ...	Bitcoin Token
ETH ...	Ethereum Token
PoS ...	Proof of Stake
PoW ...	Proof of Work
EUR ...	Euro
USD ...	US Dollars
P2P ...	Peer to Peer
SWIFT ...	Society for Worldwide Interbank Financial Telecommunication
GPU ...	Graphics Processing Unit
CPU ...	Central Processing Unit
ASIC ...	Application-Specific Integrated Circuit
GDP ...	Gross Domestic Product
FDI ...	Foreign Direct Investment

CPI ... Consumer Price Index

1 Introduction

Trade dates back to ancient times. Humans exchanged spices, textiles, and metals in order to meet our needs. This system was referred to as "Bartering." When the Lydians discovered the first known currency, silver or gold coins, these tokens were exchanged for goods or services. Long after the 10th century, China introduced fiat currency. In the 20th century, however, following the United States government's decision to end the USD's convertibility to gold, fiat currency gained widespread acceptance. Since then, fiat currency has been used as legal tender everywhere.

But as technology advanced, something new emerged: "digital currency" or "bitcoin." According to the developer of this technology, bitcoin will alter the internationally accepted financial system. This statement will be analyzed by the author to determine whether it is true, or another lie.

The author's main motivation for analysing this statement lies in his direct involvement in crypto trading, so the author additionally assesses the potential of cryptocurrencies in the 21st century.

2 Objectives and Methodology

2.1 Objectives

The final goal of the following thesis is to come up with a particular conclusion of whether the cryptocurrency can some point of time in the nearest future become a real mean of exchange and fully substitute the physical money that are being used on daily basis. The side objective of the following thesis is to come up with a particular theory based on the induction and deduction method, this theory will try to categorize the nature of the domestic economy of El Salvador following their acceptance of cryptocurrency as an official mean of exchange.

2.2 Methodology

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To be more specific, the author calculates correlation coefficients based on the Pearson correlation coefficient formula, which is shown below:

$$r = \frac{\sum(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum(X_i - \bar{X})^2 \sum(Y_i - \bar{Y})^2}} \quad (1)$$

In addition to this, the author also calculates t ratios related to the correlation coefficient with the formula shown below:

$$t = \frac{r_{xy}\sqrt{1-n}}{\sqrt{1-r^2}} \quad (2)$$

3 Literature Review

3.1 History of Cryptocurrencies

The history of the formation of cryptocurrencies did not begin in 2008, when it was initially promoted higher and eventually became what it is now. The history of the creation of cryptocurrencies dates back for further than that. Professional cryptographers began debating the feasibility of establishing a worldwide information network in the 1960s of the previous centuries. The decade of the 1980s saw the beginning of the first real steps in this direction. They started exchanging brokerage data, which was necessary for trading on the stock exchanges, with the assistance of the information network (infonet) (Foss, 1993). Coincidentally, the concept of digital money was conceived about the same time. The most important benefit of the idea was that it made it possible to acquire stocks, other financial assets, and derivatives of those assets very fast. American cryptographers David Chaum and Stefan Brands were working on the implementation of the concept of electronic money during that time (Law, 1996).

In addition to proposing the first protocols for "electronic currency," they detailed the operational principles of an anonymous digital payment system and presented the concept (Foss, 1993). Chaum first presented the concept of a public key encryption model in 1982, when he presented the blind digital signature method. A database of persons who could stay anonymous while assuring the veracity of the information they revealed about themselves was made feasible because of a recent discovery. But digital cash was the primary focus of Chaum's fantasies about the future of finance. He envisioned a system in which votes could be cast electronically and the process could be audited without the voter's name being revealed.

A collection of cryptographers, hackers, and activists were motivated to action because of Chaum's theories. They were the ones who gave rise to the term "cypherpunk," which refers to members of a movement that promotes the use of computer technology as a way of subverting centralized control systems and governmental authority (Narayanan, 2013).

In the year 1990, David and Stefan founded the firm that would later become known as DigiCash. Their primary focus was on the creation and distribution of the eCash monetary system. She served in a capacity that supported the confidentiality of electronic payments, and there was cryptographic data protection there. The fact that eCash was managed in a centralized manner was the primary distinction between it and contemporary cryptocurrencies. In 1998, this platform was officially declared insolvent. However, the concept of making anonymous payments in a quick manner was brought to the attention of numerous cypherpunks. Adam Bakov made a significant contribution to the advancement of cryptocurrencies through the work that he did.

In 1997, he was the one who implemented HashCash, a technique that is immune to spam as well as denial of service threats. After then, Hal Finney worked on making improvements to it. He was successful in developing a more sophisticated algorithm for the management of electronic payments. The implementation of a string of hash blocks into transactions was the core component of the enhancement. During developing the very first blockchain, the HashCash technology emerged as one of the most important concepts. 1998 saw the introduction of two separate digital projects that were developed by developers based on this platform:

- Wei Dai is a project funded by **B-money**.
- Nick Szabo is a project developed by **Bit-Gold**.
-

Each of them built their systems on top of a decentralized registry as the primary data store. The cryptocurrency began as Wei and Nick's efforts, which later evolved into its precursors. In the future, Satoshi Nakamoto will refer to B-money as the foundational technology that was used in the creation of Bitcoin. In 1998, Hal Finney was the one who built the very first blockchain, and after some time has passed, he would also join the Bitcoin project (Papadis, 2020).

Therefore, the development of blockchain technology and cryptocurrency may be attributed to the collaborative efforts of several people. But the ultimate step in achieving the concept of digital money was taken by an anonymous developer using the pseudonym

Satoshi Nakamoto, which was addressed in earlier chapters. This chapter will focus on the development of Bitcoin.

3.2 Concept

This work is based on the idea that several tasks need to be finished and, as a result, analysed not only by the theoretical part, which is certainly important, but it is also important to reveal in practice what a cryptocurrency is and whether it can be used as the primary method of payment for certain services. The concept behind this work is a collection of tasks that need to be finished and, as a result, analysed. However, first things first, author need to show a firm grasp on what a cryptocurrency is.

Studying cryptocurrencies is fascinating for many reasons, but one of those reasons is to learn how cryptocurrencies work and how their internal structures are organized. In contrast to what one would anticipate, the answer to this issue will not be nearly as challenging if it is approached from the perspective of a really intriguing illustration. On the island of Yap, the recording and management of debts was done with the use of fairy stones throughout the 19th century. However, as the tribe became larger, it became nearly impossible to keep track of who owed what to whom and how much money was owed. Because of the strain that this produced in the community, the elders were forced to select someone to be in charge of maintaining records of the transactions that used fairy stones. However, when the register started charging a fee for performing each transaction, and the elders, in turn, exerted pressure on him, pushing him to input false information, such a system could not justify itself. After that, the members of the tribe stopped using the centralized record, and anybody who had struck an agreement with the tribe shared this information with the other inhabitants. It was only deemed to have been accomplished if the majority of people acknowledged it (Davies, 2010)

Cryptocurrency may be thought of as a collection of ideas and technology that, when taken as a whole, serve as the foundation of the digital money ecosystem. The storage and transfer of value between members on the network is accomplished through the usage of monetary units like as bitcoins. Andreas Antonopoulos, a self-described "preacher" of Bitcoin and one of the pioneers in the promotion and development of the concept that cryptocurrencies will eventually become public and be utilized in the same manner as

conventional monetary currencies, put forward this perspective (Humayun, 2019). If author try to characterize cryptocurrencies using terminology that is more easily comprehended, we may describe this phenomenon as "virtual money." Virtual money consists of cryptographic codes and does not have a tangible equivalent. This serves as further evidence that the cryptocurrency in question is not the money that the ordinary person envisions when they think of money.

It is important to point out that the idea of "bitcoin" came into existence first. Only a couple of years after it first appeared, an article was published in Forbes magazine that was largely responsible for the widespread adoption of the word "cryptocurrency" (Forbes, 2011). The history of the emergence of the phenomenon of crypto assets will be considered from the beginning of the creation of an electronic coin. This is since bitcoin and cryptocurrency are frequently confused with one another, and also due to the fact that bitcoin was the first cryptocurrency that did not fail. However, if the author of this work is going to compare bitcoin to monetary currencies such as the dollar or the euro, then it is necessary to highlight a few distinguishing characteristics that will help create a general picture and the essence of the cryptocurrency.

These characteristics are as follows:

- 1) Unlike the dollar, which was initially based on gold, digital money is wholly virtual and not backed by anything. This contrasts with the dollar. Although there are some industry professionals who are under the impression that the price of cryptocurrencies is what controls the amount of energy that is put into their production (Hayes, 2017)
- 2) Each transaction is conducted in a totally anonymous manner, yet the system itself is entirely open to scrutiny. The chain of transactions that have been carried out with the coin may be viewed at any moment by a user from the outside, but the people who conducted those transactions will be concealed behind secret public keys;
- 3) It is not possible to reverse the payment. This aspect of cryptocurrency is one of the most important ones to consider. During this occurrence, S. Nakamoto penned the following: "The lack of irreversible transactions raises the cost of services whose services are irreversible." Because the money might be reversed, the seller needs to be

on high alert and request more information from the purchaser than is strictly required (Böhme, 2015)

- 4) Perhaps the most significant distinction, and the one that gave rise to the entire concept in the first place, is that cryptocurrencies do not have a centralized authority to manage them. This is accomplished by removing intermediaries from the financial transaction process along with the commissions they charged for their services, as well as transferring the critical function of maintaining accounting records from centralized financial institutions to a network of autonomous computers.

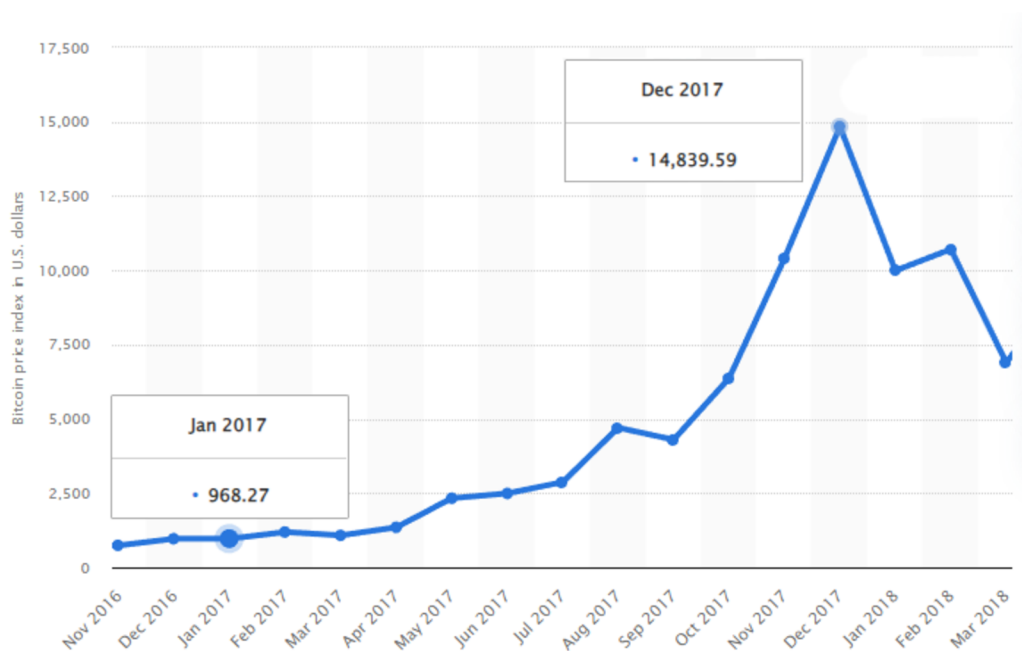
Satoshi Nakamoto is the one who developed the bitcoin cryptocurrency protocol and created the first version of the software in which this protocol was implemented. At the same time, Satoshi Nakamoto is a fictional person or group of people, and quite a decent number of people were suspected of being Satoshi, but to this day it is not clear who he is or where he came from. But this does not negate his merits, which served as the beginning of the cryptocurrency era. The use of cryptocurrency can lower the costs associated with conducting business while also protecting against the corruption that can occur in intermediate entities. To put it another way, the system removes the requirement for the participation of a middleman, while preserving the infrastructure that enables strangers to transact business with one another. But before explaining what a cryptocurrency is and how it was created, it is important to describe the element on which it is built, and it is the blockchain.

One school of thought holds that the advent of bitcoin occurred at the point where it was most required. In point of fact, the first mention of this coin emerged from the ashes of the existing financial system on Wall Street on October 31, 2008, following a string of devastating collapses on that day. When the programmer S. Nakamoto, who was a complete unknown at the time, published his essay titled "Peer-to-Peer Electronic Cash System" online, this marked the beginning of the lengthy road that cryptocurrency would take (Maurer, 2013). The article provides an overview of an online exchange system that supports encryption, enables two parties to trade units of value without exposing confidential information about themselves or their bank accounts, and illustrates how the system works. The participants in the transaction are able to transmit digital money directly to each other through the use of this system, which was meant to function independently of conventional

banking systems. This is an example of peer-to-peer trade, in which there are no middlemen. There is no requirement for financial institutions such as banks or credit card firms. There are no payment processors or other reliable third parties involved in the transaction at any point. In point of fact, it is a sort of digital currency that is available. Bitcoin was greeted with significant suspicion by society despite the potential that S. Nakamoto's plans held for the future.

Because this was not even close to the first time someone had tried to develop a system like this, there were a few different explanations as to why this occurred. S. Nakamoto was preceded by members of the cypherpunk movement, which was a loose group of technical activists engaged in comparable technological endeavors. There were quite a few researchers that attempted to design a method of anonymously exchanging digital currency, but not a single one of them was successful in their endeavors, regardless of how close they got to finding a solution. However, S. Nakamoto's system had two characteristics that were not present in any other cryptocurrency: a blockchain and monetary incentive schemes for owners of computers that participated in the network to keep it operational.

Figure 1, price of bitcoin in 2017-2018



Source: Statista, 2023

S. Nakamoto and the people who followed him were able to construct the system as it exists now through a process of trial and error. Despite the fact that there were a few times

of extreme danger. 2014 is generally regarded as the year that was the most detrimental to the growth of cryptocurrencies. In the first place, this is because the Mt. Gox exchange nearly went out of business, which led to the devaluation of this currency but author will explain it in further chapters. During this time, its value dropped by many orders of magnitude in the span of only a few days, and a number of newspapers began reporting that bitcoin was being used for criminal reasons, such as purchasing firearms and narcotics. Bitcoin, on the other hand, was able to rebound. At the start of 2016, it was valued at \$364, and by the time November rolled around, it had already increased to \$742. There have been over 650 new cryptocurrencies created all of which have the same technological foundation as Bitcoin, but none of them have yet surpassed the value of Bitcoin. But starting in 2017, the price dynamics of bitcoin began to expand at a phenomenal pace, and this year served as the first moment of a substantial growth in the cryptocurrency and its value. In other words, 2017 was the first year of a large increase in the value of bitcoin. If the price of a bitcoin was \$968 at the beginning of 2017, then by the end of the year it had increased to \$14,960 (Statista, 2023).

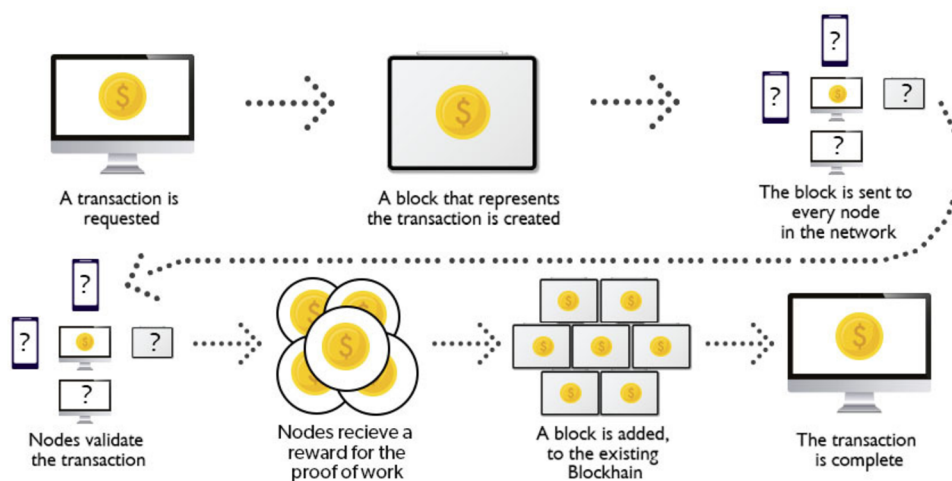
This price did not last for very long, but it marked the beginning of the first time the price of bitcoin "jumped" numerous times, demonstrating to the entire world how much it was capable of costing. Thus, the author would like to conclude that S. Nakamoto is not a pioneer in the field of cryptocurrencies. Modern crypto assets have come a long way with upgrades and improvements, which allowed them to reach their current position. However, it is clearly seen that over time this type of currency does not become more stable. But before explaining what a cryptocurrency is and how it was created, it is important to describe the element on which it is built, and it is the blockchain.

3.3 Blockchain and Mining

Today, the world is on the verge of another ground-breaking revolution which is bound to change the way how matters stand regarding the mean of exchange that people are using daily. In other words, the world might face a drastic change and a shift from the ordinary currency (physical money) to the cryptocurrency (Bolotaeva, 2019). As was noted previously, the blockchain serves as both the foundation of the cryptocurrency and a form of log for its transactions. A blockchain may be thought of as a lengthy chain of blocks, each of which records a transaction that takes place simultaneously. If the system continues to

operate normally, this chain will continue to extend eternally. By establishing a chain of transactions and assigning a specific time to each one, the system can monitor and control the status of each participant's account at any given moment. Additionally, it can determine the information that is associated with a bitcoin or a portion of it, including the dates on which it was generated, spent, or received. The blockchain cannot be stored on a single media; rather, it exists in a distributed form among the community of people who possess computers and serve as network nodes. Network nodes are devices that have electronic wallets installed on them. To be more specific, specialized software that displays passwords to users. They are used to manage the account. Since the nodes of the network collaborate with one another, the integrity of the master log may be preserved without compromising its confidentiality. Because of this, the blockchain technology is incredibly trustworthy. Because of this, the formation of trust connections and the authentication of identities can also be carried out with its assistance. This is since no one can modify the blockchain without the associated keys.

Figure 2, blockchain mechanism



Source: GeeksForGeeks, 2022

The blockchain is, without a doubt, a very significant component of the bitcoin ecosystem, but the issue remains: how can one get bitcoin if people already know how to buy it, receive it, and trade it? When thinking about bitcoin, the topic of mining is also something to keep in mind. Mining is the act of adding an information block, which is how new bitcoins are created and added to circulation. In the realm of digital currency, however, mining refers to the process of adding an information block. To give you a general idea, anyone who has access to the internet can start mining bitcoins. There are now also

opportunities for cloud mining, which you can participate in by entering into a contract and paying for the service over a predetermined time period. If, at the outset of bitcoin's inception, a participant could manufacture coins with one computer, however as the system developed, such power became severely deficient (Hayes, 2017).

It wasn't long before whole mining farms and, later on, mining pools appeared. The increase in the number of competitors in the market, as well as the shrinking supply of coins, were necessary conditions for their production. The miners were put in a position where they had no choice but to band together in order to break a block that none of them could get on their own. When calculating cryptographic tasks, the complexity of the computation directly correlates to the number of resources, namely energy, that are necessary to complete the work. Each computer or network node that is participating in the mining process gathers information on the transaction and incorporates it in a hash, which is an encrypted string of alphanumeric and numerical characters (Gatteschi, 2018). The technique of hashing makes it possible to condense a substantial amount of data into a much more manageable size, similar to how papers are stored. This results in a significantly lower volume of data.

The hash that is produced will always be of a set length, regardless of whatever hashing technique was employed. The SHA-256 hashing technique, which generates a hash that is 64 characters long, is used to create the cryptocurrency (Mohanty, 2022). The program running on the miner's computer takes the hash of the first transaction and combines it with all of the information that transaction includes. This information is then combined with the raw information of the following transaction, which has not yet been hashed, to produce a new hash. This operation is carried out once again each time fresh transactions are received for processing. Transactions are grouped together like this to form blocks that are added to the blockchain in this way. Mining cryptocurrencies has a variety of benefits, one of which is the restriction on the supply of coins.

The algorithm for mining bitcoins was developed by Satoshi Nakamoto with the intention of producing exactly the same number of coins in the same amount of time. The protocol initially allowed for the issuance of a constant number of blocks holding 50 bitcoins for the first four years (Harwick, 2016). However, in 2012, this amount decreased to 25, and it will continue to decrease by a factor of two every four years after that. By the year 2140,

mining should come to an end, and the total number of coins that are now in circulation should reach 21 million. Because of this mechanism of the system, bitcoin is given a scarcity; this not only enables it to maintain its value but also removes the potential of inflation from the equation.

The original impetus for the production of cryptocurrencies and the driving force behind their purpose was the desire to do away with the requirement of a middleman in financial transactions. This made it possible for unrelated parties to engage in financial transactions with one another. This is accomplished by moving the most important function of maintaining accounting registers away from centralized financial institutions and placing it instead in the hands of a network of autonomous computers that together form a distributed trust system that is not controlled by any one institution. Cryptocurrencies are based, fundamentally speaking, on the concept of a bladeless and worldwide ledger, which is available for use by the general public and is continuously monitored by high-performance computers that function independently from one another. Cryptocurrency makes it possible to lower the cost of doing business by removing the need for intermediaries along with the costs associated with using their services. This eliminates the potential for corruption that existed inside intermediary systems. The public ledger that cryptocurrencies like Bitcoin and Ethereum utilize makes it possible to see the inner workings of the system that governs our economics and politics. Because it is possible to eradicate the need for any information middlemen, this technology has the potential to be utilized in a variety of contexts other from the financial sector as a method of delivering transparency and control. This technology is, at its foundation, a sort of social structure that is able to shift control of monetary resources and knowledge away from a dominant elite and toward the general populace. They will therefore be able to reclaim the ability to freely dispose of their assets and abilities as a result of this (Hayes, 2017). As a result, one may reach the conclusion that the blockchain system is the core of cryptocurrencies and the foundation upon which their operations are founded. This technology has only been applied in the realm of banking up to this point; but, due to the fact that it possesses a universal character, it is capable of being utilized in virtually every aspect of human endeavor.

3.4 Crypto as a Currency

It is vital to understand how cryptocurrency may be mined and earned before attempting to describe how it can function as a currency. The author has previously discussed mining as one of the methods to accumulate cryptocurrency, but cryptocurrency may also be earned by selling items or services and can also be exchanged for another currency. The author has already highlighted mining as one of the ways to amass cryptocurrency. Because of how straightforward it appears to be on the surface, mining is quickly becoming one of the most popular strategies for acquiring digital currency. In contrast, it is not. On the other hand, this is currently the method that makes earning bitcoin the most difficult. This is due to the fact that businesses who possess pretty powerful capabilities invest a significant amount of money in mining. It is abundantly clear that for the average individual, the opportunity to carry out the most profitable mining of coins is only a possibility that exists in theory. There are three other ways to acquire bitcoin, in addition to the traditional practice of independent mining. The first step is to establish a connection to an existing mining pool. This indicates that the user joins a mining group, which combines the many options that are now accessible. A mining pool is a shared server that several users connect to in order to mine cryptocurrency collectively. After the cryptographic puzzle has been solved, a reward in the form of a share of the newly minted coins is divided up and given to each participant in proportion to the amount of work they put in. This is a kind of investing in the manufacturing of cryptocurrencies through the purchase of shares. The second approach adheres closely to common practice. This refers to the buying and selling of goods and services. When a person on the internet sells some goods or provides some services, they are rewarded with a bitcoin for their efforts. The third method is to exchange conventional currencies for cryptocurrencies or to purchase cryptocurrencies with traditional currencies such as the dollar, the euro, or another currency. When it comes to the direct storage of digital currency, there are two alternatives available: storing it on the exchange itself or storing it in an electronic wallet.

Some people retain their assets on exchanges, while others use electronic wallets instead. In the latter scenario, you can choose between a few different paths, each of which has its own set of qualities. If you decide to use a stationary wallet on your own computer, you will not only be able to conduct transactions on the network, but you will also be able

to generate a bitcoin address for the purpose of receiving and transferring virtual money. Furthermore, you will be able to save a secret key. The options for such wallets are incredibly varied, and each of them comes with its own specific group of features. Additionally, there are mobile wallets. They are a piece of software that may be installed on a smartphone. A mobile wallet, much like a stationary wallet, is used to store the private keys associated with bitcoin addresses and grants the ability to transfer Bitcoin straight from a mobile device. There are several mobile wallets that let you conduct transactions by only bringing your phone close to a scanner, eliminating the need for you to enter information each time. Mobile wallets are not full-featured clients for most payment systems, which is one of their features.

Speaking about exchanges, cryptocurrency trading is growing at a rapid rate each day, and as a result, the list of world exchanges is continually being expanded to include new trading platforms for major cryptocurrencies as well as a large number of altcoins. A cryptocurrency exchange is a website or online resource that enables users to purchase, sell, and trade cryptocurrencies over the internet. Today, there are more than 400 decentralized exchanges; nevertheless, if you compare prices for the same currency pair on multiple exchanges, it is possible to pick out the best among them. These exchanges enable users to make the most of the difference in rates and earn money as a result of doing so. The so-called bitcoin arbitrage strategy is a straightforward and speedy method for making money with digital currency. Arbitrage in cryptocurrency refers to making money by taking advantage of price differences in the same cryptocurrency across a variety of trading platforms. When deciding on a trading platform, our primary motivation is based on our commercial interests. For example, if we go into a certain exchange with a certain amount of money, we anticipate that we will increase our capital and gain experience, both of which will further enable us to use the exchanges as a source of consistent income.

Because of this, the first thing you need to do is carefully examine the lists of the best exchanges and choose the platforms on which it is most profitable to buy currency, the best to trade on, and the platforms on which optimal conditions are created in order to better and more reliably store digital savings. After studying the most recent list of exchanges organized by rating, the user is able to select sites that have previously demonstrated that they are reliable. After all, investing in cryptocurrencies in and of itself is a somewhat high-risk activity. Because of this, choosing the appropriate exchange becomes even more crucial,

since the trader's potential gains in the future will directly be reliant on making the appropriate choice. The table below provides a rating of the various exchanges that traders deemed to be the best in 2023.

Table 1, exchange rating in 2023

Place	Name	Trading Volume (24h)	Support for fiat currencies
1	Binance	\$17,876,665,835	EUR, GBP, BRL, and 8 more
2	Coinbase Exchange	\$1,731,104,356	USD, GBP, EUR
3	Kraken	\$575,284,619	USD, EUR, GBP, and 4 more
4	KuCoin	\$702,378,722	USD, AED, ARS, and 45 more
5	Bitstamp	\$134,823,612	USD, EUR, GBP
6	Bitfinex	\$96,857,313	USD, EUR, GBP, JPY
7	OKX	\$1,334,735,607	AED, EUR, GBP, USD, and 39 more

Source: Coindesk, 2023

As a result, acquiring and storing cryptocurrency may be done in a variety of ways. Each one of them possesses a unique combination of benefits and drawbacks. The decision is entirely predicated on the choices of the users. Nevertheless, it is important to constantly pay heed to the advice of professionals because there have been instances in the past in which inverters lost significant sums of money because they entrusted their money to exchanges. Consequently, acquiring and storing cryptocurrency may be done in a variety of ways. Each one of them possesses a unique combination of benefits and drawbacks. The decision is entirely predicated on the choices of the users. Nevertheless, it is important to constantly pay heed to the advice of professionals because there have been instances in the past in which inverters lost significant sums of money because they entrusted their money to exchanges.

In addition to this, it is essential to bring attention to the most successful cryptocurrencies that have survived the test of time and are carrying on with their job to this very day.

- ***Bitcoin (BTC)***

Bitcoin now dominates the cryptocurrency market and is expected to continue its meteoric climb as more and more people begin to associate it with the immediate meaning of cryptocurrency. An intriguing circumstance, to be sure, but when set against the backdrop of today's expectations, bitcoin is a long way from being at the head of the pack among its rivals. In comparison to its contemporaries, it lacks the functionality and user-friendliness of the best alternatives. Bitcoin is a banknote that has enriched many people at the same time, and as a result, the unstoppable expansion of its market value continues.

- ***Ethereum (ETH)***

This cryptocurrency is currently fascinating not only as an object for investment, but also as a basis or platform for many potential areas of the digital economy. Previously, it was just intriguing as an investment object. On the Ethereum blockchain, a vast variety of decentralized applications (Dapps) are now in development. Vitaly Buterin, who had previously worked at Ripple Labs with digital assets, was the one who came up with the idea for this (Dannen, 2017).

- ***Cardano (ADA)***

This is a completely decentralized platform that operates on the open-source model. Cardano is distinguished from other cryptocurrencies in that it does not impose any limits on its users and does not necessitate the completion of any KYC procedures. It was established in 2017 and quickly rose to prominence as one of the earliest ecosystems to function using the Proof-of-Stake (PoS) network protocol (Johnson, 2021).

3.5 Economic Perspective

When it comes to the topic of cryptocurrencies, this inquiry is likely one of the most challenging there is. After the recent events that have transpired in Russia and Ukraine, as well as possibly elsewhere in the world, the situation is somewhat different than it was a couple of years ago, when cryptocurrencies were developing consistently and were moving in the direction of becoming one of the types of currency for the whole world. It is essential

to bring attention to the fact that an increase in interest rates in the economy of the United States would retard the dynamics of the stock market and cause rising equities to suffer losses. This is positive news in the near term for cryptocurrency investors. However, there is a potential for danger in the short term because of the assault on cryptocurrencies that is being carried out by the government of Joe Biden. Western tech and financial platforms are becoming increasingly restrictive of crypto firms. However, it is difficult to forecast when the cryptocurrency industry will enter a new era of expansion. There is still a possibility of stagflation, and a downturn in the economy of the entire world is getting closer and closer to being unavoidable. This produces a bad environment for all markets throughout the world, including cryptocurrency markets.

Despite this, and despite the characteristics of the cryptocurrency market, a trend toward decentralized stablecoins may emerge in the future. Even at this late stage, the total capitalization of dollar tokens is comparable to the capitalization of bitcoin and is equal to ether. Furthermore, the daily turnover of dollar tokens exceeds the total turnover of cryptocurrencies. Despite this, the volume of the cryptocurrency market reaches tens of trillions of dollars, which simply cannot be ignored (Taskinsoy, 2020).

Naturally, the greater the amount of pressure that is applied by global authorities to the market, the greater the amount of liquidity that will flow into smart contracts that enable the issuance of a stablecoin that is backed by cryptocurrencies and real assets (Simons, 2022). The movement toward increasingly stringent regulation may be seen all around the world. At the hearings on FTX being held in the United States Congress, there is a proposal being made to compare cryptocurrency exchanges with casinos, with all of the repercussions that this would have for the business. This argument is particularly compelling because many nations are presently grappling with the challenge of deciding whether to legalize cryptocurrencies and the usage of such currencies (Trautman, 2022).

Indeed, global authorities have embarked on a path toward the development of an efficient regulatory framework that is proportionate to the dangers posed by cryptocurrencies (Sotiropoulou, 2019). All regulatory bodies share the goal of bringing about a more orderly categorization of cryptocurrencies and reducing the rate at which new crypto assets are created. This objective is modelled after how the classification of securities is determined.

This will assist in gaining control of the cryptocurrency, but at the same time it has the potential to destroy it because it will start to conform to the rules and regulations and will gradually lose its value.

3.5.1 Fiat Market and NFT

Along with the terms fiduciary (which means trust), symbolic, and unsecured money, the phrase "fiat money" is also used. Delimitations of words are sometimes possible. For instance, Milton Friedman, recipient of the Nobel Prize in economics, argued that fiduciary paper money may be traded for precious metals like gold and silver, but fiat money is money that is produced by decree of a sovereign government and does not need to be exchanged for anything. It is a common misconception that the words are interchangeable and should be treated as such. The value of a fiat money is not based on the banknote itself, but rather on the functions that may be performed with the cash. For all intents and purposes, a model of monetary interactions between the state and the people, fiat monies have no link with any asset; rather, they are produced from "nothing" and are controlled by the Central Bank of the country in which they are issued.

Fiat money refers to both the digital currency stored on people's credit and debit cards as well as the physical bills and coins that people actually possess in their hands. The country's Central Bank decides what their worth should be at any given time. The government does things like issue bonds and participates in international commerce in order to bolster the value of the currency in outside markets. The value of fiat currencies may be preserved by the state so long as it continues to exercise its power and engage in productive economic activity. These include rubles, yuan, dollars from the United States, euros, and yen, among other currencies.

Regarding the NFT, this phenomenon is still in its infancy, but it is intimately connected to the world of cryptocurrencies. A non-fungible token, often known as a non-fungible or unique token, is what NFT is. NFTs are decentralized, blockchain-based financial instruments that made their debut in the Ethereum network. There is not one, unified, and unmistakable definition for one-of-a-kind tokens that are non-fungible, and there probably never will be.

When a person purchases a home or apartment in another country, a notation about this transaction is added to the public record of that nation. This record serves to both register the owner's rights to the item and to prove those rights to the owner. It includes the owner's personal information as well as the apartment's specifications and characteristics. Therefore, the record that verifies one's rights to the actual property is connected to the property itself.

The blockchain protocol itself may be thought of as a distributed ledger. For instance, bitcoin and ether are examples of records that are stored in the blockchain. NFT too. These tokens, just like any other cryptocurrency, may be kept in your cryptocurrency wallet, where you can also use them to purchase and sell items and conduct other financial activities.

One is able to sell practically any type of virtual asset with the assistance of NFT, including photographs, audio, writings, and 3D models. The majority of the time, however, we are referring to works of digital art (or digitized art). A JPG file containing five thousand paintings of the artist Beeple glued together was sold under the hammer at the beginning of 2021 for approximately \$70 million in ether (Ethereum). This example can help fully understand the level and significance of this event. It would be difficult to classify the NFT as a serious path due to the fact that it attracts a large number of individuals who are in favor of this subfield of technology and the trade of artwork, while at the same time attracting a sizeable number of individuals who are of the opinion that this is nothing more than the purchase of artwork for exorbitant sums of money. There are certain artists that do not take NFT seriously. For instance, at the beginning of March 2021, the blockchain startup Injective Protocol purchased a stencil by Banksy titled "Fools" for around one hundred thousand dollars and then burnt this piece during a live broadcast. After that, an NFT was created from it, and it was placed up for sale. The viewpoint of those individuals who do not feel that this course of action possesses attributes necessary for existence was conveyed in this way.

The painting makes fun of wealthy art collectors who spend a lot of money on their collections. The stencil shows a scene from an auction, in which the bidders are competing for a painting that reads, "I can't believe that you fools are actually purchasing this ****" (Valeonti, 2021).

Figure 3, Banksy's painting caricature



Source: BBC News, 2021

It is essential to have a solid understanding of the fact that NFT cannot be broken up into its component pieces or substituted with a token that is functionally equivalent. From this vantage point, the NFT possesses all of the characteristics of a one-of-a-kind thing that exists in the real world.

3.5.2 Legal issues

The People's Bank of China (an equivalent of the Central Bank) proclaimed all actions linked to cryptocurrencies unlawful and threatened to take harsh steps to ban trade in them. The People's Bank of China has stated that cryptocurrencies should not circulate in the markets on an equal level as traditional currencies, and that it is now illegal for foreign exchanges to provide services to mainland investors. In addition, the People's Bank of China has prohibited foreign exchanges from providing services to mainland investors. The nation's central bank has issued a warning that it intends to prohibit financial institutions, payment processors, and internet companies from enabling trading in cryptocurrencies, and it also intends to tighten up its surveillance of the dangers involved with this activity. The

government would "seriously prohibit virtual currency speculation and associated financial activities and wrongdoing in order to preserve people's property and maintain economic, financial and social order" (Xie, 2019).

It is also important to point out that just recently, as part of a campaign to destroy the cryptocurrency market, the Chinese government opened a hunt for illegal miners who pretend to be data processing and storage specialists. This hunt was part of a larger campaign to destroy the cryptocurrency market. Prior to this, the PRC had placed limitations on the use of cryptocurrencies and the mining of cryptocurrencies in certain regions, but these limitations did not extend to the entire country. Despite this, in May, Vice Premier of the State Council of the PRC Liu He announced the need to tighten requirements for the production and trade of cryptocurrencies. The mining of cryptocurrencies was made illegal at the end of June by the authorities in the province of Sichuan in China, which is a key hub for the extraction of bitcoin. In addition, mining was outlawed in the first part of June in three other regions of China: Yunnan, Qinghai, and Xinjiang. Most of the major miners have already departed the country, including BTC, TOP and HashCow (Djankov, 2016).

Since 2013, it has been against the law in China to settle financial transactions using cryptocurrencies that are not backed by a state. As for the rest of the globe, Japan and Belarus became the first countries in the world to recognize bitcoins as entirely legal money in 2017 (Bondarenko, 2019). In these two nations, the use of this cryptocurrency as a payment method for products and services is completely within the law. Since 2013, banking institutions in China have been unable to engage in cryptocurrency transactions due to a government-enforced prohibition. In 2017, the government of China shut down all the cryptocurrency exchanges that were functioning within the nation. Mining was legally outlawed in 2018, and trading cryptocurrency was made illegal altogether in 2021. In 2018, mining was the first activity to be outlawed. The government of Turkey and the government of India both took actions in 2021 to restrict the circulation of cryptocurrencies. Now, the laws of various nations have various approaches to dealing with bitcoins and other cryptocurrencies that are like bitcoin. Transactions involving cryptocurrencies are often not allowed to be handled by licensed financial institutions because of regulatory restrictions. In addition, bitcoins and other cryptocurrencies like them are not recognized as a legitimate form of currency, but rather as a "virtual asset" that is liable to be taxed.

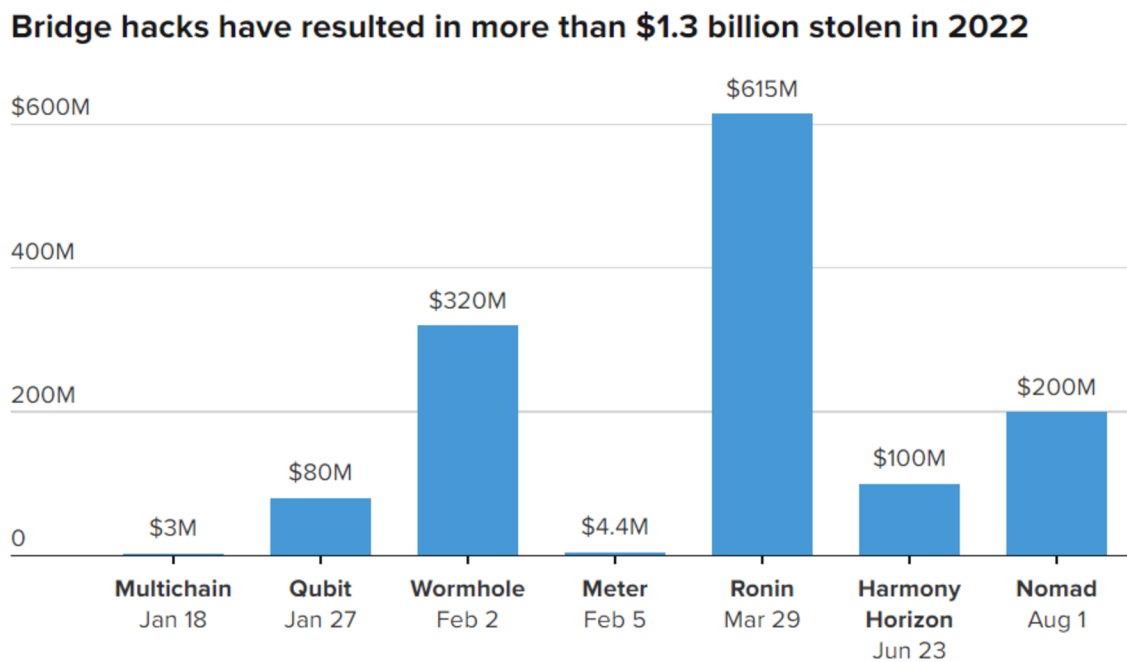
The absence of regulation and the appearance of a "pyramid" aren't the only things people have a problem with when it comes to cryptocurrencies. To mine the present supply of bitcoins in the world requires an annual expenditure of around 200 billion kWh of power, which is roughly equivalent to the amount of electricity utilized annually by the countries of Turkey and Thailand combined. Also, the rise of mining generated a speculative boom in computer components - especially video cards, the chips of which are best ideal for "mining" cryptocurrency (de Vries, 2021).

Several states have passed legislation that makes it illegal for people as well as businesses and governments to utilize cryptocurrency. Egypt, Nepal, Bolivia, Algeria, and Bangladesh are among such countries. Both Qatar and Bahrain have a policy that makes it illegal to invest in cryptocurrencies within their borders, however this policy does not extend to its people living overseas (Riley, 2021). Since 2017, Vietnam has enforced a ban on the use of bitcoin as a currency, and anyone caught doing so face a hefty punishment of up to \$9 thousand. However, the country does not control the acquisition of cryptocurrency as a virtual asset (Hendrickson, 2016).

In addition to this, it is important to underline the reasons why most states are not yet ready to legalize cryptocurrencies. In addition to this, one of the causes is the significant amount of money that is at stake whenever a hack or event is tied to cryptocurrencies. There is still a difficulty with providing blockchain bridges with the appropriate level of security and control, which is one of the most typical sources of difficulties. A system that assures the interoperability and interaction of two different blockchains is referred to as a "blockchain bridge." Without having to buy or sell bitcoin, it is possible to transfer assets from one blockchain ecosystem to another with the assistance of a blockchain bridge. This makes the process much more straightforward.

Blockchain bridges provide several benefits, but they are not without their share of drawbacks. In 2022, there were several instances of bridge security being breached owing to a lack of appropriate protocol security, as evidenced by the examples in the graphic that can be seen below.

Figure 4, result of hacking of inter-network bridges in 2022.



Source: Chainalysis, 2022

The Mt.Gox hack is considered to be one of the most significant. Mt. Gox is a cryptocurrency exchange with its headquarters in Tokyo. The company launched active in 2010 but filed for bankruptcy in 2014. Hackers continued to target the exchange successfully during its life, all the way up until the point where they were able to wipe it out entirely.

During its heyday, Mt.Gox was widely regarded as the largest bitcoin exchange in the world, making it an appealing target for cybercriminals. In 2011, cybercriminals moved bitcoins using stolen client credentials they had obtained. In the same year, many thousand bitcoins were "lost" as a result of weaknesses in the protocols that run the network. Clients have voiced their discontent with the job that the exchange has been doing, specifically pointing out issues with the withdrawal of monies.

The business was unable to get an accurate comprehension of the transactions since the code had a few technical flaws and ambiguities. On the other hand, the organization did

discover some questionable activity in its digital wallets around the beginning of February 2014. After then, the exchange, which had just sustained significant losses, decided to halt the withdrawal of funds. The quantity of bitcoins that were reportedly stolen ranged from 650 000 to 850 000 coins, which is equivalent to around 620 million US Dollars. The majority of the missing BTC coins belonged to individual users, while the remainder belonged to the corporation (A., 2017).

In this regard, it would be legitimate to claim that cryptocurrencies are a challenging sector of the economy and still require the appropriate amount of attention and effort to be done on their behalf. But this development is undeniably the result of advancements in technology; therefore, it would be irresponsible to totally refute it. On the other hand, it is still too soon to put all your faith in him.

4 Practical Part

4.1 El Salvador Economy

In order to understand the potential of cryptocurrencies for replacing fiat money and ordinary currencies, the author selects the world's most widely known and used cryptocurrency – Bitcoin and in addition to that, the author conducts a case study of El Salvador, where the author will analyse if the decision of adopting bitcoin brought any real positive effect to the economy of this small Central American country. Therefore, it is wise to mention that first official reading about adopting bitcoin as a national currency started in summer of 2021 and eventually, the currency was adopted in September 2021. Therefore, the author analyses the development of the country's macroeconomic indicators on the selected time period (for some variables, it starts as early as in 2020, but for the majority of them, it is 2021-2022). In addition to analyzing the dynamic of development of indicators, the author also calculates correlation for each pair of variables.

First, the author starts with the variable of economic growth – nominal GDP growth. For this variable, the author uses quarterly time series data. In Table 2, the author presents the dataset used for the analysis.

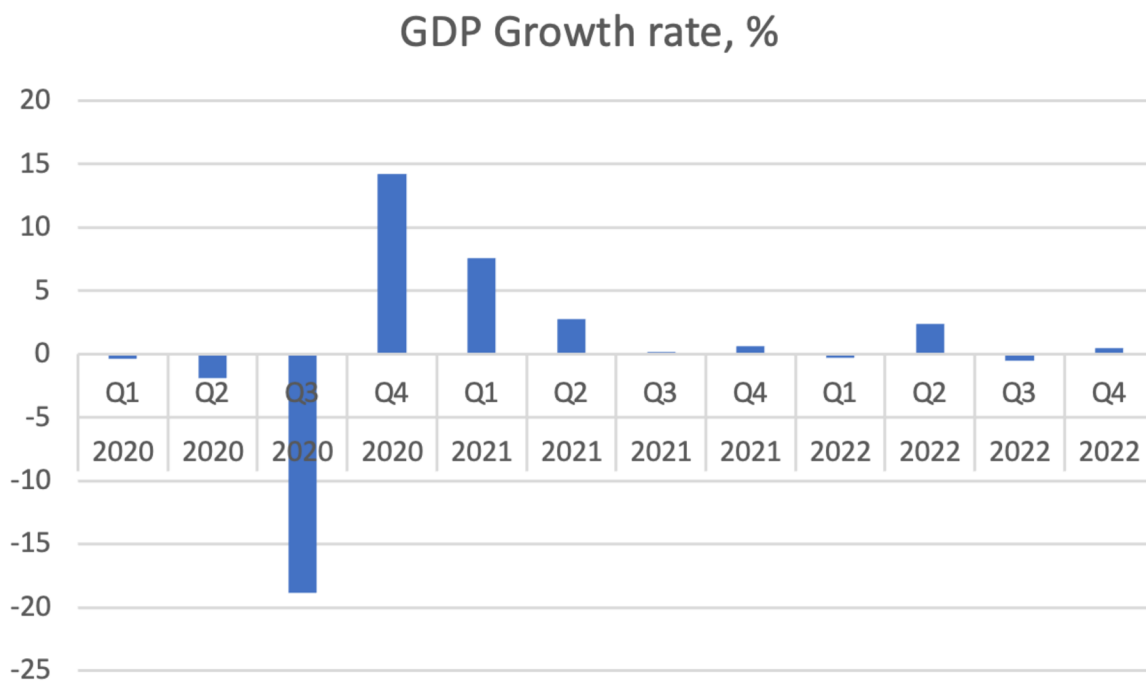
Table 2, database for economic growth

Year	Quarter	GDP Growth rate, %	Bitcoin price, thousand USD
2020	Q1	-0.34	7.22
2020	Q2	-1.89	6.63
2020	Q3	-18.83	9.232
2020	Q4	14.26	10.619
2021	Q1	7.6	29.329
2021	Q2	2.78	58.714
2021	Q3	0.21	41.766
2021	Q4	0.63	21.1
2022	Q1	-0.3	47.738
2022	Q2	2.4	46.281
2022	Q3	-0.5	19.266
2022	Q4	0.5	19.311

Source: El Salvador Statistical Office, 2023 and Yahoo Finance, 2023

Clearly, it is visible that the country's economy was constantly developing and going through ups and downs. To the largest extent, those ups and downs were caused by the ongoing pandemic of coronavirus. In Figure 5, the author presents the development of GDP growth rate over time.

Figure 5, GDP growth rate over time



Source: own processing

Clearly, the worst economic performance is identified in the third quarter of 2020 and this is largely caused by the pandemic of coronavirus. However, it is also worth mentioning that the economic growth of the country was not high enough after the adoption of bitcoin despite the expectation of the country's central government. Now, the author proceeds to the calculation of correlation coefficient between the bitcoin price and GDP growth rate. The author presents the result of the calculation in Table 3 below.

Table 3, correlation analysis

Correlation
0.19676619
t value
0.6346362

Source: own processing

Based on the correlation coefficient, it can be said that the correlation between two phenomena is low, but positive. When it comes to the t value associated with the correlation coefficient, it can be said that the correlation is not statistically significant so in fact, the

country's economy did not fully become dependent on the crypto asset. Then, the author proceeds to the second variable – FDI or foreign direct investment. In Table 4, the author presents the dataset used for the analysis.

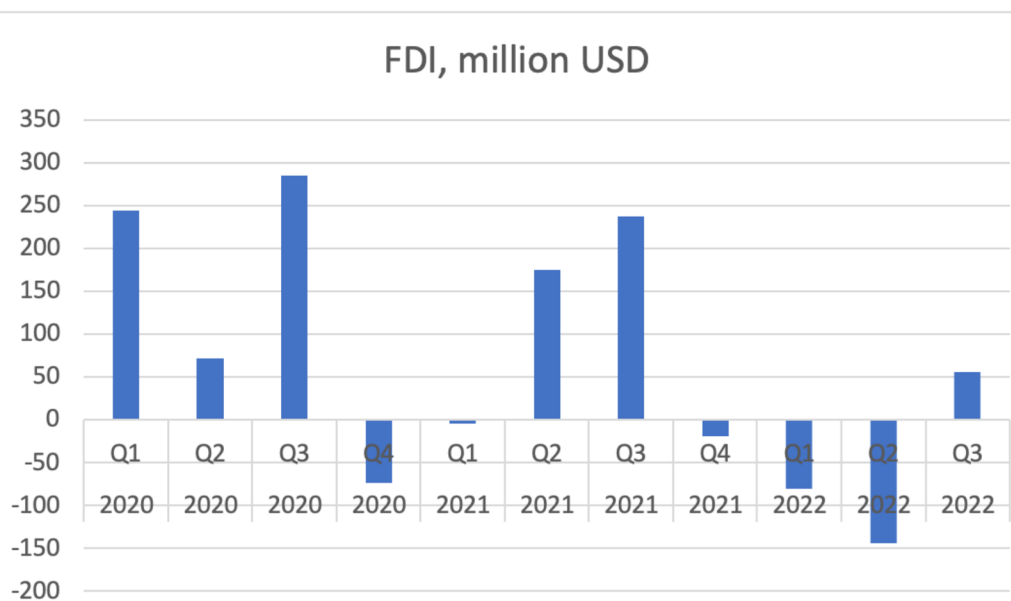
Table 4, dataset for the FDI

Year	Quarter	FDI, million USD	Bitcoin price, thousand USD
2020	Q1	244.37	7.22
2020	Q2	72.23	6.63
2020	Q3	285.16	9.232
2020	Q4	-73.89	10.619
2021	Q1	-3.87	29.329
2021	Q2	175.55	58.714
2021	Q3	237.96	41.766
2021	Q4	-19.23	21.1
2022	Q1	-80.88	47.738
2022	Q2	-144.48	46.281
2022	Q3	55.55	19.266

Source: El Salvador Statistical Office, 2023 and Yahoo Finance, 2023

The development of the country's FDI is also variable, whereas the country's net inflow is sometimes positive and sometimes negative, which means that the country was during some quarters investing more than receiving investments from foreigners. In Figure 6, the author presents the development of the FDI in time.

Figure 6, FDI net inflow over time



Source: own processing

Clearly, as it becomes obvious, the country's level of FDI was much higher before the adoption of bitcoin as a national currency, whereas the country's level of FDI was negative after the third quarter of 2021 meaning that the country was more investing elsewhere than receiving investments from outside of the country. Consequently, the author proceeds to the correlation analysis in Table 5.

Table 5, correlation analysis for FDI

Correlation before adoption	t value
-0.445311552	-1.4920381
Correlation after adoption	t value
0.1352406	0.36113078

Source: own processing

The author splits the time interval into two parts – before the talks about the adoption of Bitcoin started and after. Consequently, it can be said that the nature of the correlation has changed – from the negative one to a positive, which suggests that the country's level of FDI became somewhat dependent on the price of Bitcoin, which was rather anticipated. Then, the author proceeds to the variable of inflation, where the author will analyze the development of the CPI index over time. In Table 6, the author presents the dataset used for the analysis.

Table 6, inflation dataset

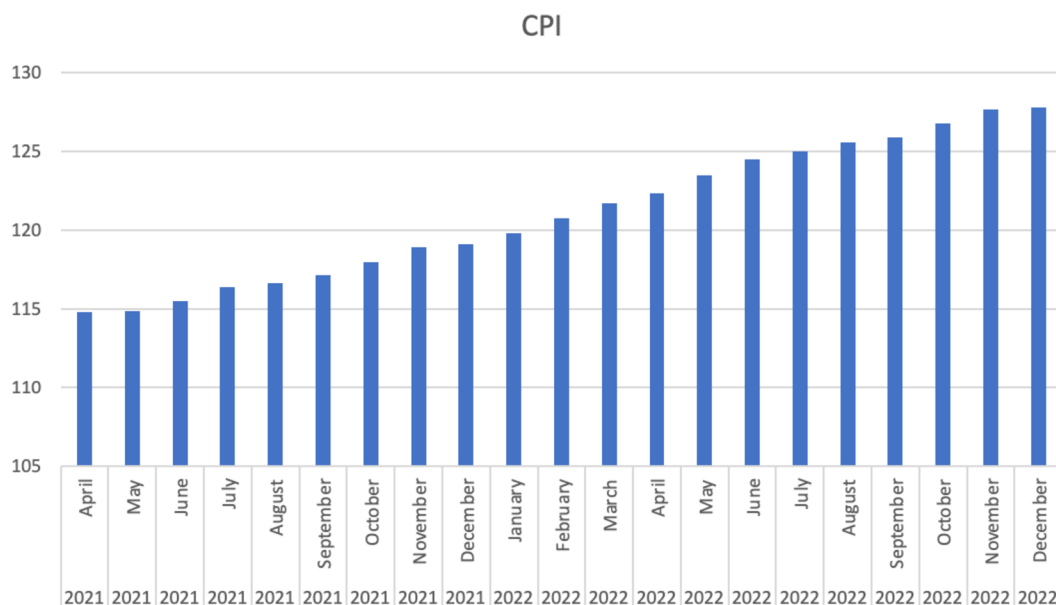
Year	Month	CPI	Bitcoin price, thousand USD
2021	April	114.81	46.281
2021	May	114.84	57.927
2021	June	115.51	36.685
2021	July	116.36	33.627
2021	August	116.63	40.057
2021	September	117.1	48.757
2021	October	117.95	48.122
2021	November	118.92	61.146
2021	December	119.06	57.217
2022	January	119.79	47.669
2022	February	120.73	38.816
2022	March	121.71	44.41
2022	April	122.32	46.281
2022	May	123.43	31.792
2022	June	124.47	19.784

2022	July	124.99	23.336
2022	August	125.56	20.049
2022	September	125.87	19.431
2022	October	126.76	20.495
2022	November	127.63	17.168
2022	December	127.77	16.547

Source: El Salvador Statistical Office, 2023 and Yahoo Finance, 2023

Clearly, it can be easily said that the country experienced an overall increase in the price level over the course of the selected period – 2021-2022. Below, the author presents the development of the indicator over time in Figure 7.

Figure 7, CPI index over time



Source: own processing

For sure, the dynamic is pretty unambiguous with the gradual increase in the price level of the country over time, which basically means that it is quite likely that the domestic population slowly starts to experience more and more problems with the purchasing power of their money. In Table 7, the author presents the correlation analysis for the inflation variable.

Table 7, correlation analysis for CPI

Correlation
-0.7840509
t value
-5.5060706

Source: own processing

The correlation, according to the t value associated with the coefficient is statistically significant and what is more, this correlation is negative, which means that whenever the price of bitcoin increases, the CPI index for El Salvador falls and vice versa. Of course, it can be said that the decrease in the value of Bitcoin price might have been one of the main factors that lead to the increase in the overall price level of the country. Finally, the author proceeds to the variable of remittances. According to the president’s justification for adopting bitcoin as a national currency, the fact that remittances accounted for almost 20% of the country’s GDP was the main motivation behind such a radical move. Nevertheless, the author will not understand if the adoption of bitcoin had any serious effect on the level of remittances. In Table 8, the author presents the dataset used for the analysis.

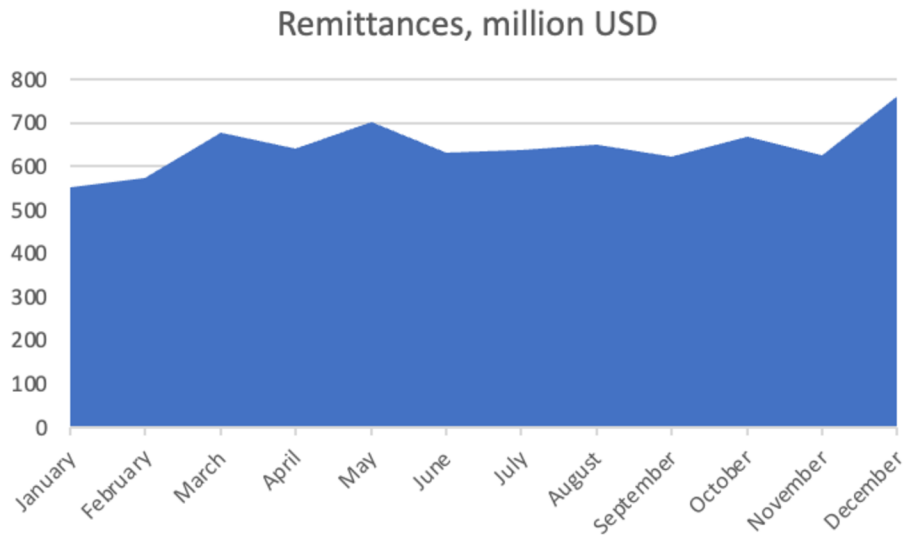
Table 8, remittances dataset

Year	Month	Remittances, million USD	Bitcoin price, thousand USD
2022	January	552.7	47.669
2022	February	572.6	38.816
2022	March	676.9	44.41
2022	April	641.8	46.281
2022	May	701.8	31.792
2022	June	632.8	19.784
2022	July	637	23.336
2022	August	650	20.049
2022	September	623.7	19.431
2022	October	667.3	20.495
2022	November	625	17.168
2022	December	760.3	16.547

Source: El Salvador Statistical Office, 2023 and Yahoo Finance, 2023

Consequently, it is visible that the level of remittances slowly increased over the course of 2022. In Figure 8, the author presents the development of the variable over time.

Figure 8, remittances over time



Source: own processing

The same dynamic is noticed on the chart – the level of remittances slowly increased over time. Then, the author proceeds to the correlation analysis available in Table 9.

Table 9, correlation analysis for the variable of remittances

Correlation
-0.3957242
t value
-1.3626213

Source: own processing

Eventually, it can be said that the correlation between two variables (Bitcoin price and the level of remittances) is not statistically significant, but it is negative, which is far from being close to the assumption of the country's president.

4.2 Interviews

In fact, the author fully understands limitations of incorporating a series of interpersonal interviews with just 3 participants – this kind of research cannot be categorized as representative. However, the author believes that this kind of technique can help to understand thoughts and believes of general population of El Salvador and consequently, it can help to illustrate the situation from the perspective of ordinary people.

The author managed to engage three people from El Salvador to participate in the author's interviews and the author was able to get in touch with them with the help of Facebook. All three interviews were conducted online through Google Meet platform that allowed to get in touch with participants and ask them the list of questions that had been prepared in advance. In the appendix, the author presents the full list of questions that have been used for those interviews. Also, in the appendix of the bachelor thesis, the author presents detailed breakdown of answers of each participant.

In Table 2, the author presents a quick overview of answers relatively to each question posed to a given participant.

Table 10, overview of interviews

Question/Name	Ana	Ricardo	Antonio
<i>Age</i>	43 years old	21 years old	32 years old
<i>Place of origin</i>	San Salvador	San Miguel	San Salvador, but lives in the US
<i>Utilization of bitcoin</i>	Uses it from time to time	Uses it for daily transactions	Uses it for money transfers
<i>Attitude towards the bitcoin legal tender</i>	An interesting decision and it shows that the government tries to change something	Negative	Positive, it facilitates his life and the life of his family
<i>Has the economic situation improved?</i>	It got worse as it had been getting for the last 20 years	No and it got even worse	Not sure, but thinks that the expected result was not achieved
<i>The future of bitcoin in El Salvador</i>	It will be taken down	It will be taken down by the new government as the old one will be taken down as well	The country will be forced to take it down under the pressure of external factors

		because of this unpopular decision	
<i>Disadvantages of legal tender</i>	External factors, no discussion with people and not good institutional basis	Dependency on external factors, populism and no discussion with people	Dependency on external factors and not being able to have a proper control over its own currency
<i>Advantages of legal tender</i>	Progressive step, shows that the government tries to change something and had a promising future	No advantages	Facilitates money transfers

Source: own research

The author will provide more comments in the next chapter related to results and discussion.

5 Results and Discussion

5.1 Potential of Cryptocurrencies

To begin with, it is worth to say that the author managed to assess the real effect of the adoption of Bitcoin as a national currency for El Salvador, which was the main focus of the author's case study. Nevertheless, the author believes that the way how situation evolved for the country is far from the central government's assumption. Undoubtedly, when judging the decision of adopting bitcoin as a national currency, it is wise to say that one of the main motivations behind such a radical decision was the belief that adoption of bitcoin will lead to an incredible increase in the level of FDI and consequently, it will have a positive effect on the country's GDP.

Effectively, there is not enough evidence to say that the price of bitcoin and the bunch of used macroeconomic indicators are statistically related but regardless of that, the desired effect was not obtained as the economic growth has stalled in 2022 and the country's level of FDI has fallen significantly right after the adoption of bitcoin. Nevertheless, it still can be said that the adoption of Bitcoin has a short-term positive effect on both indicators as they experienced a slight increase right after the currency's legal tender. Contrary to those indicators and also to the situation with the variable of remittances, which is somewhat identical to FDI and GDP growth, the adoption of bitcoin has had a negative effect on the country's price level, which increased significantly. After assessing the correlation between the CPI and the price of bitcoin, it can be said that these two variables are statistically related to each other, and this correlation is negative.

Henceforth, it is wise to say that all misfortunes that happened with bitcoin had taken their toll on the country's inflation accelerated significantly. Therefore, the author draws a conclusion that the experiment with bitcoin in El Salvador was a flop and as of 2022-2023, bitcoin and other cryptocurrencies cannot substitute fiat money. The same is highlighted by Kshetri (2022), who also underpins that despite no real negative nor positive effect on the most important macroeconomic variables, the situation with bitcoin and its negative dynamic will eventually hit the country's reserves that shrink by significant values on a daily basis due to diminishing value of bitcoin.

In addition to all that, the author's findings are underpinned by the way how people of El Salvador feel (based on the series of interpersonal interviews), who really feel that the adoption of bitcoin was a mistake as the country's situation in the eyes of general population became significantly worse. A quite similar conclusion was also achieved by Taylor (2022).

5.2 Recommendations

Finally, based on his analysis and the analysis of relevant literature about bitcoin and its effects on economies and related legal issues, the author recommends to revert the decision of adopting bitcoin as a national currency in El Salvador since it can simply lead to the situation when the country would have to officially announce a technical default due to their inability to cope with financial obligations under constantly diminishing value of bitcoin, which represents a fair proportion of the country's reserves.

The author also recommends to conduct a similar kind of analysis in the future, right after the country will eventually abandon its official usage of bitcoin as a national currency.

6 Conclusion

Although while Bitcoin has grown in popularity and is now widely recognized as a kind of digital asset, there are a number of reasons to feel that it is not a viable alternative to traditional forms of money. To begin, one of the primary concerns about the usage of bitcoin as a currency is its high degree of volatility. Because of the enormous swings in its value that may occur in a very short period of time, it is difficult to utilize as a means of exchange. In addition, it is not suited for broad usage as a currency because of its restricted scalability, which means that it cannot accommodate a growing number of users.

In addition, Bitcoin is unsupported and regulated by any central authority, both of which are essential components of a reliable monetary system. Concerns have been raised over the potential for Bitcoin to be used for illegal activities like as the laundering of money and the funding of terrorist organizations. This is because Bitcoin is a decentralized digital currency, which makes it difficult to manage and regulate.

Additionally, the acceptance of Bitcoin as a currency by states would involve a massive reworking of current financial institutions, which may not be viable or practical. This is because Bitcoin is decentralized and operates independently of any central authority. As a type of money, bitcoin is still very new and has not been tested extensively, thus its viability over the long term is still up in the air.

Because of this, it is strongly recommended that national systems are not made reliant on an asset as volatile as Bitcoin. Instead, governments should concentrate on strengthening their existing financial systems and exploring the potential benefits of digital currencies backed by central banks, which can provide the stability and security necessary for widespread adoption. This would be a better use of time and resources.

Based on the case study of El Salvador, the author concludes that the decision of adoption Bitcoin was a bad decision and the country should revert it as soon as possible unless it will have to call a technical default due to diminishing amount of reserves available to the country.

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8 Appendix

8.1 First Interview

- 1) What is your name?
 - My name is Ana.
- 2) What is your age?
 - I am 43 years old.
- 3) Where are you from?
 - I am from San Salvador.
- 4) Do you personally use Bitcoin or any other cryptocurrencies?
 - Currently, I tend to use it from time to time, but before the adoption of the currency, I had not been using it.
- 5) What is your attitude towards recognition of Bitcoin as a national currency in your country?
 - I think that it is an interesting decision, so I would say that I have a rather positive attitude towards it just to the decision itself, it shows that our government tries to change the situation.
- 6) Has the economic situation improved so far?
 - I think that it got worse, and it had been becoming worse and worse for the last 20 years.
- 7) What do you think is the future of Bitcoin in El Salvador?
 - I think that we will probably get rid of it as its value has dropped significantly and we have to get rid of it. Unfortunately, our country's economic is cursed because of the geographical position and its size.
- 8) Can you define disadvantages of cryptocurrencies in El Salvador in 3 different aspects?
 - We adopted it in a very bad moment, the implementation was not discussed with people and our country's system was not ready for it.
- 9) Can you define advantages of cryptocurrencies in El Salvador in 3 different aspects?
 - It is a progressive step; it shows that the government tries to change something and it had a promising future.

8.2 Second Interview

- 1) What is your name?
 - My name is Ricardo.
- 2) What is your age?
 - I am 21 years old.
- 3) Where are you from?
 - I come from San Miguel.
- 4) Do you personally use Bitcoin or any other cryptocurrencies?
 - I use it for daily transactions, but I do not use it for investing purposes.
- 5) What is your attitude towards recognition of Bitcoin as a national currency in your country?
 - Bad.
- 6) Has the economic situation improved so far?
 - No and we were really unfortunate because bitcoin made it all even worse.
- 7) What do you think is the future of Bitcoin in El Salvador?
 - I think that we will probably get rid of the current government and just avert their decision of adopting bitcoin as a national currency.
- 8) Can you define disadvantages of cryptocurrencies in El Salvador in 3 different aspects?
 - Dependency on external factors, no discussion with population and pure populism.
- 9) Can you define advantages of cryptocurrencies in El Salvador in 3 different aspects?
 - No advantages as of now.

8.3 Third Interview

- 1) What is your name?
 - My name is Antonio.
- 2) What is your age?
 - I am 32.
- 3) Where are you from?
 - Originally, I am from San Salvador, but I currently work in the US.
- 4) Do you personally use Bitcoin or any other cryptocurrencies?
 - Yes, for money transfers.

- 5) What is your attitude towards recognition of Bitcoin as a national currency in your country?
 - Positive, it facilitated my life and the life of my family.
- 6) Has the economic situation improved so far?
 - This is dubious, I would rather say that the expected result was not achieved.
- 7) What do you think is the future of Bitcoin in El Salvador?
 - I think that we will be forced to take it down.
- 8) Can you define disadvantages of cryptocurrencies in El Salvador in 3 different aspects?
 - I would just say that we are not in charge of the situation with its price, so we have to bear consequences of something that was not caused by us.
- 9) Can you define advantages of cryptocurrencies in El Salvador in 3 different aspects?
 - The only advantage for me is that it facilitates money transfers to my family.