

Cryptocurrency – the new global financial crisis?

Bitcoin compared to the USD

Kim Brander

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<p>The aim of the thesis is to get a better understanding of what Bitcoin is and how it differs from other currencies, especially the USD. The most discussed topics will be security, valuation and the future of both Bitcoin and the USD.</p> <p>Research questions asked are the following: depositor risks between the USD and Bitcoin, security risks of Bitcoin and the USD moneywise, personal secrecy in Bitcoin compared to the USD, is Bitcoin a currency, is Bitcoin or the USD a bubble that is going to burst, changes in value of Bitcoin compared to the USD and what is the future of cryptocurrencies.</p> <p>The topic is limited to Bitcoin and the USD. To analyze currencies in general would be too wide a topic and the same applies to cryptocurrencies. The USD was chosen because of its history and its today's position as a worldwide currency. Bitcoin was chosen because at the moment it is the only cryptocurrency (digital currency) that holds a big promise.</p> <p>The material used in the thesis is articles from Internet about Bitcoin. The information about the USD has mainly been retrieved from books. Also, an interview with Henry Brade, the CEO of Prastos Oy that runs the site Bittiraha, has been conducted.</p> <p>Bitcoin has been compared to the USD with multiple methods. The main method is the qualitative approach that includes a narrative analysis strategy, explanation building strategy, interview and a comparison.</p> <p>The thesis topic has been chosen because Bitcoin holds big potential in revolutionizing the money market, and even more. Using the same technology as Blockchain, it is possible to apply it to other things, for example securities, stocks, personal data, and contracts. The results were gathered from articles on opinions of people for and against Bitcoin. The point was to get articles where high executives (and engineers) argue about Bitcoin. The interview conducted with Henry Brade was made to strengthen or weaken the conclusions in the result section.</p>	
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<p>Målet med detta arbete är att förstå vad Bitcoin är och hur det skiljer sig från andra valutor, speciellt den amerikanska dollarn (USD). De mest diskuterade rubrikerna i arbetet kommer att vara säkerhet, värdering och framtiden för både Bitcoin och USD. Forskningsfrågorna som ställs är följande: depositions- och säkerhetsrisker hos Bitcoin jämfört med USD, personlig sekretess hos Bitcoin jämfört med USD, är Bitcoin en valuta, är Bitcoin eller USD en bubbla som kommer att spricka, förändringar i värdet för Bitcoin och USD och hur ser framtiden ut för kryptovaluutorna.</p> <p>Arbetets ämnesområde är begränsat till Bitcoin och USD. Att analysera valutor eller kryptovalutor allmänt skulle vara för brett område, vilket är orsaken till att området är begränsat. USD valdes tack vare sin historia och position som en världsvaluta i dagens samhälle. Bitcoin valdes för att det är för tillfället den enda kryptovalutan (digitala valutan) som verkar ha en framtid.</p> <p>Materialet som använts i arbetet är artiklar från Internet om Bitcoin. Informationen om USD har för det mesta tagits från böcker. En intervju har gjorts med Henry Brade, som är VD för Praso Oy som driver Internetsidan bittiraha.</p> <p>Bitcoin jämförs i arbetet med USD på många sätt. Huvudmetoden är en kvalitativ strategi, som omfattar en narrativ analytisk strategi, förklaringsbyggnadsstrategi, intervju och en jämförelse.</p> <p>Ämnet för detta arbete är valt för att Bitcoin kan revolutionera penningmarknaden, till och med mera. Genom att använda samma teknologi som i Blockchain är det möjligt att tillämpa det på andra områden, till exempel värdepapper, aktier, personuppgifter och kontrakt.</p> <p>Resultaten har insamlats med hjälp av artiklar, där åsikterna varit både för och emot Bitcoin. Målet var att hitta artiklar där chefer i höga positioner (och ingenjörer) argumenterar om Bitcoin. Intervjun med Henry Brade gjordes för att förstärka eller försvaga slutsatsen i argumentationen.</p>	
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Arcada	
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Tekijä:	Kim Brander
Työn nimi:	Kryptovaluutta – maailman uusi finanssikriisi?
Työn ohjaaja (Arcada):	Maj-Britt Granström
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<p>Opinnäytetyön tavoitteena on saada parempi käsitys siitä, mikä Bitcoin on ja miten se eroaa muista valuutoista, erityisesti Amerikan dollarista (USD). Aiheet, joista keskustellaan eniten, ovat turvallisuus, arvostus sekä Bitcoinin ja USD:n tulevaisuus. Tutkimuskysymykset ovat seuraavat: tallettajan riskit Bitcoinin verrattuna USD:iin, Bitcoinin ja USD:n turvallisuusriskit, Bitcoinin yksityisyyden suoja verrattuna USD:iin, onko Bitcoin valuutta, onko Bitcoin tai USD kupla joka puhkeaa, arvonmuutokset Bitcoinissa verrattuna USD:iin ja miltä kryptovaluuttojen tulevaisuus näyttää.</p> <p>Opinnäytetyö on rajattu käsittelemään Bitcoinia ja USD:ia. Kaikkien valuuttojen ja kryptovaluuttojen analysointi olisi liian laaja aihe, mistä johtuen työ on rajattu. USD on valittu historiansa ansiosta sekä johtuen sen statuksesta maailmanlaajuisena valuuttana. Bitcoin on valittu koska tällä hetkellä se on ainoa merkittävä kryptovaluutta (digitaalinen valuutta).</p> <p>Aineisto, jota käytetään tässä työssä, koostuu internet-artikkeleista Bitcoinista. Tietoa USD:sta on hankittu pääasiassa kirjoista. Aineistoon kuuluu myös haastattelu Henry Braden kanssa, joka on Praso Oy:n toimitusjohtaja joka hallinoi sivustoa Bittiraha. Bitcoinia on verrattu USD:iin monella eri tavalla. Päämenetelmänä on käytetty kvalitatiivista lähestymistä, johon sisältyvät kerronnan analyysistrategia, selvitysrakentamisstrategia, haastattelu sekä vertailu.</p> <p>Opinnäytetyön aihe on valittu koska Bitcoinilla on suuri mahdollisuus mullistaa rahamarkkinoita, ja vielä enemmän. Käyttämällä samaa teknologiaa kuin Blockchain on mahdollista soveltaa samaa teknologiaa esimerkiksi arvopapereihin, osakkeisiin, henkilötietoihin ja sopimuksiin.</p> <p>Tulokset kerättiin artikkeleista ihmisiltä, joilla on myönteinen tai kielteinen suhtautuminen Bitcoinin. Tavoitteena oli löytää artikkeleita, joissa korkeat johtajat (ja insinöörit) kiistelevät Bitcoinista. Haastattelu Henry Braden kanssa tehtiin koska haluttiin vahvistaa tai heikentää päätelmiä joita tehtiin tulososiossa.</p>	
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FOREWORD

The topic of the thesis started as a hobby following Bitcoin on the market, continuing to small investments in Bitcoin. During the time I have followed Bitcoin. There have been major changes in its value, which has made Bitcoin a headline topic in business magazines.

It has been really interesting to follow cryptocurrencies in the world; how they evolve, crash or become millions of USD worth, especially the Bitcoin. I am sure that we have only seen the peak of an ice berg when we talk about cryptocurrencies. And it remains to be seen if Bitcoin is going to be the future cryptocurrency that will be used worldwide, or if there will be a new cryptocurrency superior to Bitcoin that would be used worldwide.

I want to thank the Finnish site Bittiraha.fi for answering my questions regarding Bitcoin and other cryptocurrencies. The answers have helped me to see the whole picture. And a really big thank you goes to Henry Brade who had the time to meet me for an interview and answer all my questions. Henry Brade works at Prasos Oy as the CEO. The company runs the site Bittiraha.fi.

I also want to thank my sister Jessica Brander who proofread my thesis.

1 INTRODUCTION

After the financial crisis in 2008 had begun because of the mortgage backed securities, many people and companies lost money. In year 2009 Satoshi Nakamoto came with an idea; a currency that can be used worldwide. Nakamoto was tired and angry with the third party (banks and financial institutions) that took a commission from money transfers. The banks and financial institutions also control all the money transactions and know exactly who sent the money and to whom. Nakamoto wanted a system where the third party was not involved and could neither control the money transactions, nor supervise them. The timing could not have been better for Nakamoto, because the public was also frustrated that they had to contribute with their tax money to the saving of big banks that had put themselves in a bad position because of greed.

This paper will explain basically what a currency is, how it works, and take the United States Dollar (USD) as an example. After understanding the basics in a currency we are going to look at cryptocurrencies, how they work, and take Bitcoin as an example. To understand the risks, changes in value and the future concerning cryptocurrencies and currencies we have to make a comparison. The rest of the paper will analyze differences between the USD and Bitcoin. The paper is narrowed down to these two currencies to prevent it from having a too wide topic. The Bitcoin is specifically chosen because it is the biggest cryptocurrency that holds the most promise. The best currency to compare Bitcoin with is what is considered as the world's most appreciated and most trustworthy currency, the United States Dollar.

Cryptocurrencies, especially Bitcoin, have recently become a popular topic in the world. There have been major fluctuations in the price because of security breaches and mafia involvement. In June 2011 there was a security breach in MtGox, which was then the biggest trading platform for Bitcoins. The Bitcoin price dropped from 32 USD to 2 USD. In August 2012 the price had risen to approximately 15 USD. In the beginning of the year 2013 a price rally started where the Bitcoin increased in value 5-10 per cent daily. The price rally ended in an all-time high price of 266 USD in April 2013. (Lee, 2013)

After that there was a huge price drop to 50 USD. In October the price again recovered to 140 USD but dropped to 110 USD because FBI seized Bitcoins connected to the Silk Road (the mafia). After the mafia rumors the price fast rebound to 200 USD and took again a big leap in value and hit 900 USD on the 3rd of November. In the end of year 2013, Bitcoin rose the first time above 1000 USD in value. A lot of speculations about Bitcoins valuation (stability), security and other aspects have been discussed. A lot of people who invested in the beginning became millionaires. (Hiltzik, 2013)

The biggest topic in the Bitcoin community was China in the end of year 2013, because China was deciding if Bitcoin is a currency and if it is legal to use. China came out with a statement that sent the Bitcoin course downhill to approximately 450 USD. After a while the value increased again to nearly 1000 USD. In the beginning of year 2014 a lot of rumors about the liquidity in MtGox was discussed. MtGox closed their site and filed for bankruptcy. Many countries' set rules to Bitcoin whether it is legal to use them for businesses or for individuals. The concern about laws that would forbid Bitcoin and also what happened to MtGox sent the Bitcoin value again into a free fall that stopped at approximately 500 USD. After the drop Bitcoin has not reached higher than 800 USD. (ibid)

If you wish to read more details about Bitcoin in general you can read [Rostislav Skudnov](#)'s thesis about Bitcoin Clients, [Jesse Lindroos](#)' thesis about P2P Cryptographic Currency Bitcoin or [Sanna Korhonen](#)'s thesis about Bitcoin as a Payment Method for Online Store.

1.1 Aim of the study

The aim of the thesis is to get a better understanding of what Bitcoin is and how it differs from the USD (or another currency). The most discussed topics will be security, valuation and the future of both Bitcoin and the USD. The main motivation behind the topic is that we might be entering an era where crypto or electronic currencies will become the new form of money instead of the current currencies.

There are no correct or wrong answers whether Bitcoin is going to be the future world-wide currency used by almost everyone, but it can be analyzed based on Bitcoin's history and experts' statements. Again, it will be good to compare Bitcoin with the USD; for example, is Bitcoin steady enough to be trusted by the general public and can you be sure that you will have your money in the end of the day when no one controls the currency. One of the most important aims of the study is to investigate if the high executives and other people working on the financial sector actually understand how Bitcoin works and what purposes it serves.

1.2 Research questions

Depositor risks between the USD and Bitcoin

Security risk on Bitcoin and the USD moneywise

Personal secrecy in Bitcoin compared to the USD

Is Bitcoin a currency?

Is Bitcoin or the USD a bubble that is going to burst?

Changes in value of Bitcoin compared to the USD

Cryptocurrencies and their future

1.3 Limitations

The decision to analyze the risks and possibilities between the USD with Bitcoin was taken because the scope of the thesis would have been too wide if there would have been a comparison between all currencies and cryptocurrencies. Bitcoin is chosen from the cryptocurrencies because it is the currency that started the whole cryptocurrency era and also because it is still the widest used cryptocurrency. The USD is chosen from the currencies because it is one of the most appreciated and stable currencies in the world. It also has its history when the USD was pegged to gold, which will add a good example of a commodity that change really fast in price after the pegging stopped.

There are already several articles written about Bitcoin and how it works, which is why this paper will not go deep into the specifics concerning Bitcoin and its functions. There are already plenty of papers and articles written with general information about curren-

cies and their usage. The paper will mostly analyze how Bitcoin differs from the USD and how it is going to evolve, because this is a topic that is not widely discussed yet but according to the writer it will be discussed widely in the near future.

1.4 Significance of the study

Bitcoin has been in the headlines in many magazines and even many countries have had serious talks whether to accept Bitcoin as a currency and whether to accept it in general in a country. Those who invested in Bitcoin in the beginning a few USD became millionaires in a couple of years or even less. We might be entering an era of crypto or electronic currency that will change the whole concept of money.

Bitcoin is a fascinating topic because there is no third party involved in the transactions, which means that it is hard to know who has sent money to whom. Also there are significantly lower transaction costs, compared to the original forms of transactions.

Lately there have been some online thefts concerning Bitcoin, for example MtGox losing almost all of their assets and going bankrupt. It has even been discussed whether Bitcoin is a new bubble that will start a new financial crisis in the coming years.

1.5 Relevance

According to Theseus (the online database for all the written theses and publications from Finnish universities of applied sciences, back to year 1999) there have been three theses about Bitcoin as already mentioned in the introduction: [Rostislav Skudnov](#)'s thesis about Bitcoin Clients, [Jesse Lindroos](#)' thesis about P2P Cryptographic Currency Bitcoin, [Sanna Korhonen](#)'s thesis about Bitcoin as a Payment Method for Online Store.

The three theses describe Bitcoin in general, how it works, different wallets, different payments methods, and different market places. This thesis is going to use all the three theses as a base; if the reader wants to read basic information about Bitcoin it can be found from the earlier mentioned theses or from the Internet. Without having to write a

lot of information about the basics of Bitcoin, this thesis will concentrate on the risks and gains with Bitcoin.

2 METHODS

The thesis will include multiple methods. The main method is the qualitative approach that will include a narrative analysis strategy, explanation building strategy, interview and a comparison. The data will be analyzed systematically and in a planned order to draw a supportable conclusion. A planned order means that the data collected will be divided into different categories before they can be analyzed. There is also an interview with Henry Brade the CEO from Prasos Oy, which will either strengthen or weaken the conclusions drawn from the qualitative method. The interview will be a semi-structured interview because the paper is an exploratory study. With an exploratory study the narrator tries to explain the paper topic with the help of the information gathered in the interview and also the information gathered from the rest of the qualitative study.

According to Tesch 1990 (2003 p. 379) the qualitative analysis can be divided into four categories:

- understanding the characteristics of the language

- discovering regularities

- comprehending the meaning of text or action

- reflection; where the two first mentioned are more structured, procedural and deductive, whereas the last two mentioned are the opposite that is less structured, more interpretive, and inductive. Basically it means that this thesis has first begun by piling information and categorizing it. The next step has been to understand it, and after that to discover regularities and patterns. The first two steps have also included planning of how the thesis will be conducted, which means that the topics and headings have been created and the content has been thought about. The two next steps have been to analyze and reflect on the thoughts and evidence that is encountered in the topics of the thesis. And most important to recognize the relevance and relationship between the information found. (Saunders et al. 2003 p.377-379)

The qualitative approach will include an explanation building strategy. An explanation building strategy is according to Yin (1994) a strategy where you attempt to build an

explanation while collecting data and analyzing it, rather than testing something that is already predicted as the explanation.

This means that information will be gathered by searching documents and at the same time, some sort of explanation will be built. An interview will be conducted after all material has been gathered, which will most likely change the explanations and answers that have been thought out in the beginning. The information that will be gathered will consist of Bitcoin and the USD, especially concerning the risks involved, changes in value and future aspects.

The qualitative method will also include a narrative analysis and a comparison between the USD and Bitcoin. The narrator will take an objective approach and will only try to explain how the data should be interpreted. Because of the wide amount of comments about Bitcoin, both for and against, there needs to be drawn some sort of evidence so that we can have some sort of conclusion. The conclusion will be drawn by the narrator with the help of the evidence that can be found from the documents and from the interview. (Saunders et al. 2003 p.390 f.)

3 THEORY

3.1 What is a currency

Before the bills were invented, gold, silver or any other acceptable commodity were used as a payment method. These functioned as a country's currency. When the bills and coins were invented, the currency slowly became based on the currency's (the bills and coins) supply and demand instead of the value of the material the money was made of. By definition, the money described in the previous sentence is called 'Fiat Money', where the currency value is basically based on faith. The term "Fiat" comes from Latin and means "it shall be", which specifically describes the meaning of the word. Nowadays almost all of the currencies are 'Fiat Money'. (Investopedia, 2014)

Pascal-Emmanuel Gobry writes in Forbes about Fiat money, describing what is concerned as Fiat money and what is not. According to Gobry everything that has been agreed to have a value can be seen as a fiat currency, for example Bitcoin can be seen as Fiat money if a big amount of people think so. Basically Gobry says that every currency

and fiat money is based on supply and demand; for example the USD can be valued as zero if the users decide so. Fiat currencies are based on a government that can print and control the money but according to Gobry it is useless to have a government backing up the currency if the users don't support the fiat currency. (Gobry, 2013)

The USD and how a country controls its currency will be presented next. After that Cryptocurrencies will be presented in the following chapter. After that there will be a comparison between the USD and Bitcoin whether one of the currencies are more safe than the other, how they are valued and finally how the future looks like for both Bitcoin and the USD.

3.1.1 How does a currency work

A currency is controlled by a central organ of the state, for example the government. In Europe, the euro is controlled by the European Central Bank. A country can have either a floating or a fixed currency rate. Nowadays almost every country has a floating currency rate.

After the Nixon shock in year 1971 (that is mentioned in the next chapter) countries have had floating currencies. A floating currency gives a country the possibility to control the money supply, which helps to maintain the inflation rates steady. A floating currency means that the currency is on the marketplace with a changing price according to the supply and demand. According to Economics About there are many ways how a country can control its currency and its changes in value:

- One way for a country to control its currency is to control its production amount of the currency. For example, if the money value rises fast the country can decide to produce more money than it planned, which should lower the value of their currency.
- By far the most important thing concerning a currency is to have people trusting it, for example that people trust that they can still tomorrow or in the near future buy an item with approximately the same sum as today. If the world loses faith in the currency, the value will drop fast and even in the worst case become worthless.

- A third thing a country can do is to control its inflation, because a low inflation usually indicates a slow decrease in the value of their currency, when a high inflation usually indicates a fast decrease in the currency's value.

(Economics About, 2014)

Fixed currency rates were widely used before the Nixon shock (used in USA 1792-1971 pegged with gold). They are usually pegged with a commodity, for example gold. The purpose of a fixed exchange rate is to keep the country's changes in their currency value as narrow as possible. A fixed currency rate keeps the inflation low, because the future variations in the currency are small. This again should keep the interest rates low, which will stimulate the economy. (Investopedia, 2014)

There were many negative aspects concerning a fixed currency rate. One of the most important aspects for USA to change their fixed currency rate to a floating currency rate was that other countries' economies were evolving, and basically USA didn't have enough gold if everybody wanted to switch their USD to it. USA wanted to protect their gold reserves, which led to their decision to end the pegging of the USD to gold in year 1971. (Whalen et al. 2010 p.268-278)

3.2 The United States Dollar (USD)

According to CIA, the United States has the world's most powerful and technologically advanced economy in the world and also the most used currency in transactions across the world. The USD is also used as an official currency in other countries, such as Ecuador and El Salvador. There are also other countries such as Afghanistan and Liberia that use the USD as an unofficial currency, which means that the USD is used alongside the country's own currency. (CIA, 2014)

Before 1971, the money was worth a specific sum of gold. After 1971, when the dollar was a floating currency, there was no more any connection to gold and at the same time the USD became Fiat Money. Gold became a commodity one could invest in. Because of the steady price of gold until year 1970, it was seen as a safe harbor that you could invest in and the money will not lose its value and will probably rise a little bit in value.

After 1970, the gold price has rallied upwards and no ending can be seen even today. Gold has maintained its status as a safe harbor you can invest in, probably because of its history, most specifically its pegging with the USD. (Investopedia, 2014)

3.2.1 History

The USD was originally created in 1792 through the Coinage Act. At that time, 1 USD was equal to 371-416 grains of silver and 1 USD equal to 24-27 grains of gold. This meant that the purchasing power with a dollar was the same as the above described amount of silver or gold (the dollar value was based on the value of gold and silver). (McClellan Financial Publications, 2014)

Until 1971, there were many “pegs” made to the price of gold (pegs means that the currency is getting revalued to the price of gold, mainly because gold increases in value over time). In 1975, the USD was removed from the gold standard and was allowed to float freely on the currency market. Because of the pegging of the USD with gold and silver, we can see how gold has changed in value during 1792-1971. After that the USD has been extremely stable, because many powerful countries in the world have thought that the USA and the USD is the most stable country with the most stable currency. (Whalen et al. 2010 p.272-278)

As we can see in the Figure 1, the gold price didn't change many times before the USD was pegged to the gold. There have been some small changes in the gold price because of some external effects that happened in the USA. In 1812, USA had a war against United Kingdom and Ireland, which sent the gold price up for a short while. The price rose because the new USD in paper money were not backed up by precious metals, which meant that the link between the paper money and gold and silver was lost for a short while. (McClellan Financial Publications, 2014)

In 1837, the same thing happened to the price of gold because of a panic that led to over 300 banks collapsing out of 850, which led to a 5 year depression. The biggest change in the gold price happened in 1861, when USAs civil war started. Then the states had again to print more paper money, and again the link between the paper money and the

gold and silver was lost. The civil war ended in 1865 and the gold price returned to normal in 1870. In 1933, the gold got pegged with a value of 35 USD per ounce because the president of the USA, Franklin D. Roosevelt, made an executive order (Executive order 6102) that forbade anyone to possess gold coins, gold bullion and gold certificates owned by the Federal Reserve. Roosevelt made this order because according to his opinion people were buying more and more gold because of hard times, which was stalling the country's economic growth and also prolonging the depression they were facing. (Investopedia, 2014, Inflated & Whalen et al. 2010 p.85-115 & Time-Price-Research, 2014)

In 1971, the USA president Richard Nixon cancelled the direct convertibility of the USD to gold, which was called the Bretton Woods system. Nixon began an era of floating currencies, where all the other countries followed him and the USD. The Bretton Woods system had to be terminated, because other countries started to have a lot of USD and there was a big risk that USA could not be able to exchange the other countries USD for gold. (U.S. Department of State, 2014)

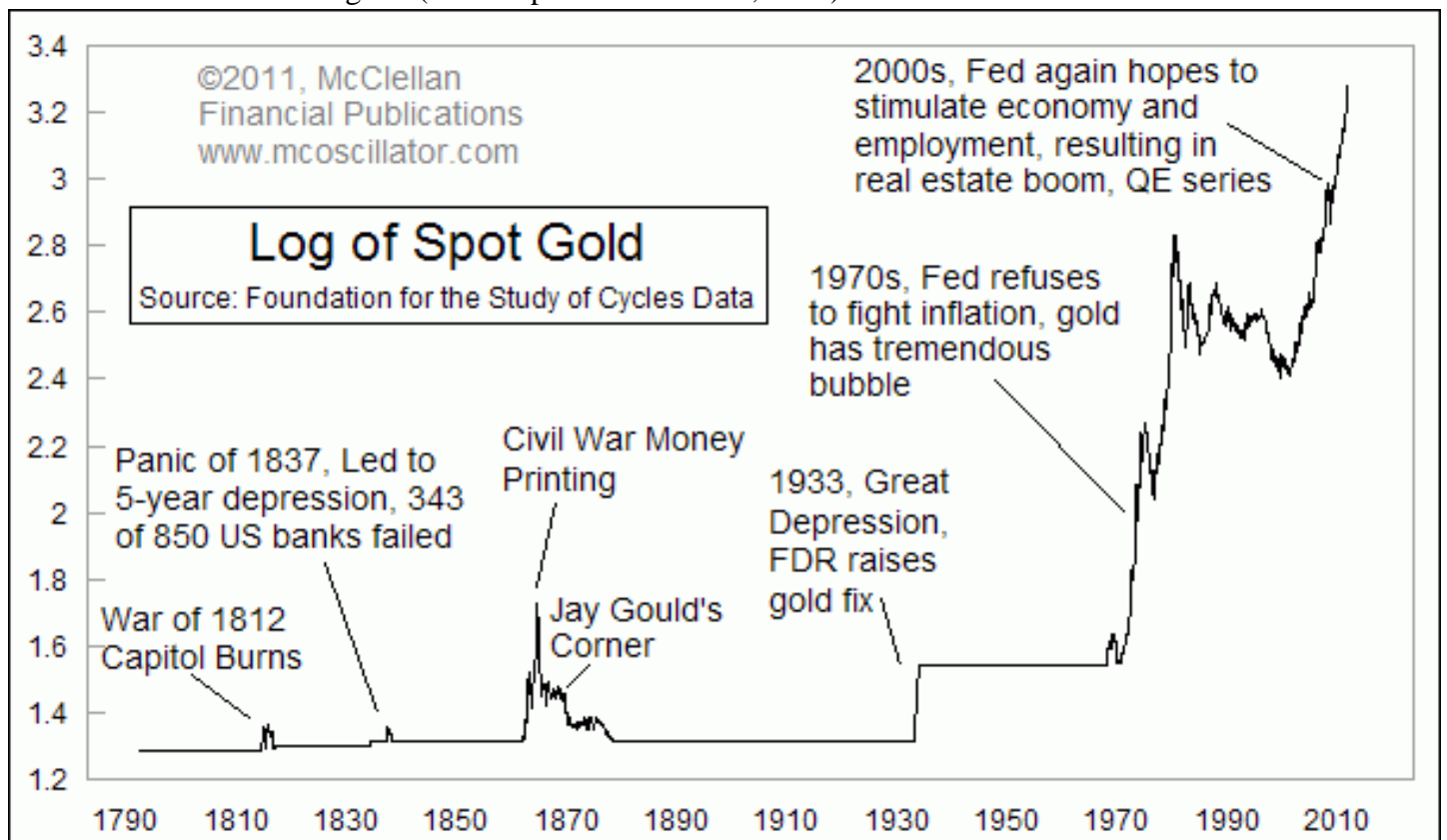


Figure 1. Log Spot of Gold, (McClellan Financial Publications)

Since 1975, the USD has been a floating currency and stable. The only thing a currency basically needs to have is enough people or countries that believe in the currency's value. For example, if everyone thinks that the USD is worthless, it would in reality be worth zero.

3.3 Cryptocurrencies

The digital currency, Bitcoin, was created by Satoshi Nakamoto and was the first cryptocurrency traded on the market in 2009. Satoshi Nakamoto was tired of banks and the financial crises they started, and decided to create a currency that the countries cannot control.

Cryptocurrencies, such as Bitcoin are created by mining, which means that computers solve difficult algorithms and get as a reward a certain amount of coins. The whole Bitcoin network where new coins are mined and transactions are sent, are maintained by a huge pool of computers solving difficult algorithms. This means that there would be no Bitcoins without the computer network and no more Bitcoins could be created without the computer network. The digital currency Bitcoin basically works the same way as a normal currency; it has its majority of its currency on the Internet and with the currency you can buy different items or services.

The main reason behind the creation of Bitcoin was to eliminate the trusted third party in the transactions, which takes costs in between. The goal was to achieve a cryptocurrency, where a person could transfer the currency to another person anywhere in the world without high transactions costs and without a third party watching over the shoulder.

Cryptocurrencies are built that way that no one can accelerate the amount of crypto money being on the market, because it has its variables that determine how much coins can be mined or in another way released. This means that no one can actually control the currency. But because the value of the cryptocurrency is based on supply and demand, it can increase or decrease drastically if suddenly a huge amount of the currency

is bought or sold. A sharp increase in the demand of Bitcoin and the slow speed at which new Bitcoins are mined lead to a huge value increase in January 2012 from 10 USD to 100 USD in March 2012. After that the Bitcoin rose from 100 USD to 1000 USD between March and December 2012. Since then the currency has been under a lot of criticism, which is a reason why it is at the moment (24th January 2014) valued at approximately 570 USD per Bitcoin. (Blockchain, 2014)

After Bitcoin's success, many other people have tried to make a copy or a better version of the Bitcoin. Some have succeeded, but most of them have failed. Today, 24th January 2014, we have more than 100 cryptocurrencies. The five most valuable cryptocurrencies are;

- Bitcoin (valued at 7215 million USD)
- Ripple (1475 million USD)
- Litecoin (387 million USD)
- Peercoin (79 million USD)
- Dogecoin (61 million USD)

(Coinmarket, 2014)

3.3.1 Litecoin

Litecoin is a peer-to-peer cryptocurrency created by Charles Lee. The Litecoin is known to be an extension of Bitcoin. It works the same way as the Bitcoin, but was created to become an improvement on Bitcoin. The media has speculated about Litecoin as a possible successor of Bitcoin, which is why it has reached a lot of media attention from November 2013 forward. As of today (31st March 2014), Litecoin is the third largest cryptocurrency with a market value of 343 million USD, after Bitcoin with a value of 5600 million USD and Ripple with 905 million USD. (Coinmarketcap 2014 & Litecoin 2014)

The biggest differences between Bitcoin and Litecoin are the following:

- Litecoin has faster transaction confirmations; a few minutes on average compared to Bitcoin that has an average transaction confirmation time of 10-12 minutes.

- The mining of Litecoin is aimed to computers owned by the general public, whereas to mine Bitcoins you will need specifically for mining made computers.
- Litecoin is planned to produce 84 million Litecoins, when Bitcoin is planned to produce 21 million Bitcoins.

(Litecoin, 2014)

3.3.2 Ethereum

Ethereum is a software platform and a programming language made for the wider public. Ethereum makes it possible to trade and secure almost anything. Ethereum might be the future business form where trades are made with the Ethereum platform and a new form of security is applied with the Ethereum software. (Ethereum 2014)

According to the Ethereum White Paper on the GitHub; “we believe that this design is a solid step toward the realization of cryptocurrency 2.0”. This will be possible according to the white paper by using Ethereum as the “Lego of crypto finance”. This means that you can use the Ethereum coding as a base and build on it whatever you have wanted, for example different types of currencies, financial derivatives, identity systems and decentralized organizations. (White Paper, 2014)

According to Vitalik Buterin, the author of “Ethereum: A Next-Generation Cryptocurrency and Decentralized Application Platform”, the basic idea of the cryptocurrency 2.0 is to take the basics from Bitcoin and build on it a new platform such as Ethereum, because Bitcoin is seen as the cryptocurrencies ecosystem. Buterin takes examples from the past, such as SMTP for e-mail, HTTP for webpages. There have already been released three protocols that are built with the Ethereum concept and they are called colored coins, Mastercoin and Counterparty. It has seemed to be quite tricky to build on the basics of Bitcoin because of the flaws Bitcoin have. This is why Ethereum was created; they want people to build the programs on Ethereum instead of the basics of Bitcoin. (Buterin, 2014)

3.4 Bitcoin

Satoshi Nakamoto, the creator of Bitcoin, defines an electronic coin as a chain of digital signatures. Basically this means that every coin has a digital key. When a transaction takes place, the one who is doing the transaction makes a digital signature hash of the previous transaction. The transaction also needs the receiver's public key. The hash and the public key are then added to the end of the coin. (Satoshi Nakamoto, 2008)

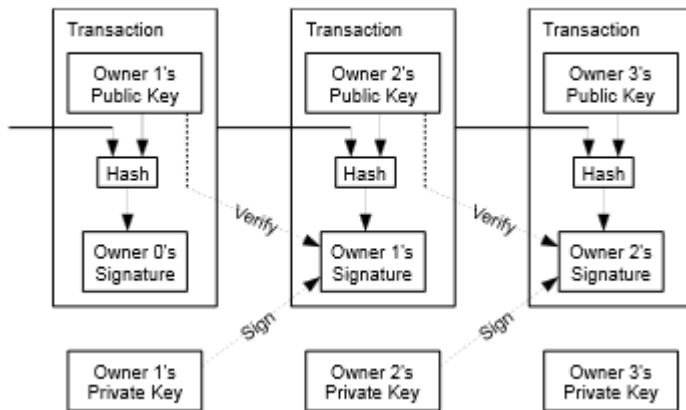


Figure 2. Transaction graph, A Peer-to-Peer Electronic Cash System, (Satoshi Nakamoto 2009)

A problem arising in the transactions is the possibility of double spending, for example that the owners are trying to double spend the coin. This can be solved by showing the whole transaction history of all the coins and a network of participants, who can agree on the single history of the orders and in which order they are received. This makes the transaction system fire proof and also a lot safer than current currencies, because if someone wants to crash or hack into the Bitcoin system they need the majority of calculation (CPU) power in the world, which is almost impossible, with even more miners entering the market every day. Also the normal computers on the market do not have the calculation power the system needs, which is why the miners have special computers especially made for mining Bitcoins. (ibid)

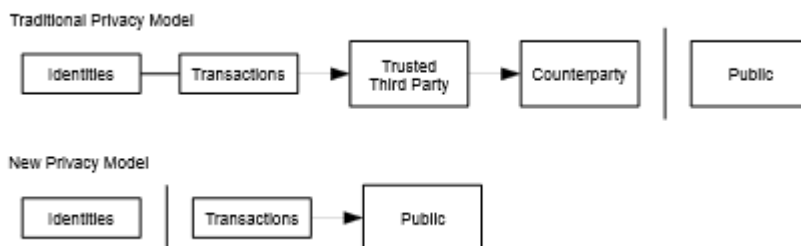


Figure 3. Privacy graph, A Peer-to-Peer Electronic Cash System, (Satoshi Nakamoto 2009)

The picture above demonstrates the privacy conducted by the traditional banking model and the new privacy model. The traditional banking model reaches its privacy goal by limiting access to all the parties involved and the trusted third party. For example on the stock exchange they announce all the transactions (time and size of trades) without saying who the parties are. But the information is inside the financial corporations, which means that you can find out who actually bought the stocks if you have the right access. The new privacy model gives all the transactions (public keys) to the public, without saying who the parties are. And it is impossible to find out who transferred the money and to whom; it is only possible to get the public keys. The public keys cannot be connected to a specific person. If the same person conducts multiple trades with the same key, there is a minimal chance that he might expose himself, which is why Nakamoto recommends an addition to the safety of privacy by creating a new key pair for every transaction. (ibid)

3.4.1 Who is Satoshi Nakamoto?

Satoshi Nakamoto's identity has not been identified. According to CoinDesk, there are many theories. The name can be divided into three words "satoshi", "naka" and "moto", with every word having multiple meanings. This makes it almost impossible to know the origin of the creator. Nakamoto is even suspected to have been a student from Finland, Vili Lehdonvirta (economic sociologist and game developer). Every person who has been suspected to be Satoshi Nakamoto has strictly denied it.

According to Newsweek's article published 6th March 2014, "The Face Behind Bitcoin", the Bitcoin founder has been found. He is, according to Newsweek's article, a

64-year-old Japanese-American man called Satoshi Nakamoto who lives in Los Angeles. (Goodman. 2014)

Brade thinks that the person Newsweek found is not the correct Satoshi Nakamoto. He states that of course it is possible; but if he would bet on it, he would bet that it is not him. It remains a mystery, because there was a message on Satoshi Nakamoto's online forum where he has not posted anything in a few years, stating that it is not me. According to Brade the actions the news agencies took revealing all the personal information about the suspected Nakamoto is wrong and they should never have done it. There were donations made to protect the person who is said to be the creator of Bitcoin, this shows the spirit of the Bitcoin community. In general Bitcoin donations are in average bigger than any other donation form. This shows how dedicated Bitcoin users are. What is also interesting is how much Bitcoin transactions have helped companies to get new customers and how much of their sales have been in Bitcoins. Big stores such as Overstock and Tigerdirect generated more than one million in Bitcoin sales in less than two months. This shows Bitcoins potential also as a payment method.

3.4.2 Getting started with Bitcoin

To be able to understand the statements in the coming chapters, we need to take a brief look at the basics of Bitcoin; how you can get Bitcoins, how you can store them and how you spend them or exchange them into Fiat currency. (Bitcoin, 2014)

3.4.3 How to use

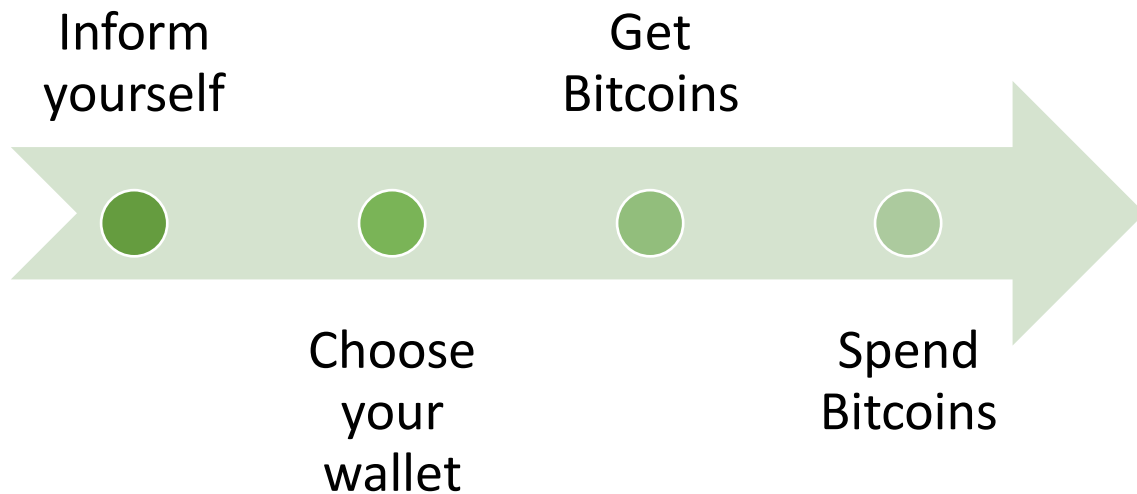


Figure 4. How to use Bitcoins, modified by Kim Brander (Bitcoin, 2014)

Above in Figure 4, we can see the basics you need to know when starting to use Bitcoins. Every step of the process is going to be explained in this and the next paragraph. To begin to use Bitcoins you need to inform yourself, which means gathering information about Bitcoin so that you have a general understanding of the concept and how it works. After you have informed yourself, you know that to be able to buy and send Bitcoins you will need a wallet.

There are multiple types of wallets; desktop wallets, mobile wallets and web wallets. Henry Brade recommended in the interview to have multiple wallets: one for your everyday purchases, which could be a mobile wallet, and a savings wallet, where you save a little bit of coins, that you can also do exchanges with (into other currencies). To this purpose, a web wallet would be perfect. And finally, one wallet for the most of the Bitcoins you possess, where a desktop or paper wallet would suit best. (Brade, 2014)

It is extremely important to understand fully how these wallets work or you might lose all your money, and when you lose Bitcoins you will probably never get them back, which is good to remember before starting to use Bitcoins.

The next step is to get Bitcoins. You can get Bitcoins from different marketplaces with varying prices. Again, it is extremely important to find a trusted third party, who will actually give you the Bitcoins and not only run away with your money. After finding the right marketplace where you can buy your Bitcoins, you can start to spend your Bitcoins. Spending Bitcoins is really easy. It is wise to use the mobile wallet when making small purchases, web wallet when changing for other currencies and for short term savings account, desktop or paper wallet when you do seldom purchases or sell your Bitcoins. If you sell your Bitcoins you most likely have to pay some taxes from it. Every country has set different laws that can be read from the country's taxation laws, for example in Finland Bitcoins are taxed according to the Finnish taxation authority: [Taxation on virtual currencies in Finland](#).

3.4.4 How to accept

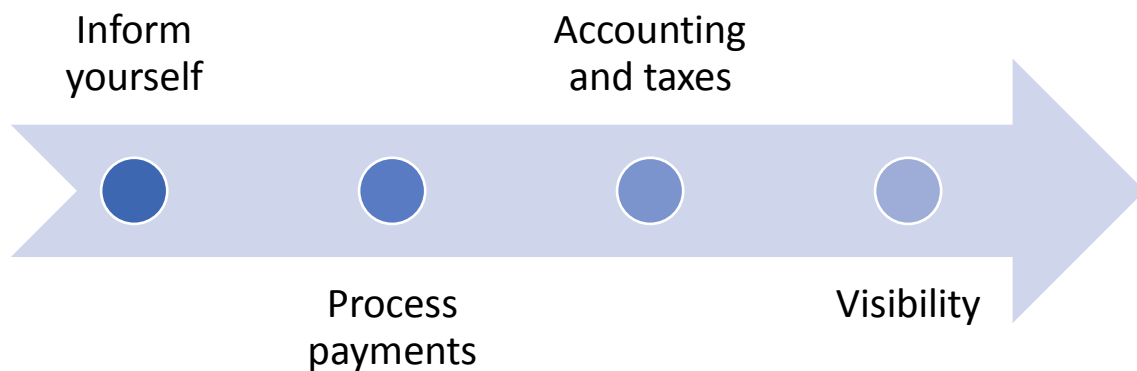


Figure 5. How to accept Bitcoins, modified by Kim Brander (Bitcoin, 2014)

Above in Figure 5 is described the process of how you accept Bitcoins. The figure is mainly made for companies accepting Bitcoin, but can also be implemented into an individual accepting Bitcoins. To accept payments in Bitcoin is easy. You give your public key to the person you want to receive a payment from. The person who pays you

transfers from his wallet to your public key. The Bitcoins should be there in approximately 10 minutes according to the statistics on Bitcoins transaction time.

If you have a company, which receives payments in Bitcoins, you usually have a deal with a third party like Bittiraha.fi (uses the service of BitPay), who will immediately sell you Bitcoins so that there will be no risk of changes in the Bitcoin value.

Up to this date, authorities have been strict with Bitcoin, making strict laws to companies and individuals concerning taxation and accounting of Bitcoin. But up to this date no one can supervise Bitcoin transactions, which means that companies can actually decide not to inform the taxation authorities about their Bitcoin sales that needs to be taxed. The amount of companies accepting Bitcoin is increasing fast, even many big companies for example Overstock (retailer), Virgin Galactic (for space flights), Zynga (mobile gaming company) have taken Bitcoin as a payment method. (Bitcoin, 2014)

3.5 Trading Platforms / Digital Currency Exchangers

Digital currency exchangers (DCE) are companies that allow their customers to change or trade their cryptocurrencies for other cryptocurrencies or 'Fiat Money'. Digital currency exchangers are taking some sort of fee for their services. The digital currency exchanger has its transactions done through the Internet, rather than the old fashioned way which is done in a physical location. (Investopedia, 2014)

Figure 6 shows us how the Bitcoin exchange is divided by volume in different market places and also how it is divided currency-wise. From the figure we can see that the main currency used in Bitcoin buying and selling Bitcoin is the USD, with a market share of 82 per cent, when the second largest is the CNY (Chinese Yuan), with a market share of 10 per cent. The third largest currency is the EUR (Euro), which has a market share of 4 per cent. From the figure we can state that the majority of Bitcoin transactions between Fiat Money and Bitcoins are made in the USD. This means that the USD is the easiest and most stable currency to deal with when doing an exchange from Bitcoins to Fiat money (USD). (Bitcoin charts, 2014)

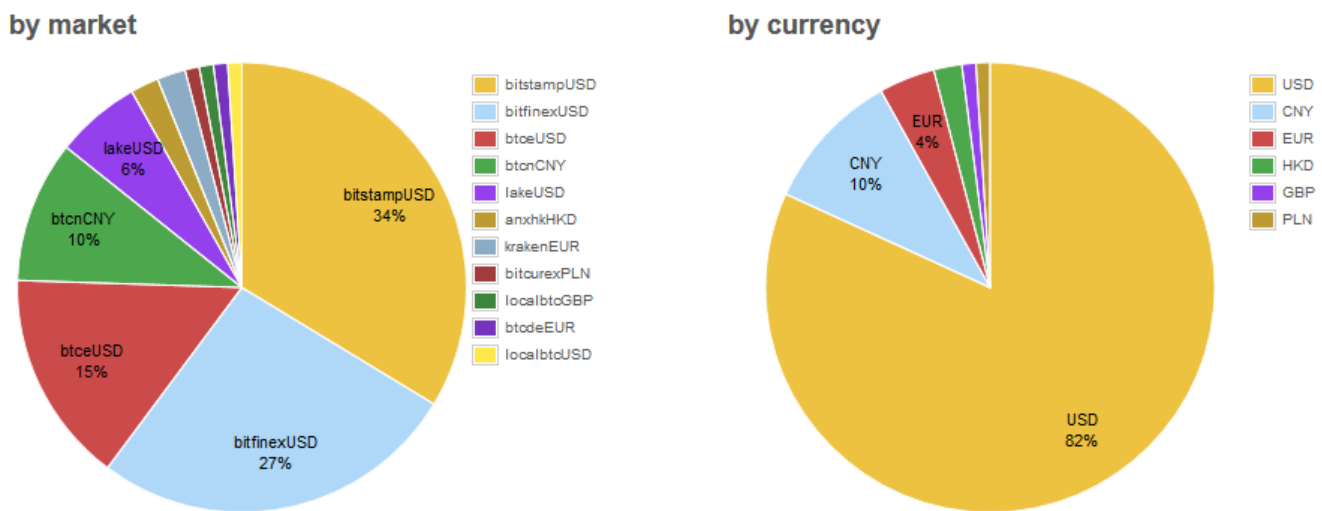


Figure 6. Bitcoin exchange places volume distribution by market and by currency, (Bitcoin Charts, 2014)

In the trading platforms divided by market (Figure 6), we can see a more equal division between the digital currency exchangers. Bitstamp has the biggest exchange with a share of 34 per cent, bitfinex is the second biggest with a share of 27 per cent, btceUSD 15 per cent, and btcnCNY 10 per cent. Bitstamp started in Slovenia by Nejc Kodrič, but moved its operations to UK in April 2013. Bitfinex is speculated to have its home office in Shanghai; at least that is where they have their partnership bank, Shanghai Pudong Development bank. BTC-E is based in Bulgaria, but most of its Fiat currency is in the USD, which is why BTC-E USD has a market share of 15 per cent. BTC China had an even bigger share of the pie before the Chinese government gave strict laws and orders concerning Bitcoins future in China. (Bitcoin charts 2014, CrunchBase 2014, BTC-E 2014, BTC China 2014)

4 COMPARISON AND ANALYSIS

In the results section there will be multiple arguments that will lead towards a conclusion with the help of Internet articles from trusted sources. To weaken or strengthen the conclusion, the writer is going to use the interview with Henry Brade the CEO of Praso Oy as a help tool. The arguments are going to have a big variation of different types of answers, both for and against the use of Bitcoin, which will hopefully motivate people to discuss more about Bitcoin in the future. MtGox and its bankruptcy will be brought up in many arguments to show the risks and changes in value, because MtGox was the biggest digital currency exchanger in the world for a long time which is why it had a big impact on Bitcoin and its future when it collapsed.

4.1 Depositor risks between the USD and Bitcoin

The main difference when talking about depositor risks Between Bitcoin and the USD is that no one is backing Bitcoin if the value suddenly plummets, if somebody gets their Bitcoins stolen from their wallet or if a digital currency exchanger goes bust. USA is behind and backs up the USD and they protect the USD no matter what happens, which means that they will keep the value in a reasonable range.

Many financial institutions in the world have guarantees for depositing money into the bank. For example the whole European Union has a deposit guarantee sum up to 100.000 euros per guaranteed bank, which means that your deposited money in one bank is guaranteed by the state or the deposit insurance company up to 100.000 euros. USA has as their deposit guarantees company the Federal Deposit Insurance Corporation (FDIC), who insures to at least 250.000 USD per insured bank. Basically, this means that all the funds that exceed 250.000 USD will be lost if the company goes bankrupt and cannot pay their depositors their money back. A person can spread his or her risk by depositing money into different deposit insured financial institutions; for example if a person has 1 million USD, he can deposit it to four different deposit insured financial institutions, which means that if any of the companies would go bust the customer would get all of his money back in any scenario where he invested maximum of 250.000 USD per bank. If the same person would deposit his or her 1 million USD into one bank and the bank would go bankrupt, he or she would only get 250.000 USD back and lose 750.000 USD, if the bank cannot pay its customers back, which is usually the case. (eur-lex, 2014)

No one is guaranteeing Bitcoin if something happens. For example, if a digital currency exchanger goes bankrupt, someone steals your Bitcoins from your wallet. MtGox bankruptcy showed that people actually can lose their money. Almost all the depositors' money was lost. According to MtGox statement made on 20th March 2014, they claimed to have found 200.000 Bitcoins which they thought they lost. When MtGox filed for bankruptcy, they reported a total of 850.000 Bitcoins missing (750.000 that were customers' and 100.000 which were belonging to MtGox), which is about 7 per cent of all the Bitcoins that exist. After finding the 200.000 Bitcoins, MtGox still needs

to find their customers 550.000 Bitcoins if they want to break even. (MtGox announcement, 2014)

Brade thinks that the public has taken the bankruptcy of MtGox very well, especially those who understand the basics of Bitcoin. Brade also states that MtGox was only a marketplace and they can go bust. If we look it from a broader perspective, we can see that Bitcoin is functioning much better than the normal financial sector, where the banks are saved when they go bust with the taxpayers' money. The comparison between MtGox and the financial sector is perfect, because if the same thing that happened to MtGox had happened to a big financial sector company, the taxpayers' money would have been used with a major bailout. The Bitcoin world does not have a bailout. Of course, what happened to MtGox is a huge tragedy and gives a negative picture of the Bitcoin world at least for a while. But at the same time, it functioned as a warning to the other Bitcoin companies, motivating them to improve their safety functions. Brade thinks that this will strengthen all the other functions and companies will be even more careful. (Brade 2014)

The Bitcoin community does not have a safety net at all, while the big companies, especially on the financial sector, have a state bailing them out if something goes wrong. Brade thinks this support is a big reason why many major corporations do not need to do their very best. (ibid)

The Bitcoin community learned from this that people need to be more careful and keep better care of their Bitcoins, so that they will not lose all their money if a marketplace goes bust. The best part of Bitcoin is that you can store your money yourself; you do not need the third party. Many people are used to the safety net and also the third party, who saves your money on their servers, which is a big reason why it will take time for people to get used to this new system. (ibid)

Micky Malka states in Bloomberg's article "Bitcoin Bull Holds Firm as Mt. Gox Drags Down Currency" about MtGox and its bankruptcy (Saitto, 2014): "It will take time for the rest of the Bitcoin ecosystem to prove that this is a bad apple and not a problem of the entire ecosystem." According to Malka there is a chance that Bitcoin will flop, but he believes that Bitcoin will be a part of the future. (Saitto, 2014)

There has also been hackers attacking wallet providers and stealing their and the depositing customers Bitcoins. According to Wired's article "\$1.2M Hack Shows Why You Should Never Store Bitcoins on the Internet" written by Robert McMillan in 2013, a Company named TradeFortress lost 4100 Bitcoins in an attack by a hacker which happened on 23rd and 26th October 2013. The hackers were able to retain the Bitcoins, because the Bitcoins were stored on the Internet and not in a "cold storage" where it is safer. The owners of the site TradeFortress says that he does not have the required funds to pay back to his customers, but that he will use all his personal Bitcoins and the Bitcoins he has in the cold storage to pay his customers back, which amounts up to 1540 Bitcoins. (McMillan, 2013)

There have also been incidents when people have stored their Bitcoins on a "cold storage", for example on their hard drive or on a paper piece, and then they have lost or thrown away their paper piece or hard drive. If they have not had a backup somewhere, their Bitcoins are lost forever and can never be retrieved. The Guardian's article "Missing: hard drive containing Bitcoins worth £4m in Newport landfill site" explains how a digital wallet of James Howells containing 7500 Bitcoins was lost and probably will never be found. Howells had been mining the currency and storing his Bitcoins on his hard drive. One day he had spilled lemonade on his computer, which led to him selling or throwing away almost all the parts except the hard drive. Between June and August 2013 he had a clear out where he threw away the hard drive without understanding that it contained 7500 Bitcoins (with today's 02.04.2014 value at Bitstamp 489USD/BTC the 7500 Bitcoins are worth 3.667.500 USD. One of the most important things to remember when storing your Bitcoins in a cold storage is to make backups to prevent the example described above from happening. (Hern, 2013)

Brade thinks that you need to have different wallets where you can save your Bitcoins. You will need a "wallet" that you use for daily purchases, for example a mobile wallet. You will also need a "savings account", a wallet that is more secure than the other wallet. There are different kinds of wallet types that are secure to save your Bitcoins on. You should have a wallet that is not on the Internet. A good option is a paper wallet, where your address is a paper that is stored somewhere safe. Another good option is to store the Bitcoins on your computer on a hard drive and move them, for example, to a

memory stick. Then remove the file on your computer, so that no one can steal your Bitcoins if they succeeded to hack into your computer. The most important part in storing Bitcoin is to have a backup. For example, if you have a paper wallet, you should have it duplicated and keep the Bitcoins separately in different locations so that if your house catches fire, you will not lose them. And it is important to have the paper wallet in a dry and dark place. There are even some extreme people who have engraved their wallet's private address on a metal plate that will stand a temperature over 1000 degrees Celsius. And you should have, of course, the majority of your Bitcoins in the savings wallet and only a small amount that you need to make purchases in the daily purchases wallet. (Brade 2014)

4.1.1 Analyze

Depositor risks have been clearly presented and the answer received can be considered clear. The USD has a depositor guarantee up to 250.000 USD per insured bank. Bitcoin has no depositor guarantee, because it is not backed up by any institution or country. We can draw a conclusion that in the perspective of deposition guarantee the USD is much more secure than Bitcoin.

If we look at Brade's comment about deposition guarantee, it implicates that having a deposition guarantee will only backfire in the countries' economies, when big corporations have to be saved with the tax payers' money. MtGox's bankruptcy made people and Bitcoin companies more careful, which has improved safety features and at the same time made people more careful when storing their own Bitcoins. Nowadays almost everyone uses cold storage to store their largest portion of Bitcoins and make backup copies so that the coins will not be lost in an accident.

Banks have a reputation of keeping people's money safe, by having them in the bank deposited. Bitcoin is trying to build a reputation that you can keep your own money yourself much safer and no third party can control or do anything with your money.

4.2 Security risk on Bitcoin and the USD moneywise

When we talk about security concerning the USD or any other currencies, we need to look at the money in the paper format and the money stored on Internet. Most of the

money is not printed and is on the Internet on peoples' accounts in different financial institutions. One of Bitcoins biggest security risk is the wallet services that the Bitcoins are stored on, which we already described in the previous chapter. To hack and get more Bitcoins produced or make fake Bitcoins is almost impossible, which will be explained later on.

When we talk about security, we also need to remember that Bitcoin is completely anonymous based on no trust and thus only based on cryptographic proof. The banking system relies on trust because they have reversible transactions. Bitcoin transactions cannot be reversed, which is why no trust is needed.

The Internet bank programs security features are so good that no major incidents have been reported. The Internet banks have a security that is built so good that it should be impossible to hack them. David H. Freedman investigates in his article "How to hack a bank" if it is possible to hack a bank. Freedman consulted eight computer security experts, who thought that hacking a bank was possible. A security guru, Jon David who has worked on the field for more than 30 years, stated "If I were going into e-crime, I'd hit a bank". According to the article, banks have been hacked and stolen money, but the banks do not want to report these incidents because it would show the vulnerabilities of the bank. (Freedman, 2000)

Paper money has also a good security behind it but, people printing fake money has happened all around the world. The USA came out with a new 100 dollar bill with new security features. The USD, especially the 100 dollar bill, is known for being a victim of crime, people printing fake money because the USD is widely used around the world. According to the BBC article "US releases \$100 banknote with new security features" the new 100 dollar bill will bring new safety features which will make it harder to counterfeit the bill. The US Secret Service has estimated that 0,01 per cent of the circulated 1,1 trillion USD could be counterfeited, but no one can know the exact figure. (Wall & Espiner, 2013)

Bitcoin network works when more than 50 per cent of the nodes are honest. This means that if someone would want to hack into the Bitcoin system, it is practically at least to

some extent possible with a 50 per cent or above computational power. Otherwise it is impossible to produce more Bitcoins than the system produces or to steal someone's Bitcoins, because of the peer-to-peer distributed timestamp server. If you want to understand or read more about the functions of the Bitcoin network, you can read Satoshi Nakamoto's white paper; Bitcoin: A Peer-to-Peer Electronic Cash System. (Nakamoto, 2008)

One way that hackers can get cryptocurrencies is if they mine coins with other peoples' computational power. There have been and there still are computers infected with different viruses, which allow the virus to take an amount of computational power from the victim's computer. Symantec's article "IoT Worm Used to Mine Cryptocurrency" explains how a virus named Linux.Darll0z had infected computers and used their computational power to mine cryptocurrencies such as Dogecoins and Mincoins. According to Symantec, this was a small incident compared to other similar incidents. (Hayashi 2014)

There have also been incidents when people send their Bitcoins to the wrong address that is valid and possessed by a random person. If the Bitcoins are sent to a wrong address, there is a big chance that you will never get your Bitcoins back, because you cannot find out whom the address belongs to. This is possible because of the not-reversible transaction described in the first paragraph of this chapter. One of the few ways to get back your Bitcoins would be a case where the receiver notices the mistake and sends the Bitcoins back.

If you would accidentally in a bank send your money to a wrong address, you can call the bank and they will usually help you to get your money back (because reversible transactions are possible). Sometimes when you send money from your account to another person's account, you may not get your money back because the receiver does not want to send them back, which is why you have to be careful sending money to a wrong account. But you should be even more careful when you send Bitcoins from one address to another, because the Bitcoins you will send to a wrong address will probably not be returned. When the writer mentions sending Bitcoins to a wrong address, the writer means sending Bitcoins to another person's address. If the Bitcoins are sent to an address that does not exist, it will bounce back to the sender's address.

4.2.1 Analyze

Security risks have been brought up. The USD security has been divided into the Internet bank and cash, the Internet Bank being almost impossible to break into, cash having its problem by people printing fake money. The biggest risk with the USD is that someone may use it wrongly by illegally printing fake money.

Nakamoto's white paper states that Bitcoin is almost impossible to break into and it is almost impossible to print more Bitcoins. You need to have over 50 per cent of the calculation power, which is at the moment almost impossible because of the large amount of specially made computers around the world making calculations to the Blockchain.

Wallets described in the previous chapter possess a security threat if the user does not know how to use them. As Brade pointed out you, need to have a user wallet (mobile wallet) with a small amount of Bitcoins and a saving account that is in cold storage.

In Nakamoto's white paper, also the non-reversibility of transactions is discussed and that transactions are safer in Bitcoin because no one can control them. Bitcoin transactions have a cryptographic proof, which meant that they are non-reversible. Again, if you send the Bitcoins to the wrong address, you cannot get them back. Banks rely on a trust based model, because they can this way control transactions and even have them reversed. This proves that banks have the power over their customers, while the Bitcoin users have the power over themselves.

From the evidence we can draw the conclusion that Internet banks are safe but Bitcoins network is at least as safe as the Internet banks. With Bitcoins you can lose money if you do not know how to use your wallets or if you send the money to a wrong address. This means that you have more responsibilities with Bitcoin, but then again no one can control your transactions or accounts. Cash, especially the USD, has still quite bad security features, because people are printing fake money. The risk that someone is printing illegal USD's is quite high, while someone printing illegal Bitcoins is impossible.

4.3 Personal secrecy in Bitcoin compared to the USD

When we talk about personal secrecy, we have to look the same way we did in the previous chapter. When using cash, for example the USD dollar bills, you leave no trace from yourself. The only way you can be traced is if you withdraw or deposit your mon-

ey to a bank. So, basically you can be almost completely anonymous without anyone knowing your business if you buy everything with cash and nothing goes through your account. The problem arises when you buy a lot with cash, for example a house, the tax authorities and other governmental agencies will start to supervise you whether you are using your own money, or if you have something illegal going on. This is a reason why almost everything has to go through your account, for example your salary and rental payments (at least this is the case in Finland and most of the European countries).

Receiving and submitting your payments through your account makes it possible for anyone with the right authorization to check upon you and your transactions, which will make it much more difficult for money laundering and other illegal activities. In today's world, the cash is decreasing and the amount of "online money" (money on the Internet) increases, which is why the personal secrecy of a person lies in the hands of the financial institutions, and then again the secrecy of the financial institutions lies in the hands of the regulators.

According to the FDIC law "Part 1020 – Rule for financial institutions" financial institutions should follow certain procedures, for example to inform the higher authorities if they suspect someone for money laundering. Financial institutions have made their rules stricter every year to try to avoid illegal activities, and also to be able to gather more information about their customers. (FDIC, 2013)

The Bank Supreme Act of 1970 requires a bank to report any transaction higher than 10.000 USD. The act was followed up by the Money Laundering Control Act of 1986 that made money laundering a federal crime. In 2001, the law was even further extended when the congress passed the USA Patriot Act, which increased reporting responsibilities and also included more financial institutions. This was done to fight even harder against illegal activities, such as money laundering and terrorist activities. These stricter rules make it harder to move cash and much harder to move bigger amounts of money with wire transactions. At the same time it is easier for the officials to catch people doing illegal activities, because they have access to the transactions saved at the financial institutions. The negative aspect of it is that it exposes persons to the regulators, because anyone with the right access can get information about anyone he or she wants. This

information can be used wrong. There is also a risk of a financial institution losing their customers' personal information, which would expose the customers for the same kind of threat. (Cornell University Law School)

With Bitcoin it is possible to be completely anonymous. Making transactions and receiving Bitcoins is anonymous. But if you give your public address out to the public and tell who you are, then everyone can follow your transactions concerning that address. Basically, this means that you can be anonymous when paying with Bitcoins and at the same time you do not need to trust anyone. Some third party service providers, for example digital currency exchangers or wallet service providers, require you to give personal information, while others do not require that. If you want to stay anonymous, you should use services that do not require you to give them information about yourself, because if there is a breach in their system, then your personal information might leak.

According to Andreas Antonopoulos article "Bitcoin security model: trust by computation" Bitcoin's security model is a model called "trust by computation" where trust is achieved through computational power. The financial institution implements a model of achieving trust through access control. According to Antonopoulos, the traditional method used by financial institutions requires firewalls, encryption, strong authentication and careful vetting. (Antonopoulos, 2014)

The writer of the paper already described two paragraphs ago how this traditional method requires trust in those who have access to all the information, which might expose peoples' personal secrecy.

With Bitcoins trust model, no one needs to be trusted because there is no third party or central authority watching over your shoulder, because of the computational power the nodes possess. As already mentioned in the chapter about Bitcoin, there must be at least 50 per cent honest nodes that are 50 per cent of the computational power. If the dishonest nodes reach above 50 per cent, it means that someone who wants to hack the network can do so, and try to destroy the whole currency. Because of the trust by computation model there is:

- no need for the network to be closed or encrypted

- no need to fight against people trying to misuse the system, because they cannot misuse it
- no need for a trusted third party

Finally, no one can steal any secret information from the servers or network because there is nothing to be found

(ibid)

4.3.1 Analyze

When using the USD as cash, it leaves no trace if you only use cash. Others, such as the Internet bank, leave a trace that is encrypted but can be retrieved by, for example, the government if they have the right clearance.

Bitcoin is completely anonymous if you change your address every time you use it. Because the addresses are public, people can follow addresses with a lot of Bitcoins, which is why the identity might be known for the addresses with plenty of Bitcoins.

From the facts gathered we can draw a conclusion that Bitcoin is safer than the USD concerning personal secrecy. The USD in cash is anonymous when your personal secrecy remains intact. Everything else that involves using your bank account possesses a security threat that might endanger your personal secrecy. For example anyone with the right clearance can get your account information, or if someone hacks into the system. Bitcoin is totally anonymous if you use the correct services in the correct way. No one can get your information, because there is no information about you to be found. There are also risks in Bitcoin endangering your personal secrecy; this might happen if you use a service where you give your personal information, then the same can happen as described above with the bank accounts.

4.4 Is Bitcoin a currency?

There are different opinions about if Bitcoin is a currency or not. The main problem in the discussion arises because Bitcoin functions the same way as gold as an investment that hold its value, but at the same time it can be used in the same way as cash is used; anonymously without a third party involved. To understand whether Bitcoin is a currency or not we can compare it with the USD.

Henry Brade thinks that Bitcoin is a digital currency and states the following: Satoshi Nakamoto called Bitcoin a currency. I call it a digital currency. Brade likes the name digital currency and thinks that virtual currency is not a good name, because there are hundreds of virtual currencies (game currencies, flight mile currencies, Facebook credits, amazon coins). Also the USD and all the other countries' currencies are also basically virtual currencies, because more than 90 per cent of the currency is on Internet, which is why Brade likes the name digital currency. (Brade, 2014)

Brade also thinks that a big reason behind the fact that not many countries have accepted Bitcoin and has a negative attitude towards it is because Bitcoin is like a commodity that you can change. At the same time, it has the same qualities as a currency. This can be confusing and will hopefully become clearer in the future. What we, Prasos Oy, are interested in is if Bitcoin is seen as a financial activity, like a currency or like a commodity. It takes a long time to make regulations, taxes etc., but these regulations and especially laws will affect Bittiraha and other marketplaces future. (Brade 2014)

In chapter 3.1, the writer described what a currency is, and that most of the currencies in today's world are Fiat Money. If we look at the basics needed for something to become a Fiat currency, it needs to have supply and demand and also some sort of value, which Bitcoin has. The USA Internal Revenue Service (IRS) made a statement in March 2014 stating that Bitcoin is not a currency. Many other countries have made the same conclusion stating that Bitcoin is not a currency. The IRS statement said (IRS, 2014):

In some environments, virtual currency operates like "real" currency -- i.e., the coin and paper money of the United States or of any other country that is designated as legal tender, circulates, and is customarily used and accepted as a medium of exchange in the country of issuance -- but it does not have legal tender status in any jurisdiction.

The notice provides that virtual currency is treated as property for U.S. federal tax purposes. General tax principles that apply to property transactions apply to transactions using virtual currency.

An article in Wired "Bitcoin Is Pointless as a Currency, But It Could Change the World Anyway" written by Felix Martin, argues that Bitcoin's boldest promise lies not in currency but in questioning how the money works and have worked for 500 years. (Martin, 2014) According to Martin, the fight between merchants and the sovereigns began in the

17th century, when the merchants were tired of the sovereigns abusing their monetary monopoly. Then the merchants realized that they could have their own money, which they created and called the “écu du marc”. They did not use coins as the sovereigns did; they used bills instead and also had written records of credit balances. The impact of the merchants’ new currency was not just affecting economically, but also politically. As the sovereign’s power decreased with the new currency being more widely used, this led to truce by founding the Bank of England in 1694. (Martin, 2014):

Henceforth, money would be a hybrid beast — issued by private banks, but under license from the sovereign — and its creation would be managed according to neither fiscal nor commercial interests alone, but as a compromise hammered out between the two. It was nothing short of a Great Monetary Settlement: a politico-monetary quid pro quo that has remained the basis for all capitalist financial systems ever since.

Brade thinks that the major differences between Bitcoin and USD are that USD has a money policy, while Bitcoin does not have one. USD has the FED deciding different things about the USD, for example creating new money to the market. USD is debt based money that comes from the central bank, and from there it goes to the financial institutions and from there to the market. How USD is maintained and controlled is political. We have loose and hard money. Hard money being gold, but also during the time gold was pegged to the dollar; financial institutions could borrow out more money than they actually had; the process is called fractional reserve. Loose money means the kind of money in today’s world where the financial institutions can borrow out much more money than they actually possess. Bitcoin is different in this sense that there can only be 21 million Bitcoins, which has the same kind of quality as gold, which is also limited. But it is also almost impossible to use the fractional reserve model, because you keep the Bitcoins yourself or have them on a marketplace. Yes, MtGox did not have us much money as they had assets, but this only taught the Bitcoin community: the big marketplaces nowadays need to prove through the Blockchain that they have all the customers Bitcoins saved in their wallet, which makes the fractional reserve model impossible in the near future. This makes Bitcoin the hard money, while we have in today’s society loose money policy, with the fractional reserve model where the central bank and financial institutions can make more money. The loose money policy that the countries are practicing is, according to Brade, a lending bubble system that can only be maintained at the moment by keeping the interest rates almost at zero. (Brade 2014)

4.4.1 Analyze

From the information received we can draw a conclusion that Bitcoin is some sort of currency. According to Brade, Bitcoin is a digital currency. The problem arises in its multiple features; it functions in the same way as gold as an investment and also works the same way as cash, being anonymous when transferred to someone. Several countries have said that Bitcoin is not a currency, but some sort of commodity; this is because the countries cannot control the currency. This and that: the USD has a money policy while Bitcoin does not have one; this is a big reason to its odd interpretation by the countries. From the information gathered we can see that Bitcoin functions as a currency, because you can use it in some stores and even change it to USD's. At the same time, it functions as an investment like a commodity.

4.5 Is Bitcoin or the USD a bubble that is going to burst?

There have been multiple articles stating that Bitcoin is a bubble that is going to burst.

According to Henry Brade, Bitcoin's value can in theory be really high. But Brade thinks the Bitcoin value could be around 10.000-100.000 USD per Bitcoin, if the USD value stays almost the same. To be more worth, it would require almost everyone to use it, which probably will not happen at least in the near future. A crisis for the big currencies is good for Bitcoin; it might prove that Bitcoin is better than the other currencies. (Brade 2014)

Brade does not think Bitcoin is a bubble that is going to burst, because its value is not big enough. Of course there is a risk that it can at some point become too valuable; because of having too many companies on the field and because of a too big hype about it. Brade states that he thinks that Bitcoin is not yet there, but it might become the scenario if it gets too much hype without a reason. If it would happen this could be compared towards the IT-bubble that happened year 2000. Brade sees this as a possible scenario that could happen in a time of 5 years. (ibid)

If Bitcoin would be used as a worldwide currency, it could possess a value of a few trillion USD. Chris Dixon, who works in the Silicon Valley in a venture capital firm Andreessen Horowitz, states in the article “A single Bitcoin could be worth \$100K in future, says Silicon Valley VC” that a single Bitcoin could easily be worth 100.000 USD if it becomes the market leader in online payments. (Racoma, 2014)

In Forbe’s Article “You Don’t Need A Nobel Prize To Be Wrong About Bitcoin, But It Helps” the writer Rogowsky writes about Jean-Paul Rodrigue and his model defining every stage of a bubble that Rodrigue created in 2008. The Nobel Prize-winning economist Robert Shiller has stated the following (Rogowsky, 2014):

The Bitcoin phenomenon seems to fit the basic definition of a speculative bubble — that is, a special kind of fad, a mania for holding an asset in expectation of its appreciation. The instability of Bitcoin’s value in dollars is a measure of failure, not success.

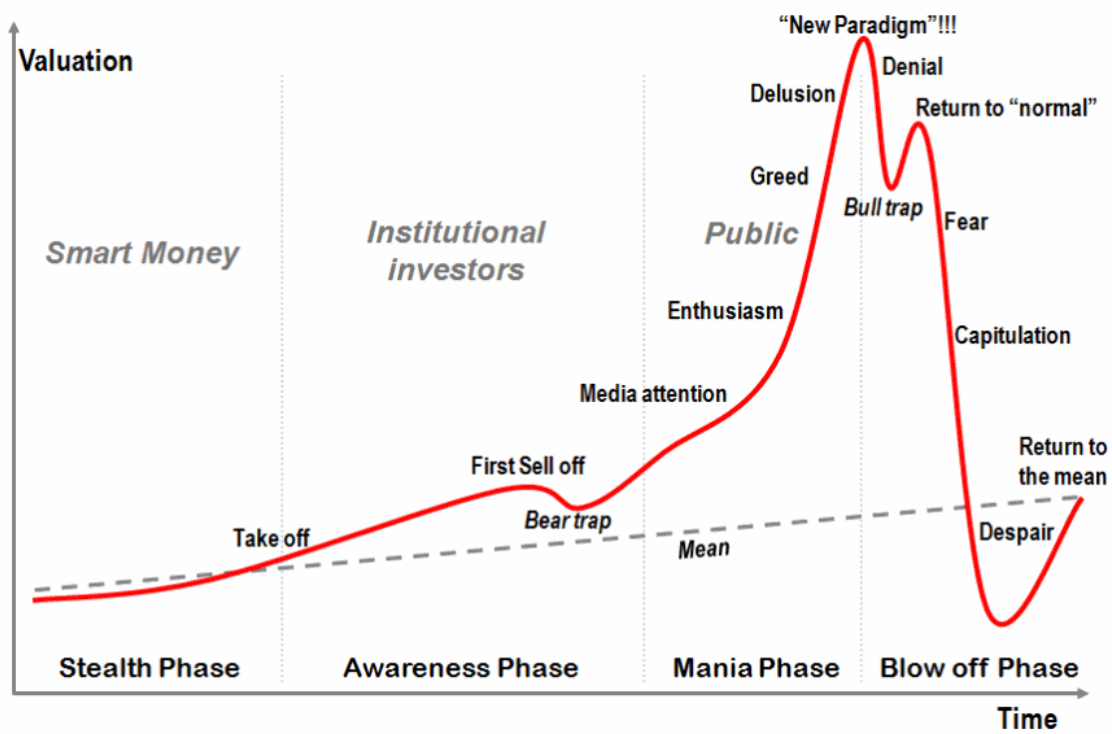


Figure 7. The stages of an investment bubble, (Jean-Paul Rodrigue, 2008)



Figure 8. Bitcoin Price, April 2013- April 2014, (Coinbase, 2014)

Rogowsky points out that Rodrigue’s chart (Figure 7) is just a model and no straight conclusions can be drawn, even though the Coinbase chart (Figure 8) looks reasonably the same as Figure 7. Rogowsky also points out that even though Bitcoin has had a rough time, for example Mt. Gox going bankrupt, it has neither lead to fear, capitulation, nor to the despair stages of Rodrigues model. Rogowsky points out that of course there is a possibility that these stages might still happen. In the end of Rogowsky’s article, he argues that Bitcoin might be a good thing by stating that:

- Bitcoin users have increased from 350.000 to 2 million in a few months
- there are over 25.000 merchants accepting Bitcoins
- Bitcoin has been stable after Mt. Gox went bankrupt, no panic was seen
- Bitcoin starts to look like a new kind of banking

(ibid)

Robert Schiller was on a panel at Davos in January 2014 talking about digital trends and stated the following (Weisenthal, 2014):

It is a bubble, there is no question about it. ... It's just an amazing example of a bubble.

He added that he's "amazed by how people are so excited about it" and that he tells his students that "No, it's not such a great idea."

Mark T. Williams, a former commodities trading floor senior executive and Federal Reserve bank examiner who teaches finance at Boston University School of Management

predicts in his article “FINANCE PROFESSOR: Bitcoin Will Crash To \$10 By Mid-2014” that Bitcoin will crash to 10 USD per Bitcoin by the first half of 2014. Williams’s thinks that Bitcoin is flawed because it is decentralized, it does not meet the standards to become a worldwide currency, it has a high risk and China pushed the price up high and popped the bubble. Williams’s prediction and conclusion can be seen in Figure 9, which is taken from the article. (Williams, 2013)



Figure 9. Bitcoin will crash to \$10 by mid-2014. (Williams, 2013)

Aaron Pressman writes in his article “Bitcoin crashes again: Is it over for the cryptocurrency?” about Bitcoin and its future. In the same article, Pressman’s colleague Phil Pearlman states that “whether this means that Bitcoin has crashed once and for all and that a bubble has popped remains to be seen”. Pressman raises the ultimate question: whether an unregulated currency, lacking centralized authority and control, can exist among powerful nation states and their financial regulatory regimes. Pressman and Pearlman state clearly that the nations will have a big impact on whether the currency will blossom or fail. (Pressman, 2014)

Bitcoin is not the alone facing a lot of challenges. USA that is seen as one of the world’s most stable and trustworthy country, and the USD that is the worlds most used currency; is also facing a lot of future challenges. USA has had already a major problem with their amount of public debt, which is increasing at a fast pace. If USA had to default

their debt (or a part of it), a new world crisis would start which would affect the whole world. It would affect mostly the countries that have invested major amounts in USA state bonds. As it looks like, the big investors as China and Europe will not allow this to happen, because a new crisis will become much more expensive than to forgive some amount of loans and bonds to the USA. A big actor in keeping the USD stable and trustworthy is the FED (Ulkolinja: USA:n keskuspankin mahti, YleAreena 2014)

4.5.1 Federal Reserve System (FED)

The FED has as their assignment, according to their homepage: “The Federal Reserve, the central bank of the United States, provides the nation with a safe, flexible, and stable monetary and financial system”. When gold was not pegged to gold anymore, FED had more power to steer the currency; basically the FED could print money whenever they wanted and how much they wanted. This was not possible before when the gold was pegged with the USD. (Board of Governors of the Federal Reserve System, 2014)

The documentary on YleAreena, 2014 called “USA’s and the FEDs power to do things” describes the history of the FED and what they have done wrong and right. The FED has practiced a loose money policy, saving companies from going bankrupt by printing more money. FED has many times kept their interest rates too low for too long. The major tasks the FED has are to print money, set the interest rate and control the banks. When the FED wants to lower interest rates, they print and create more money. When the FED wants higher interest rates, they take money away from the market by making money more expensive. (Ulkolinja: USA:n keskuspankin mahti, YleAreena 2014)

In 1920, FED had low interest rates, and in 1928 high interest rates, which lead to the great depression. This happened because the FED increased the interest rates to protect the gold reserves, because people were withdrawing all of their money. The FED should actually have decreased the interest rates to stop a great depression from happening. (ibid)

In the middle of the 1960s, the great inflation took place because there was too much money on the market. The middle of the 1960s was a time of wars, which meant that the spending increased and too much money was out on the market. President said no to

higher interest rates and FED caved, which lead to even more money on the market, because you could borrow money quite cheap. Too much money was on the market and the inflation was really high. (ibid)

In 1971, Nixon entered the new era of modern inflation when the gold pegging was stopped. After that we have seen the 2000 stock market crash, which was called the IT bubble. The reason behind it was again that the FED had had a loose money policy. In 2008, we saw again the same type of loose money policy too long from FED when the financial crisis hit the world and the Lehman Brothers went bankrupt. (ibid)

The question raised in the YleAreena documentary was whether USA's debt and the fast uphill on the stock market will have the ingredients of becoming a new world crisis. The head of FED, Ben Bernanke, has as his predecessors practiced a loose money policy. This has made it possible for them to make major buyback programs, buying bonds from the market and keeping the interest rates low to stimulate the economy by borrowing cheap money. According to the documentary, this looks like a repetition already seen as a bubble that is going to pop. The biggest question is what could happen if the USA had a much lower rating credit rating (already dropped from AAA to AA+ in 2011)? Could people start to lose their faith in the US dollar and the value of the USD could drop dramatically? USA has a heavy debt, which they can survive with by printing more money, but it will not solve any problems if the USD is worth nothing. Only time will show what Janet Yellen, who got elected in January 2014 as the Chair of the Board replacing Bernanke, can and will do. (ibid)

4.5.2 Analyze

From the information gathered we can draw a conclusion that Bitcoin is too small to be a bubble that is going to burst. If it were to become too big because receiving too big a hype, it could become a bubble that could burst; but that to happen it would need to be worth at least 100.000 USD per Bitcoin. There are many speculations saying that Bitcoin's value will plummet and soon be worth zero or a couple of USD's. Brade thinks this is not going to happen; the only way it could happen if Bitcoin showed some technical problem that cannot be fixed.

A conclusion about the USD can also be drawn; with USA and its debt rising to new records and Fed's loose money policy, it might lead to a big financial crisis if they would not be able to pay their debt or if they would lose trust in the USD around the world. Comparing the chances of a bubble that is going to burst, the USD holds a greater risk because its amount of debt and loose money police might come and bite it back. Even if the value of Bitcoin would go down to near zero it would be a needle in a haystack, if we compare it to the USD and a possible crisis USA could bring.

4.6 Changes in value of Bitcoin compared to the USD

There have been big changes in value when we look at Bitcoin. The writer already described in the Introduction chapter how volatile Bitcoin has been and how fast its value has changes both ways. In this chapter, the writer will go through the reasons behind the fast rises and downhill's in the value of Bitcoin. The USD has kept its value relatively stable throughout its whole history, which is why we dedicate this chapter to Bitcoin's value changes.

The first major breach happened 19th June 2011 when MtGox was breached, causing them to lose delicate information about their customer, which sent the price of Bitcoin to plummet from 17,51 to 0,01 USD per Bitcoin on the MtGox marketplace. After that we have seen a major increase in Bitcoin's value until the end of 2013. One of the biggest reasons behind the high and fast rise of value in Bitcoin was China, who got more and more involved in Bitcoin. On 20th April 2013, the Bitcoin central was hacked, which sent the course from an all-time high from 266 to 50 USD. In October 2013, when FBI seized Bitcoins connected to the Silk Road, the price dropped again from 140 to 110 USD but recovered fast. On 19 November 2013, Bitcoin went above 1000 USD per Bitcoin and reached an all-time high of 1242 USD. On 17 December 2013, China's central bank banned Bitcoin transactions and the regulators of China gave a negative message about Bitcoin, which sent the price of Bitcoin down to approximately 500 USD. The value of Bitcoin rose again to approximately 700 USD. On 28 February 2014, MtGox filed for bankruptcy. A lot of people stated that this was evitable, and interestingly it did not affect the price of Bitcoin, only the price of Bitcoin in MtGox marketplace because they had lost their customers' Bitcoins. (Highfield, 2014)

Karl Whelan writes in his article “How Is Bitcoin Different From The Dollar?” that Bitcoin differs from the dollar in that sense that it is not backed up by any state. The dollar is backed by the USA, meaning when the USA requires payments in USD, they create a direct demand for the dollar that cannot according to Whelan be replicated by Bitcoin. (Whelan, 2013)

Brade thinks that the value of Bitcoin can still change a lot, because of its low value of approximately 5 billion USD. If the Bitcoin value could reach approximately 100 billion USD, the changes in value would be much less. More and more Bitcoins are held by people who do not panic to sell their Bitcoins. (Brade 2014)

4.6.1 Analyze

From the information gathered we can state that the USD is much more stable than Bitcoin, because it is much bigger and at the same time it has FED controlling it and USA backing it. Bitcoin has no one backing it and it is still a small currency with a value of a few billions, which is why it faces big changes in value. The positive value increase has been mainly because of its hype. The decrease in value has lately been because of China and other countries’ rules and laws concerning Bitcoin and its usage. If it were to become bigger, its value changes would be much smaller because someone selling or buying the currency would have only a small effect on the currency.

4.7 Cryptocurrencies and their future

Micky Malka states in Bloomberg’s article “Bitcoin Bull Holds Firm as Mt. Gox Drags Down Currency” as follows: (Saitto, 2014)

I have no doubt on the future of Bitcoin because the concept of money becoming digital in all shapes and forms is here to stay.

Returning back to the article that Martin wrote in Wired about Bitcoin, he sees a future in Bitcoin because of its hybrid payment technology that provides a new means economically and politically (Martin, 2014):

If history is a guide, it is here that bitcoin's real potential lies: in its hybrid payments technology. As Europe's medieval merchant-bankers proved, a brilliant new means of recording and verifying money transfers can indeed be a revolutionary event — not just in economic, but in political terms.

The existing, bank-based payments system is expensive and antediluvian — but also profitable and therefore jealously guarded by its powerful owners. Other technologies co-exist — such as cash payment face-to-face, or the developing world staple of hawala for international transfers — but they cannot seriously compete with banks. If Bitcoin's technology is as cheap, as scalable, and as secure as its advocates claim, it may be different.

Martin explains in the article that there is room for Bitcoin, and if it actually works the way it has been marketed it may become something big. (Martin, 2014)

Brade thinks that sky is the limit when we talk about Bitcoin's future as a cryptocurrency. It can in the long run be a big part of the financial sector, for example in money transactions and at the same time take many work places from the financial sector. Many people understand Bitcoin as a money invention, but that is not its only purpose; it is basically a technological innovation. The Blockchain can be used to almost anything, for example to different securities, stocks, personal data, and contracts. This will decrease the workload for people working with this information, which will lead to fewer jobs on the financial sector. These changes will take quite a long time. Bitcoin has a good head start compared to other cryptocurrencies and has all the ingredients for success. Brade thinks that there are no other cryptocurrencies at the moment that can challenge Bitcoin, but if there were some technical problems with Bitcoin that could not be solved, it could lead to a creation of a new cryptocurrency. (Brade 2014)

Brade thinks that Bitcoin has three possibilities, if we discuss about the long-term promise Bitcoin holds. First option is that it can become niche digital currency, especially meant for certain purposes with a few million users. Second option is that it will somehow crash. For example states or laws have prohibited the use of Bitcoin somehow. Or there will be some technical problem. The third option is that it will become a worldwide currency in the size of USD or Euro. Brade thinks that Bitcoin has a big expected value ratio and that Bitcoin will become bigger than it is today. (Brade 2014)

The former USA Federal Reserve Chairman, Ben Bernanke, stated in a letter 18th November 2013 to the senate (Perlberg, 2013) the following:

Fed doesn't have the authority to supervise virtual currencies, but that they may hold long-term promise, particularly if the innovations promote a faster, more secure and more efficient payment system.

The statement made by Bernanke is a positive message for Bitcoin and its future. In 2013, Bernanke was the person making decisions in FED, which is the central bank of USA. The message had a big impact on Bitcoin because it works without a central bank, which is the opposite of the FED. If a person who leads a central bank supports a system without one, it is definitely a positive message to Bitcoin. (Perlberg, 2013)

Jared Cohen, the Director of “Ideas at Google”, stated that the future of digital currencies like Bitcoin is clear: it is very obvious to all of us that cryptocurrencies are inevitable. Cohen however points out the danger of Bitcoin, because it does not have enough regulation. (Hajdarbegovic, 2014)

Warren Buffett, the CEO of Berkshire Hathaway, stated 3rd March 2014 that Bitcoin is not a currency. In his latest interview 14th March 2014, Buffett advises investors to stay away from Bitcoin and argues that Bitcoin is a mirage basically. (Rizzo, 2014)

Nouriel Roubini is a Lecturer at the Stern School of Business. According to Coindesk’s article, Roubini has earned himself the nickname “Dr Doom”. Roubini predicted the housing market crash that led to the financial crisis in year 2008. Roubini stated also his opinion about Bitcoin in the following way (Palmer, 2014):

So Bitcoin isn’t a currency. It is [by the way] a Ponzi game and a conduit for criminal/illegal activities. And it isn’t safe given hacking of it.

Al Gore, former Vice President and Board Member of Google, stated the following during the Innovation Project in 2013 (Cawrey, 2013):

When bitcoin currency is converted from currency into cash, that interface has to remain under some regulatory safeguards. I think the fact that within the bitcoin universe an algorithm replaces the functions of [the government] is actually pretty cool.

Bill Gates has also given his opinion about cryptocurrencies and their future in a following way (Cawrey, 2013):

“Someone who’s interested in finance can help drive innovations such as digital currency that reduce transaction costs so that poor people can borrow at five percent a year instead of 15 percent.”

Brade thinks that the major reasons for Bitcoin getting bad publicity are the lacking rules and laws concerning Bitcoin around the world. Banks have been careful against Bitcoin, not because of Bitcoin in general, but because of the laws that they need to follow. And if Bitcoin does not have enough laws, it is really hard for banks to give their opinion about it. (Brade 2014)

In Germany, the private money concept has arisen, which is the old type of model of money where you had your private money and the state money. According to Brade this could be a positive direction, because it would give Bitcoin some sort of reasonable definition, which is really needed. (ibid)

4.7.1 Analyze

We can draw a conclusion from the information that Bitcoin has some kind of a future. It might be as a currency or as something else.

According to Brade, Bitcoin has a future not only as a money invention, but as a technological innovation, because the Blockchain can be used to almost anything, for example to different securities, stocks, personal data, and contracts.

Ben Bernanke's positive comment about Bitcoin shows that USA supports Bitcoin in some way and that it will exist in the future. Al Gore's, former Vice President, support for Bitcoin strengthens Bitcoin and its future.

Warrant Buffett's and Nouriel Roubini's negative comments about Bitcoin, stating Bitcoin being a Ponzi scheme and that you should stay away from it, show that there are also people who are against Bitcoin.

4.8 Matrix

In the figure 10 we can see a summary of all the statements made in the fourth chapter and all the most important risks and possibilities, and also positive and negative aspects.

To summarize the most important parts of the chapter we can state that:

- The USD has a deposit guarantee of 250.000 USD in every bank (almost every bank has the deposit guarantee). Bitcoin does not have a deposit guarantee; if the financial institute goes bankrupt, you will probably lose all your money.

- Bitcoin has a security risk in deposits; if someone steals your Bitcoins you cannot get them back because it is impossible to find this person. If a bank or financial institute loses its customers funds they will refund the customer.
- The USD in cash is the currency that is in the world the widest used to launder money. Bitcoins are impossible to laundry money with.
- Bitcoins have total personal secrecy when the USD can be monitored by someone who has the rights to do that.
- Both the USD and Bitcoin are used as money, while Bitcoin is also used as a commodity. People invest in Bitcoin in the same way as people invest in for example in gold.
- The USD has a money policy while Bitcoin has none. The USA has a loose money policy with the USD, which means that they can print as much money as they want. Bitcoin has a “hard money policy” which means that Bitcoins are mined and the amount of Bitcoins produced is already known. No one can change the quantity of Bitcoins because it has already been decided when it was created.
- Bitcoin has been affected by big changes in value while the USD has stayed stable for a long time. The big changes in value on Bitcoin are because of its hype in the media and china that started to buy and support Bitcoin in the middle of year 2013.

	Statements		
Currencies		USD	BTC
	Deposit Guarantee	X	
	Security Risk in Depositions		X
	Money Laundry	X	
	Total Personal Secrecy		X
	Used as Money	X	X
	Used as Commodity		X
	Has a Money Policy	X	
	Loose Money Policy	X	
	Hard Money Policy		X
	Big changes in Value		X

Figure 10 Summary of the statements made in chapter 4 in a matrix

5 DISCUSSION AND CONCLUSION

Bitcoin is a widely discussed topic and will be so in the future. It is not only an electronic currency, but also has potential to become something bigger; a security model for a financial system or any other company, because Bitcoin has an encryption which is in theory impossible to break.

The main arguments that were presented in the results section were as follows:

- security which consists of the following topics; deposition risks between the USD and Bitcoin, security risk on Bitcoin and the USD moneywise, personal secrecy in Bitcoin compared to the USD;
- valuation which consist of the following topics; is Bitcoin a currency, changes in value of Bitcoin compared to the USD;
- future which consist of the following topics; is Bitcoin or the USD a bubble that is going to burst and what is the future of cryptocurrencies.

The research questions were answered in the comparison and analysis section, with reference to articles where economical experts gave their statements. There was also gath-

ered general information from the Internet. The interview with Henry Brade was made to give some deeper information about Bitcoin, and at the same to strengthen or weaken the statements presented in the comparison and analysis section. In the end of every statement, there was an analysis made that showed the conclusion of the chapter. The research aim was reached and hopefully the paper will help people to understand Bitcoin and its potential.

My main motivation to do this thesis has been that we might be entering an era where crypto or electronic currencies will become the new form of money instead of the current currencies, which is why it is an extremely interesting topic. At least they are going to have a big part in the future money market in the world. Another point is that I wanted to investigate whether people in high executive positions actually understand how Bitcoin works. There have been many negative comments about Bitcoin being a scam and that it is going to crash. Many of these comments have proved that the person who commented on Bitcoin does not even understand how it works and what its main purpose is. Many people who arguments against Bitcoin has not enough knowledge about Bitcoin, which is why I have taken a speculative approach when reading the articles. Many times the case has been that you cannot trust the sources.

I believe that Bitcoin has a big potential and a future, whether it will become a major currency or not. The Blockchain that was created can be used to almost anything, which I think will play a vital role in the security features in the future. I would guess that Bitcoin will in a few years have created its own ecosystem to be used by millions of people. Why? Bitcoin has many good qualities; no one can track the user, it can easily be sent to a war zone or somewhere else where sending normal money would be almost impossible. And at the same time it can be built to send or maintain other documents, stock papers, you name it! And the best part, you do not need to trust a third party, who could accidentally leak your personal information or lose your money or personal documents.

I think that the main reason why Bitcoin is generating so much negative comments is because people do not actually understand the fundamentals of Bitcoin and the future it possesses. A paper about how much many high executives, like Warren Buffett, actually

know about Bitcoin could be extremely interesting. The main angle could be if there are the high executives just giving some comments without actually knowing the fundamentals about Bitcoin. I think that there still remain a lot of questions unanswered; for example the laws made in all countries are still at a starting stage, especially the taxation laws.

My opinion is that there are other methods to do this or a similar research, but it will most likely reach the same conclusions. The most important part is to understand how to analyze the information received. Many financial experts are making statements about things without actually knowing much of the topic.

The future of Bitcoin remains to be seen, but according to many articles and Brade, Bitcoin is here to stay and will have an impact on the world. This will be either as the first worldwide used currency or, as a currency used for specific purposes or as something totally different, for example a security feature used in the world by almost everyone.

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Interview

Henry Brade, CEO of Prاسos Oy. 17.03.2014, Interview about Bitcoin and its future
[oral]

APPENDICES

Interview questions with Henry Brade 17.03.2014 (the interview was conducted in Finnish)

1. Could you tell shortly about Bittiraha and the company Prasos Oy?
2. Do you think that Bitcoin is a currency
3. What are the risks in Bitcoin; mostly concerning how you deposited your Bitcoins somewhere? Which option would you recommend?
 - a. Different wallet services?
 - b. On your hard drive?
 - c. On a marketplace for example BTC-E (liquidity concerns MtGox)?
4. How does MtGox going bankrupt (because of them losing their customers Bitcoins) affect Bitcoins reputation and do you see it as a beginning to an end?
5. Do the people who are working at high financial positions understand how Bitcoin works or are they just giving Bitcoin a bad reputation without understanding the fundamental parts?
6. What are according to your opinion the main differences between Bitcoin and USD?
7. Is Bitcoin an Investment option, or a payment option? What about its future?
8. Countries and their central banks have decided not to make Bitcoin a real currency. What do you think are the main reasons behind this?
 - a. Does Bitcoin become an official currency, and if yes, how soon?
9. How do you think Bitcoins value will change in the future? There have been speculations that one Bitcoin could reach the value of a couple of million if it would be used worldwide, do you think this could happen?
10. The variation in the value of Bitcoin has been extremely volatile. Do you think that the Bitcoin will continue to behave in the same way or do you think that it will start to behave more like a currency (less volatile changes in value)?
11. What do you think about other cryptocurrencies (Litecoin, Zerocoin)? Are other cryptocurrencies going to be a threat to Bitcoin in the near future; if it would happen would the value of Bitcoin go to zero?
 - a. Do you think USA can keep USD as the world's most valuable currency or will a cryptocurrency like Bitcoin take its place?
12. What do you think about the taxation, especially in Finland? Do you think it will change in a better way?
13. Do you think that Newsweek found the correct Satoshi Nakamoto, a 64 year old American- Japanese guy who lives in the USA, Los Angeles, San Bernardino?
14. Where do you see Bitcoin after 10 years?
15. USA and USD have had problems in their economy; they have increased their debt, USA rating dropped from AAA to AA+. What do you think would happen if USD would start to lose its value? Could we have a new economic crisis?
16. Do you think Bitcoin is a bubble that is going to burst?