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Impact of Public Speculation on Cryptocurrencies

A Study Between Early and Late Adopting Countries

TIIVISTELMÄ

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Lopputyöni käsittelee kryptovaluuttojen käyttöönottoon vaikuttavaa keskustelua. Käyn läpi käyttöönottoa kahdessa maassa. El Salvadorin voidaan katsoa olevan esimerkki aikaisesta käyttöönottajasta eli valtio on ottanut kryptovaluutan viralliseksi valuutaksi dollarin ohella luodakseen taloudellista riippumattomuutta. Yhdysvalloissa taas kryptovaluutat eivät ole virallisia valuuttoja, mutta valtio pyrkii luomaan lainsäädäntöä niiden kaupankäynnin valvomiseksi. Lisäksi tarkastelen desentralisoitua pankkitoimintaa ja sen tulevaisuuden näkymiä.

Perehdyn kirjallisten lähteiden kautta kryptovaluuttojen käyttöönoton nykytilaan käyttäen kvalitatiivisia menetelmiä. Kryptovaluuttojen hintoihin vaikuttavat tekijät voidaan jakaa sisäisiin tekijöihin, jotka liittyvät kysyntään ja tarjontaan. Ulkoiisiin tekijöihin sisältyvät kryptomarkkinat, yleiset rahoitukseen ja talouteen liittyvät tekijät, sekä poliittiset vaikuttimet. Tutkimuksessani keskityn analysoimaan 1. taloudellisia tekijöitä 2. poliittista ilmapiiriä, sekä 3. yleistä keskustelua. Tutkimuksen aineisto on kerätty talven ja kevään 2022 aikana, jolloin sekä arvopaperi-että kryptomarkkinat olivat erittäin volatiileja.

Tutkimuksessa havaittiin erityisesti kehittyvien maiden halu irrottautua fiat-valuutoista tai tuoda sen rinnalle desentralisoituja vaihtoehtoja. Kryptovaluuttojen katsottiin lisäävän taloudellista inklusiota ja mahdollistavan pankkipalvelut henkilöille, joille se muuten ei ole mahdollista. Tämänhetkisen korkean inflaation vaikutuksia kryptovaluuttojen tulevaisuuteen on vaikea tällä hetkellä arvioida, mutta osa kryptovaluuttojen käyttäjistä uskoo niiden olevan suoja inflaatiota vastaan. Kryptovaluuttojen käyttö sisältää yhä vakavia haasteita ja eri maiden lainsäädäntö ja valvonta vaihtelee merkittävästi. Empiirisessä osassa näitä johtopäätöksiä arvioi taloustieteen ja pankkitoiminnan asiantuntija.

Avainsanat¹ kryptovaluutat, hajautettu pankkitoiminta, El Salvador, Yhdysvallat

ABSTRACT

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My thesis deals with the debate affecting the introduction of cryptocurrencies. I examine their implementation in two countries. El Salvador can be considered an example of an early adopter, i.e. it has adopted cryptocurrency as legal tender alongside the dollar in order to create financial independence. In the United States cryptocurrencies are not official currencies, but the state aims to create legislation to control their usage. In addition, decentralized banking is examined.

I look at the introduction of cryptocurrencies using qualitative methods of the material available. The factors affecting the prices of cryptocurrencies can be divided into internal factors related to demand and supply. External factors include the crypto market, general factors related to finance and economy, as well as political factors. In my research I focus on analyzing 1. Economic factors 2. Political climate, and 3. Public discussion. The research material was collected during the winter and spring of 2022, when both the securities and crypto markets were extremely volatile.

The research found that some developing countries want to break away from fiat currencies or wish to introduce decentralized alternatives alongside. Cryptocurrencies could be considered to increase financial inclusion and enable banking services for people for whom it is otherwise not possible. The effect of the current high inflation on the future of cryptocurrencies is currently difficult to assess, but some users of cryptocurrencies believe that they are a protection against inflation. Cryptocurrencies still have serious challenges, and the legislation and supervision of different countries varies significantly. In the empirical part, these conclusions are evaluated by an expert in economics and banking.

Keywords² Cryptocurrencies, decentralized banking, El Salvador, USA

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1 INTRODUCTION

The objective of the study is to examine how public discussion and speculation in society and media concerning cryptocurrencies affects their adoption. It will also present how cryptocurrencies, namely bitcoin is used in different countries. The example countries are El Salvador and the United States. These countries are in different stages of adopting cryptocurrencies due to the regulations in the country, public discussion, political climate, and economic factors. Therefore, it is interesting to evaluate how these different factors play a role in the adoption of cryptocurrencies especially in these countries. El Salvador can be seen as an early adopter regarding cryptocurrencies. United States on the other hand, plays an important role in world economy in general and is seen as a leading country in regulating and adopting cryptocurrencies in different fields. Many countries in Asia like Vietnam and Thailand have adopted crypto assets, and in the future the integration of crypto into the financial system in Asia will be interesting to follow. Including Asia in this study, would however been a topic of its own, and has therefore been left aside.

Of the available cryptocurrencies, I will mostly concentrate on bitcoin because it is the most widely used and known of the currencies and its market share is around 40 % (Coinmarketcap.com, 2022). Some major effects to global economy happened during the process of writing, such as post covid-19 pandemic era, war in Ukraine, major rise in prices of food and energy and growing inflation. These matters have had a negative effect on the stock market and the crypto market. Also, the confidence towards crypto has taken a hit.

Since the topic includes examining how public discussion and speculation effect the adoption of cryptocurrencies this era represents how volatile and heavily under speculation the crypto market is. On the other hand, there is a strong need in the world to find solutions for sustainable development, clever use of resources

and equal opportunities. New technologies can bring back the services to the customer and offer financial inclusion for those not having the opportunities for that before.

2 RESEARCH PROBLEMS AND PURPOSE OF THE RESEARCH

I will use qualitative research as a method to analyze the phenomenon of decentralized banking and adoption of cryptocurrencies. The study's main intention is to form a larger picture of cryptocurrency usage in the mentioned countries and see which factors have been raised in the public discussion in order to back up or discourage the usage of the currencies.

According to Sovbetov's (2018) adopted model from Poyser (2017) the following factors influence cryptocurrency:

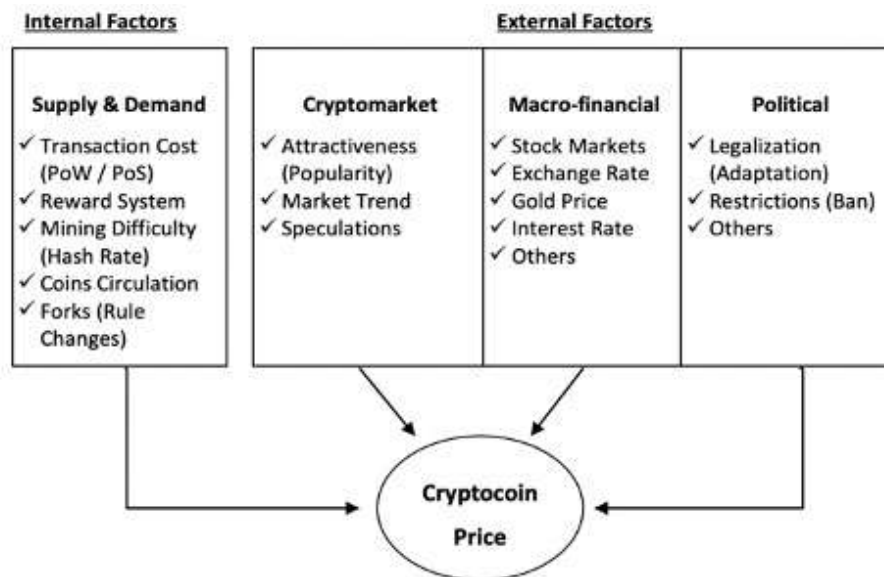


Figure 1. Factors that Influence Cryptocurrency Prices

Figure 1. Factors that influence Cryptocurrency Prices (Sobvetov, 2018)

The figure shows that there are multiple factors that play a role in the formation of price concerning cryptocurrencies. In this study I will concentrate on examining the crypto market and political factors dividing them into 1. Economic Factors 2. Political Climate and 3. Public Discussion from the model.

The reason for the interest on the subject, are the possibilities that the new technologies offer to the monetary system. The open monetary system is not controlled by governmental monetary policies and does not rely on fiat currencies and cannot be controlled by central banks.

“Fiat money is a government-issued currency that is not backed by a physical commodity, such as gold or silver, but rather by the government that issued it. The value of fiat money is derived from the relationship between supply and demand and the stability of the issuing government, rather than the worth of a commodity backing it. Most modern paper currencies are fiat currencies, including the U.S. dollar, the euro, and other major global currencies” (Chen, J., 2021 p. 1)

Through the usage of cryptocurrencies even small economies, like the example country El Salvador, are claimed to hedge against inflation and give more power concerning money to the people (Adopting Bitcoin, 2022). In the United States the White House claims that its goal is to protect consumers while maintaining the technological leadership in the United States when discussing cryptocurrencies. Digital assets like Bitcoin have grown rapidly from investments on an estimated level of 14 billion dollars to 3 trillion dollars in five years. There are views that regulation has not followed the investments (BBC News, 2022). In Finland the public discussion has been quite moderate and stayed mostly within the investor’s realm. The public opinion towards cryptocurrencies and the new technologies have been quite passive or negative. For example, the Finnish Osuuspankki does not quote cryptocurrencies and does not give values of their worth but are monitoring the market (op-media.fi, 2021).

As brought up earlier, the discussion concerning cryptocurrencies is a very interesting and up to date topic. Having monitored the growth of cryptocurrencies for a longer time already, the present situation in the world after the COVID-19 pan-

demic and followed by the war in Ukraine, might open new opportunities for cryptocurrencies. The global crisis affects world economy, energy prices and growing inflation. This makes the study of cryptocurrencies and the new technologies even more interesting.

3 FROM CENTRALIZED TO DECENTRALIZED BANKING

3.1 History Of Centralized Banking

When looking at the history of banking we can go as far as 2000 BC when Sumerians and Ancient Egyptians were lending money to each other. Even then, there would be a compensation of the risk in the transaction. Roots of modern banking, however lie in the 13th century Italy, when after the Roman Empire the country was formed into smaller states which were often fighting with each other. These wars caused financial losses, and to solve the financial crisis, the locals in Central and Northern Italy offered each other financial services that resembled our banking today. Later this was formed into *Relationship Banking* where a client and a banker were building a relationship that had goals and trust, that both parties agreed on. The *Industrial Bank* was a formation of the Industrial Revolution in the 17th century. At this point the demand for financial services increased heavily and the bankers started to change their functions to a more standardized manner. In 1717 the Bank of England introduced the first cheques that were recognized all over the country. More financial products followed later, such as savings accounts, personal loans, and finally current accounts. These products were aimed to the middle class while the aristocracy would still deal with their personal banker. By the 20th century a revolution would hit the banking system in the form of modern communication and computers. A step to this direction was the need to move cash from one customer to another without being robbed on the way by highway bandits (Panzarino, H. & Hatami, A., 2020).

After the introduction of computers, the local processes were moved to a central level and would involve the whole branch as a network. This created the *IT bank* in 1950's. This modernization increased productivity along with profitability and banks were able to serve huge amounts of customers and started to grow rapidly. At this point the sold products were controlled on the central level and the branch staff needed to have more sales skills and less banking skills. Therefore, the skilled and costly bankers were not needed in the branches and branch staff slowly became less informed of the products they were selling to the customers. Also, this standardization restricted the bank's functions, and it became extremely hard to renew anything. Banking products could not be changed easily so it was easier to introduce a product change as if it were entirely a new product. A huge number of products needed to be serviced by growing IT infrastructure and operations. Banks started solving this problem with bank mergers. The different bank systems were hard to emerge, so they were linked to each other as stand-alone independent entities that functioned through interfaces. At this point the banks' IT functions became so complex that they would enable further stagnation in the banking world. The internet changed the world by letting everyone connect with each other and in the 1980's banks started to offer digital access to the customers. Also, the customer started to ask for banking on their own computers. At this point the banks feared losing customers caused by the online engagement that would lose profitability. Customers frequently engaged online, and this would increase the load on the banks' systems causing blackouts and huge increase on IT, in order to maintain service level. In the middle of 2010, a new phenomenon threatened the banks, namely Fintech Startup. The Fintech's were smaller, agile, and newer businesses that used technology to provide specific financial services. These services were often cheaper, transparent, user friendly and could be operated through applications and websites. They became quite visible to the public and started replacing traditional banking with better customer service. At this point the world of banking was formed into two: traditional banks and Fintech's. The Fintech's were also able to gather investments creating new challenges for the traditional banks.

This digital banking revolution could take banking back to its roots according to Panzarino and Hatami. It could give the customers uniquely designed services being able to always be there for the client (Panzarino, H. & Hatami, A., 2020).

3.2 The Need For Decentralized Banking

The new chapter in the evolution of banking is happening at the moment and a new contender is emerging. The new agents use technologies like robotic process automation, blockchain and DLT (distributed ledger technology), cryptocurrencies, AI (artificial intelligence) and many more. New type of technology and social media giants like GAFA (Google, Apple, Facebook and Amazon) and their Chinese counterparts BAT (Baidu, Alibaba and Tencent) or even PayU in South Africa and Paytm in India are already in the financial markets or have announced to do so (Panzarino, H. & Hatami, A., 2020).

The most important outcome of the digital revolution is that the customer is in the centre of the service. This revolution can be seen for example in modern music consumption using Spotify or iTunes. The music industry value chain has evolved completely, and the music retailer has disappeared. Similar things have happened in other industries as well for example booking.com and airlines' direct services replacing traditional travel agencies.

According to Panzarino & Hatami banks should keep in mind three customers basic financial needs:

- They need to pay someone
- They have a surplus of cash, and they want to protect it
- They want to do something they don't have money for

The so called "neo banks" should serve these needs and the basic business products should be:

- A universal payments account

- A capital protection tool
- A master credit line

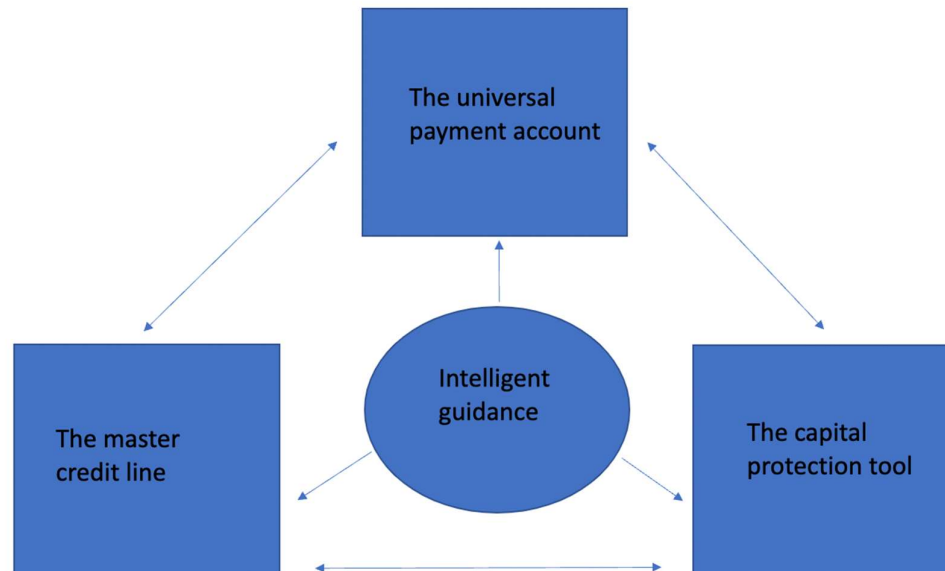


Figure 2. Components of the perfect neobank

Since 2009 when bitcoin was created, decentralized economy has been a topic receiving a lot of attention. Many developing countries try to find a way to decentralize their operations and optimize the resources they have available. In decentralization the operations are spread or outsourced away from the centralized economy. In this case, a community has control over individuals' wealth without requiring third parties, such as banks. Fintech (Financial Technology) supports decentralized development using blockchain and as long as there is internet and energy, the blockchain technology network will work indefinitely.

Financial inclusion and fair access to finance are components that create equality in the world and can raise the impoverished into middle class. This means that people and businesses have easier access to cost effective financial products and

services that they need. These services consist of the basic transactions, payments, savings, and credits.

There are 1,7 billion citizens worldwide who do not have access to bank account according to data released by the world bank (Tong, 2021)



Figure 3. Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+) (Worldbank, 2018)

People living in emerging economies where traditional banks are not available are now starting to use blockchain technologies to enable financial services. One of the early adoptions of blockchain are the fast money transfers between countries without fees and delays in time, nor middlemen. This has a significant democracy effect on the finance sector and include population that previously were not able to have access to banks. Banks have acted as the middlemen between the depositors and spenders charging fees of their transactions. Large wealth owners have always had access to such investment products that create large returns, whereas

ordinary people have had their money deposited on bank accounts on low interest.

The Covid-19 pandemic has also emphasized the division between high income workers compared to blue collar workers. High income workers have had the possibility of working remotely whereas low wage workers in essential services such as teaching, cleaning, retail and hospitality have been in a different position. In many developing countries the economic impact of the pandemic made these economies suffer even more.

3.3 History Behind Bitcoin

Bitcoin was invented in 2008 by an anonymous person or a group who call themselves Satoshi Nakamoto. The currency's use began in 2009 when an implementation of it was released as an open-source software. There were also previous attempts to create digital cash technologies such as ecash, hashcash, b-money and bit gold. These were introduced in the 1990's but bitcoin was the first digital asset to become largely used and known. Bitcoin puts together concepts and technologies to form a digital money ecosystem. The actual units of the currency are called bitcoins and they are stored and transmitted in the bitcoin network amongst the participants. The communication between the participants is carried out mostly on the internet but other transport networks can also be used. Bitcoins can be used in the same way as conventional currencies, they can be used to buy and sell, to send money or extend credit. They can be bought, sold or changed to other cryptocurrencies or fiat money through exchanges such as Coinbase or Binance (O'Reilly, 2015).

3.4 How Cryptocurrencies Are Formed

Bitcoins and all cryptocurrencies are created by "mining". Mining is a process where miners solve complex mathematical puzzles with their computers, in order to verify and process bitcoin transactions. These miners get rewarded in bitcoins

and transaction fees once they have mined a block of bitcoin, and it has been added to the blockchain, which is a public ledger that facilitates the recording and tracking of assets in the bitcoin network.

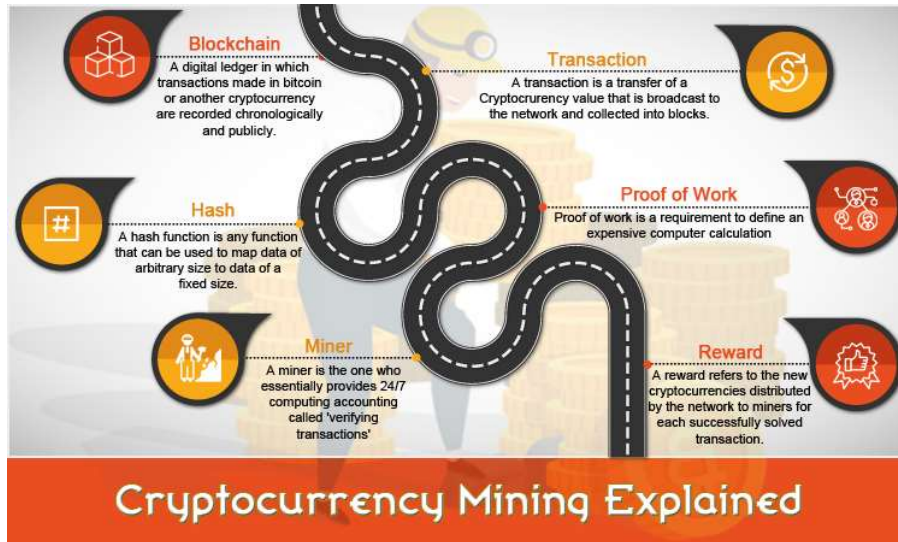


Figure 4. Cryptocurrency Mining Explained (Scalablockchain.com, 2019).

4 CRYPTOCURRENCY ADOPTION IN EARLY AND LATE ADOPTING COUNTRIES

4.1 Economic Factors Of The Early Adopting El Salvador

In the following I will make an overview of El Salvador's economic factors and reasons behind the adoption of bitcoin.

4.1.1 Overview Of El Salvador's Economy

According to Worldbank's statistics (Worldbank, 2022) El Salvador is the smallest country in Central America. There has been some economic growth in the country during recent decades, but poverty and inequality are still present. The poverty rate (based on U.S.\$ 5.5 per person per day poverty line) declined from 39 % in 2007 to 22,3 % in 2019. The extreme poverty (measured as U.S.\$ 1,9 a day) declined from 13 % in 1995 to 1,5 % in 2019 (Figure 5). According to these numbers

El Salvador became the most equal country in Latin America and Caribbean (LAC). The COVID-19 pandemics impact on households and businesses resulted an 8 % decline in GDP in 2020. Also, the poverty increased by 4,6 % between 2019 and 2020 and it would have risen to 7,6 % without government’s support. In 2022 El Salvador’s economy is expected to grow by 2,9 %



Figure 5. Poverty headcount ratio in El Salvador (Worldbank, 2022)

El Salvador needs reforms for fiscal sustainability. Its public debt is 90 % of GDP. Crime and violence are also a threat to social development and economic growth. Many people migrate from the country and the homicide rates are higher in relation to other countries. It also suffers from earthquakes and volcanic eruptions and is vulnerable to the climate change.

Despite all, El Salvador has great potential for a dynamic, inclusive, and resilient economic growth and its GDP was growing steadily until the COVID-19 Pandemic

(Figure 6). According to the Worldbank El Salvador should enhance public and private investments, promote access to high quality jobs and enable innovative private sector. It should also promote sustainable and equitable fiscal policy, strengthen resilience to risks and reform governance and institutions (Worldbank, 2022).

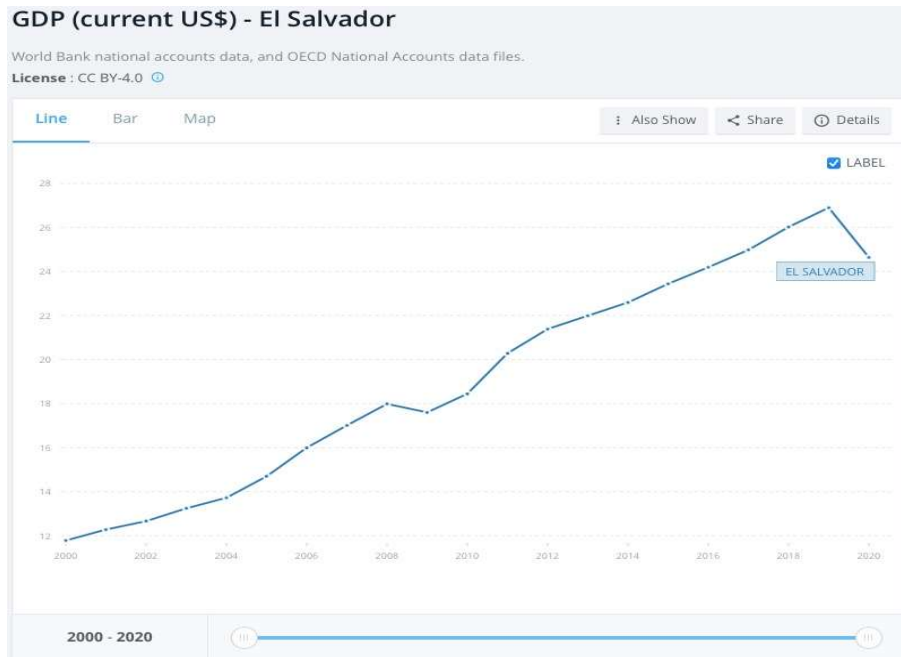


Figure 6. GDP in El Salvador (Worldbank, 2022)

4.1.2 El Salvador's Aim To Be The World's Leading Bitcoin State

El Salvador became the world's first country to adopt a cryptocurrency as their official tender in 2021 when the country's president Nayib Bukele made several motions concerning the adoption of bitcoin alongside USD. All companies working in the country should offer customers a possibility to pay with bitcoin. The biggest international chains and shopping centers offer this possibility. A phenomenon that has become quite visible in the media is Bitcoin Beach where the local community were the first ones to start using bitcoin as a payment method.

The government started the experiment by offering every citizen a 30 USD worth of bitcoin if they downloaded an app named Chivo wallet which is an application designed to let its users pay, store and receive money with bitcoin. The application has around 3 million users of the country's 6,5 million people. However, it is only possible to send bitcoin to another Chivo wallet but not to an external wallet, so the application doesn't totally present bitcoin's free and open-source software culture.

The main reasons according to president Bukele for the bitcoin adoption as a legal tender were to bring unbanked citizens into the economy and facilitate cross border payments. The government of El Salvador has invested in buying bitcoin from Autumn 2021. However, there has been criticism against the project on many levels.

The country's finances depend heavily on international investors and financial aid and this still operates in dollars. The International Monetary Fund (IMF) recommended El Salvador in February 2022 to quit using bitcoin as a legal tender. IMF had concerns about the volatility of bitcoin prices and the possibility that criminals use cryptocurrency. This recommendation affected the bitcoin value negatively as well (News ABC, 2022).

4.2 Political Climate In El Salvador Supports President's Actions

President Nayib Bukeles position is very strong in El Salvador. It is one of the highest for any Salvadoran president. The approval rating has been over 75 % since the start of his presidency on June 1, 2019. In 2021 he was heavily criticized locally and internationally for his governing style but still it seems that the Salvadorans trust their president. In early 2021 the Lowy Institute ranked El Salvador best in Central America to manage the pandemic and number two in Latin America. People seem to agree with the presidents' measures. He is seen as a good communicator and uses his twitter account very actively. Traditional media in El Salvador is somewhat

critical of Bekele’s governance but since the media’s credibility is low among Salvadorans, this hasn’t affected his popularity. Also, the political opposition is weak, so his high approval ratings support the adoption of cryptocurrency (Global Voices, 2022).

All 2022 Surveys

Date	Entity	Rating/Score
March 9th, 2022	CID Gallup Latin American Presidents.	85% Approval View Survey
January 26th, 2022	CID Gallup Bukele's job approval.	84% Approval View Survey
January 14th, 2022	UCA January survey	7.54 out of 10. View Survey

In 2021, President Nayib Bukele was heavily criticized locally and internationally for his governing style. Nevertheless, his approval rating hasn’t gone below 75 percent.

The following are all the polls done by CID Gallup, Francisco Gavidia University, La Prensa Grafica, and others. The results show that [President Nayib Bukele](#) is still holding a high approval rate.

Table 1. President Bukele’s approval ratings (Elsalvadorinfo.net, 2022)

4.3 Public Discussion Concerning El Salvador’s Bitcoin Adoption

The main reasons for El Salvador to take on bitcoin as a legal tender according to the president is to give access to financial services to all people. The other factor pointed out was the possibility to control their own currency and not be dependent on the U.S. dollar. These statements as showed above receive support from the Salvadorans. However, discussion around the adoption of bitcoin in El Salvador, in other countries and in media in general is very controversial. It is difficult to analyze the material since it is so conflicted.

According to an article by Helsingin Sanomat where a Finnish man living in El Salvador is interviewed, Bitcoin isn’t very visible in everyday life. Rather the phenomenon is seen in advertisements and media. Bitcoin can be used in larger international chains and stores, but cash and other cards still also function in most places. People also use bitcoin when receiving money from abroad, since using bitcoin

transactions is commission free. The article claims that the bitcoin adoption and the hype around it is part of the effort to brand El Salvador and to get foreign currency and tourists into the country. Some concern is raised over the fact that the country is investing its moderate money supply into a highly volatile asset like bitcoin (Helsingin Sanomat, 2022).

4.4 Economic Factors Of The Late Adopting United States

This chapter opens economic factors regarding bitcoin in the U.S.

4.4.1 Overview Of United States' Economy

The United States has the largest nominal GDP and net wealth. It also has the second largest purchasing power parity after China. Purchasing Power parity is an economic theory that compares different countries' currencies through a "basket of goods" approach. It has a population of 329,5 million and the GDP in 2020 was 63 285 USD per capita putting it in the 8. place in the world. The GDP increased at an annual rate of 6,9 % on the fourth quarter of the year 2021. The United States also has the most technologically powerful and innovative economy. Especially in the fields of artificial intelligence and computing the U.S. leads innovation.

COVID-19 pandemic caused supply difficulties also in the United States but the rebuild of business and consumption are expected to grow in the near-term. Also, the labor market should heal.

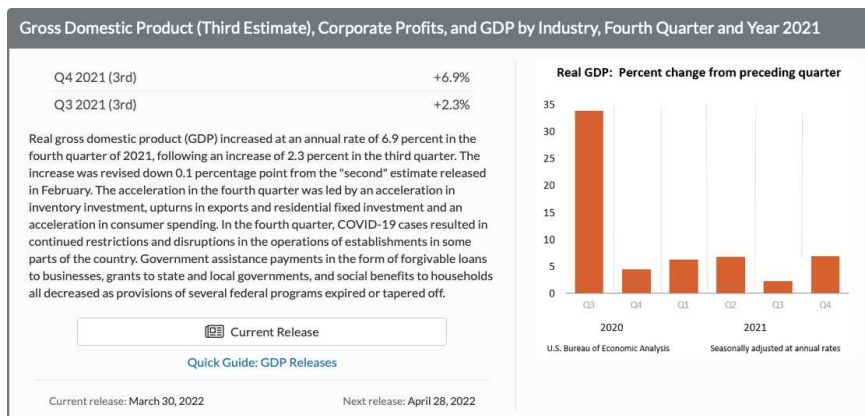


Table 2. Gross Domestic Product (Third Estimate), Corporate Profits, and GDP by Industry, Fourth Quarter and Year 2021 (Bea.gov, 2022)

4.4.2 Bitcoin’s Attempt To Be A Reserve Currency

The USD is the most used currency in international transactions, and it is also the world’s strongest reserve currency. A reserve currency is a large amount of currency held by the central banks and other major institutions to back up investments, transactions, and international debt obligations. It also influences the domestic exchange rate. Commodities like gold and oil are priced in the reserve currency and countries hold on to these currencies to pay for these goods. It then minimizes the exchange rate risk as the purchasing country doesn’t have to exchange its currency for the current reserve currency for the purchase. USD has been the primary reserve currency used by other countries from 1933. Therefore, all nations follow closely the monetary policy of the United States to make sure that the value of their reserves is not affected by inflation or prices rising (Chen, J., 2020).

There are some movements to make bitcoin a reserve bitcoin currency according to Reuters. A crypto platform is trying to gather 10 billion USD worth of bitcoin to back its own “stablecoin”. A stablecoin is a cryptocurrency pegged to a reserve asset such as the USD. Seoul-based Terraform labs has so far purchased 40 000 bitcoins worth 1,7 billion USD. According to Terraform cofounder Do Kwon this “will open a new monetary era of the bitcoin standard”, referencing the gold standard that formed the basis of global finance hundred years ago (Reuters, 2022).

4.4.3 Cryptocurrencies As Hedge Against Inflation

One dollar in 1800 is equivalent to 22,88 dollars today in purchasing power. This means that today’s prices are 22,82 times higher than the average prices since 1800 according to the Bureau of Labor Statistics consumer price index.

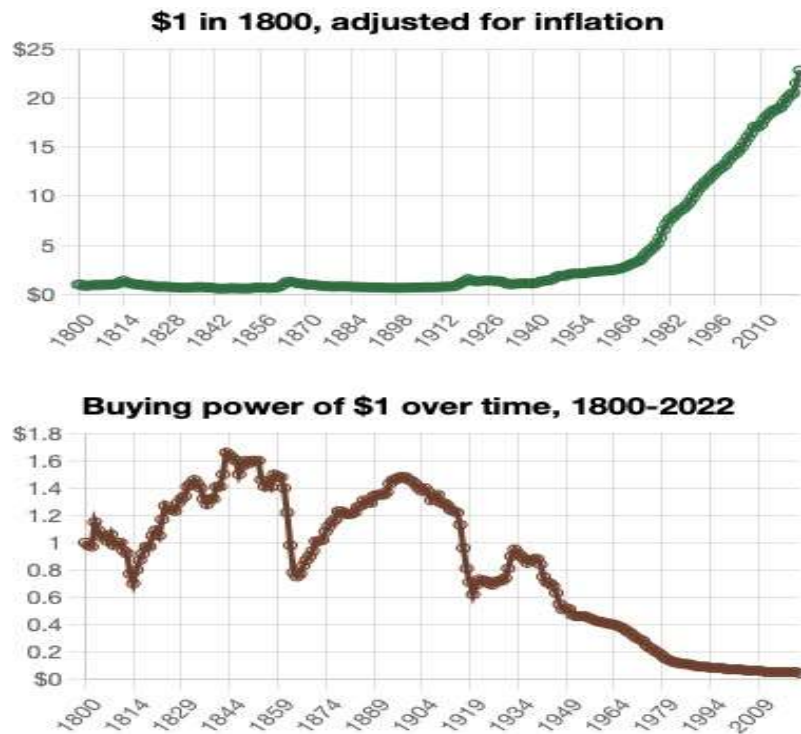


Figure 10. Inflation of the dollar from 1800 to 2022 (Officialdata.org, 2022)

The USD inflation rate in March 2022 was 8,54%. This means that one dollar today will be equivalent in buying power to 1,09 dollars next year (Officialdata, 2022).

According to a survey released from the cryptocurrency exchange Gemini, countries having currencies that have declined 50% or more in value against the USD over the past decade are more likely to purchase cryptocurrency in the coming year. These countries are South Africa, Mexico, India and Brazil. In regions with long-term hyperinflation such as Latin America and Africa 60% of the respondents saw crypto as the future of money. However, only 15% of the respondents in USA and 16% in European Union saw cryptocurrencies guarding against inflation (Gemini, 2022).

This indicates that when a country has a stable currency, cryptocurrencies are not seen as a viable option, but for countries with more risk of inflation cryptocurrencies could be an option.

4.4.4 Cryptocurrency Legislation In The United States

According to United States National Conference of State Legislators. Thirty-seven states and Puerto Rico have pending legislation concerning cryptocurrency, digital or virtual currencies, and other digital assets in 2022. There are several bills suggesting changes in law concerning cryptocurrencies, for example 18.2.2022 senator Kam Lagers bill to authorize state agency to accept cryptocurrency as a method of payment for the provision of government services. Also, a bill was passed in the House of Representatives in the State of Hawaii to establish a program for the licensure, regulation, and oversight of digital currency companies. Another example is an act by Senator Rogers in Arizona to include bitcoin as a legal tender.

The contents of the initiatives either suggest allowing cryptocurrency as a legal tender or suggest different kind of regulation to control the cryptocurrency usage. Clearly the legislation concerning cryptocurrencies in the United States lacks clarity. A recent report from the Biden administration outlines proposed legislation that would regulate the cryptocurrency market. However, the key themes are to stop cryptocurrency crime and tax evasion, regulate stablecoins and the give potential for investment tools such as crypto ETF's and other funds. Some of the concerns rise from the decentralized nature of cryptocurrencies. Since there is a lack of government involvement some investors are worried about the possible scams related to cryptocurrencies (NCSL, 2022).

4.4.5 Public Discussion In The United States Concerning Cryptocurrencies

According to global state of crypto report by Gemini (Gemini, 2022) 23% of the inhabitants in the U.S. see cryptocurrencies as the future of money. The percentage in the developing countries that see crypto as the future of money is +50 on average. The number of crypto owners in 2021 almost doubled. An interesting finding was also that women became more crypto-curious. At the moment 32% of crypto owners in the U.S. are women but 51% of the crypto-curious are women.

Crypto ownership was also distributed more among different ethnic groups. Many Americans stated that they need more education of the topic to feel more comfortable in purchasing cryptocurrency. 16% of the respondents in the U.S. saw cryptocurrencies as a way to protect against inflation but the majority of 85% of the crypto owners in the U.S. purchased cryptocurrency for its investment’s potential.

ATTITUDES + BARRIERS:

Crypto is the future of money for many

The majority of respondents in Latin America (59%) and Africa (58%), where many have experienced long-term hyperinflation, say that crypto is the future of money.

Cryptocurrency is the future of money

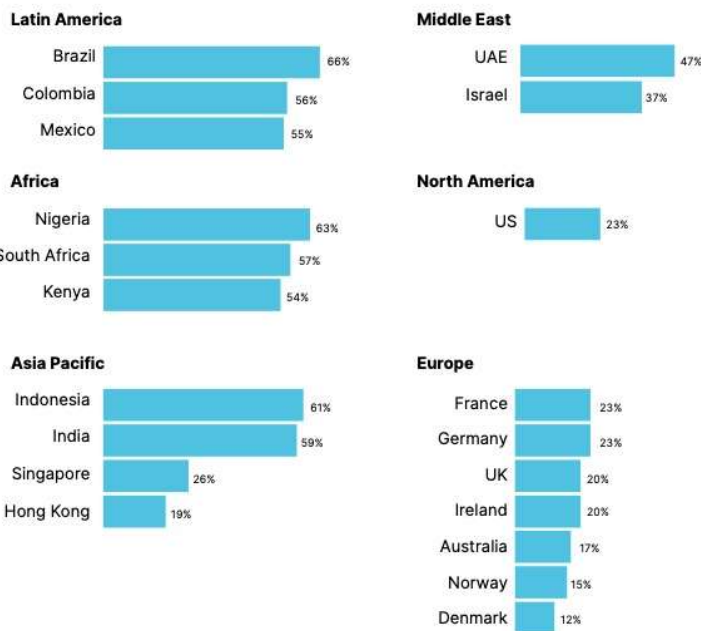


Figure 11. Crypto is the future of money for many (Gemini, 2022)

Currently, the discussion concerning crypto market is related to the rising inflation following the COVID-19 pandemic, geopolitical tensions related to the war in Ukraine and potential regulation changes in the U.S. However, cryptocurrency volatility has always existed, and it is a concern to the investors. Some see it as the

market being immature and therefore hasty to react. A popular tweet might have an equal reaction in the market compared to a change in the law, and this makes the cryptocurrency market so hard to predict.

5. CONCLUSIONS AND RESULTS

In order to get an expert view on conclusions made in my study by using the current public discussion, research articles and literature I have asked for views of the conclusions from Professor Panu Kalmi and Associate Professor Klaus Grobys from the University of Vaasa. Professor Kalmi is a Professor of Economics and a distinguished expert of international banking (Kalmi, 2022). Associate Professor Grobys is an expert in the field of finance and has also carried out research on bitcoin.

Banking and financial sector have always been conservative in adopting new ways of operating. Looking back the banking industry only reforms through bank crisis. At the same time the customers are adopting new ways of purchasing goods, making investments, and saving money, and being able to get financing for different purposes. The basic needs for banking have remained the same. Customers' wishes of the ways to handle their finances have changed and follow the development in society. Social media, different streaming services and online stores lead the way to using apps and platforms in our daily lives. Customers need individual finance services that are not dependent on time and place. Decentralized banking and cryptocurrencies can be seen as an attempt to bring back the customer to the center of the services as Panzarino and Hatami concluded (Panzarino, H. & Hatami, A., 2021). When asked for an opinion concerning this view, Associate Professor Klaus Grobys refers to the following: "Aleksi Grym, head of the Digital Central Bank process in the Financial Stability and Statistics Department at the Bank of Finland, argued that a blockchain network would be slow, would be poorly scalable, would have latency issues, and would be complicated to govern. He also emphasized that

“because you have a centralized issuer, it really doesn’t make sense to then decentralize the record keeping.” I agree with Aleksi Grym”.

Monetary instability is seen differently when comparing developing countries and industrialized countries. When adopting and purchasing cryptocurrencies, the developing countries are trying to use bitcoin as an inflation hedge and also to control their own currency. Some countries have even faced arbitrary asset seizures which also affect to the willingness to have control over their finances. This might lead to certain unnecessary risk taking and speedy access to adopting cryptocurrency as a legal tender as has happened in El Salvador. On the other hand, the industrialized countries, like the U.S. is already using cryptocurrencies and people are investing in it, but the regulation and legal framework does not support the actions in a quick enough manner as we could see in the different pending bills in the U.S. legislature.

According to Professor Kalmi financial inclusion is still definitely a problem in developing countries and there have also been many attempts to solve the issue. Such attempts have been financial deepening, microfinance, and credit cooperatives. Financial deepening can be defined as increases in the ratio of a country’s financial assets to its GDP. Microfinance on the other hand, targets financial services to individuals and small businesses who lack access to conventional banking and related services. Credit cooperatives are financial organizations owned and controlled by its members, who can borrow money saved by the group with low interest rates. As for Associate Professor Klaus Grobys, he agrees that we can see this development in countries with monetary instability such as Central African Republic (CAR) and El Salvador.

When evaluating the economic factors, political climate and public discussion in the early and late cryptocurrency adopting countries like El Salvador and the U.S. the discussion is quite different. El Salvador, using the strong mandate of the president, is trying to give access to financial services to all its citizens, along with getting rid of the country’s dependency on the dollar. According to Professor Kalmi

adoption of cryptocurrencies is still in a very low level everywhere. Therefore, it is not fully clear whether there is enough empirical evidence to prove that countries with monetary instability would be keener to adopt cryptocurrencies. His opinion is that the adoption could cause chaos in those countries, including El Salvador.

Professor Kalmi's opinion is understandable since bitcoin's value has gone down very much from its all time high and is now 15 929 € and El Salvador has lost around 60 million dollars in experimenting currently very volatile bitcoin.

The material I used in my study suggested that cryptocurrencies could present an alternative for people in countries where getting a bank account is difficult due to not having proof of income, savings and residency. Professor Kalmi still sees that at this moment cryptocurrencies do not really present an alternative for these people. He sees cryptos too fragile and the adoption rates too low to really be useful for that purpose. Associate Professor Klaus Grobys states that getting an online wallet isn't much easier than opening a bank account and does not see this as a reason for adopting cryptos.

In the United States the discussion evolves around the need for regulation in cryptocurrencies. Also, the negative influences such as tax evasion and other criminal activities are covered in the discussion quite frequently. According to crypto influencers a necessary evolution of modern finance is needed. What remains to be seen is, whether the crypto investors are in it for the profits or trying to bring power back to the individual over their finances and giving the possibility for an access to financial services to everybody.

Spring 2022 has been a very interesting time in the stock market and in the crypto market. The covid-19 pandemic has reached a point where most countries have started treating the disease like an ordinary seasonal flu. Still there are many effects of the pandemic faced in everyday life. The war in Ukraine that started in the end of February 2022 however, created a decline in the global economy. At the

same time inflation has reached the highest level in decades in the European Union, the US, along with other countries. The war in Ukraine has lifted prices of energy and food. The coronavirus pandemic broke supply chains resulting to growth of consumer prices. Especially the supply of energy, wheat and other products produced in Russia and Ukraine face shortage on the market. Also, the EU and United States bans on oil and gas imports from Russia raise the cost of energy for consumers (Europarl.europa.eu, 2022).

According to Professor Kalmi the current state of the world with war in Ukraine, post pandemic era, high inflation rates and global warming do not have effect on the adoption of cryptocurrencies at the moment. He claims that people might be more interested in the adoption during more stable times. In hard and volatile times, he thinks that people prefer monetary stability. Associate Professor Grobys does not see an economic rationale in this sense. He does however, assume that the extremely high prices for energy could have an impact on the willingness to mine cryptos such as Bitcoin – which is extremely costly as it takes enormous amounts of energy and computer power to solve the cryptographic puzzles required to maintain the blockchain.

Central banks have also increased their interest rates causing a fear of “stagflation”. Stagflation is caused by high inflation in a situation of economic stagnation and unemployment (Investopedia, 2022). All these factors together have made the markets uncertain about the future and it has also influenced the crypto market.

According to Professor Kalmi the high inflation probably correlates with the willingness to adopt alternative currencies. He also states that there is historical data to back this, so in principle this can also correlate with the adoption of cryptocurrencies. However, he does not think that there has been any case yet where high inflation would have led to widespread adoption of cryptocurrency. He argues that the inflation rate should be very much higher for that to happen. Associate Professor Grobys see that high inflation does correlate with the willingness to adopt

cryptocurrencies in cases of Central African Republic (CAR) and El Salvador and therefore agrees with this view.

In traditional investments price movements are connected to the company's performance. Cryptocurrencies have no underlying assets meaning that the movements in price are only based on speculation among investors of whether it will rise or fall in the future. Therefore, big swings in their prices measure the confidence owners have on the currency.

Professor Kalmi also argues that cryptocurrencies are perceived more as vehicles for speculation rather than payments. The challenge is that they are not trusted according to him. Therefore, in his opinion the biggest challenge in the adoption is, that typical cryptocurrencies are not trustworthy. Associate Professor Grobys argues, that the biggest challenges are the frauds, namely cyberattacks, money laundry, price manipulation and instability.

There have been some negative and positive impacts on cryptocurrencies lately which have affected its value heavily. The negative stories and threats of further regulation have been pulling the price of bitcoin down. In eleven years, the price of bitcoin rose from its launch to 20 000 dollars per coin but in 2021 the price rose 700 % in twelve months to the record high of 69 000 USD in November. In June 2022 the price had gone down to 18 000 USD. In August 2022 the price was 21 500 USD (Coinbase 23.8.2022).

Impacts to this were: 1. June 2022 Celsius Network, a major US cryptocurrency lending company froze withdrawals and transfers explaining the move with "extreme market conditions". 2. June 2022 Binance, one of the largest cryptocurrency exchanges paused withdrawals blaming a "stuck transaction" causing a backlog. 3. Early 2022 it was reported that Russia might ban cryptocurrency operations. After the war starting in Ukraine, crypto exchanges for Russian transactions were banned. 4. In 2021 comments from Elon Musk regarding energy effects of crypto

mining along with Tesla company not accepting digital payments affected the market. 5. June 2021 Chinese government banned the mining of the currencies and in September 2021 all crypto transactions were declared illegal. Along with these, statements from Donald Trump, UK regulator Financial Conduct Authority black-listing Binance followed by Santander and HSBC blocking customer payments created doubts in the market.

On the positive side the bitcoin price has been protected by: 1. The first big US bank Morgan Stanley offered wealthier clients access to Bitcoin funds. 2. Elon Musk promised that Tesla would accept bitcoin payments again when 50 % of its energy usage came from renewable sources. 3. El Salvador making bitcoin legal tender.

An interesting question is whether the adoption of cryptocurrencies diminishes political power, and would politicians be willing to give up that power? According to Professor Kalmi, the widespread use of cryptocurrencies might lead to tax evasion but in his opinion, politicians do not currently think that cryptocurrencies present a credible threat to their power. Associate Professor Grobys argues that CBDC's (Central bank digital currency) would not diminish political power, whereas other forms would.

President Joe Biden's executive order aiming to coordinate US government's actions on the regulation of digital assets can be seen both positive and negative development cryptocurrency value. Some cryptocurrency fans see the regulation as a bad development but then again, the executive order could help to develop the consumer protection in digital assets (thetimes.co.uk, 2022).

Also, Professor Kalmi agrees that it is good to think what kind of regulation and legal framework would be needed in order for cryptocurrencies to be adopted more widely. He also thinks that the question is quite broad but believes that cryp-

cryptocurrencies issued by central banks might have some potential. Associate Professor Grobys sees that cryptocurrencies would need the same regulation as the banks in order to be adopted more widely.

As for the adoption of cryptocurrencies in Finland Associate Professor Grobys does not see a possibility at this stage. According to him Finland (luckily) is quite conservative in this (and other) regards helping the survival of the country across all domains. He hopes that Finland will not be among the countries adopting blockchain-based technology first.

In my opinion, the idea of cryptocurrencies issued by central banks fights against the whole idea of cryptocurrencies being an answer to individuals to control their funds without traditional banking industry. Also, cryptocurrencies function through a peer-to-peer blockchain network where participants clear the transactions without a need for central clearing authority. Traditional banks have always had the role of central clearing authority, and this is something that users of cryptocurrencies want to get rid of, or do not even have access to, not necessarily having access to traditional bank accounts.

All this makes apparent, that what is clearly required, is solid knowledge for the crypto investors and users along with predictable and long-term policies in regulation. With these tools there might be a possibility for wider adoption of cryptocurrencies.

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APPENDIX 1

27.8.2022 17:57

Impact of Public Speculation on Cryptocurrencies

Impact of Public Speculation on Cryptocurrencies

The objective of the study is to examine how public discussion and speculation in society and media concerning cryptocurrencies affects their adoption. This study tests the conclusions and results of the thesis. The following ten questions present a view acquired from the articles and literature concerning the adoption of cryptocurrencies and decentralized banking. I will present these views in order to get professional opinions to support or disagree with my findings. The study is part of a thesis for Vaasa University of Applied Sciences by Michele Ilomäki.

*Pakollinen

1. Sähköposti *

2. Some researchers (Panzarino & Hatami, 2021) see decentralized banking and cryptocurrencies as an attempt to bring back the customer to the center of the services. Would you agree that decentralized banking will be the next phase of the banking industry? *

3. Would you agree that countries with monetary instability are more keen on adopting cryptocurrencies? *

4. Do you see financial inclusion being a problem in developing countries? *

5. Do you see cryptocurrencies presenting an alternative for people in countries where getting a bank account is difficult due to not having proof of income, savings and residence? *

6. In your opinion, does high inflation correlate with the willingness to adopt cryptocurrencies? *

7. What kind of regulation and legal framework would cryptocurrencies need in order for them to be adopted more widely? *

8. What are the biggest challenges regarding the adoption of cryptocurrencies in your opinion? *

9. Does the adoption of cryptocurrencies diminish political power? If yes, do you think politicians are willing to give up that power? *

10. Do you see a future for cryptocurrencies in Finland? *

11. Does the current state of the world with war in Ukraine, post pandemic era, high inflation rates and global warming affect the valuation and adoption of cryptocurrencies in your opinion? *

APPENDIX 2

1.9.2022 Answers from Professor Kalmi

Some researchers (Panzarino & Hatami, 2021) see decentralized banking and cryptocurrencies as an attempt to bring back the customer to the center of the services. Would you agree that decentralized banking will be the next phase of the banking industry? *

I am not entirely sure what you mean by decentralized banking, so I am not sure how to answer this question.

Would you agree that countries with monetary instability are more keen on adopting cryptocurrencies? *

I think the adoption of cryptocurrencies is very low everywhere, so I am not sure we have empirical evidence on this. I hope not, because I think that could cause chaos in those countries (cf. El Salvador).

Do you see financial inclusion being a problem in developing countries?

*

Yes, definitely. And there has been many attempts to solve those issues, like financial deepening, microfinance, and credit cooperatives.

Do you see cryptocurrencies presenting an alternative for people in countries where getting a bank account is difficult due to not having proof of income, savings and residence? *

Not really, because I think cryptocurrencies are too fragile and the adoption rates too low for them to be really useful for that purpose.

In your opinion, does high inflation correlate with the willingness to adopt cryptocurrencies? *

I think high inflation probably correlates with the adoption of alternative currencies, and of that there is also historical data. So in principle it could also correlate with the adoption of cryptocurrencies. I do not think there has been any case yet where high inflation leads to widespread adoption of cryptocurrencies. Moreover, the inflation rates should be very high, not in the kind of figures they are now for that to happen.

What kind of regulation and legal framework would cryptocurrencies need in order for them to be adopted more widely? *

This is a good question and quite broad one as well. I believe cryptocurrencies issued by central banks may have some potential.

What are the biggest challenges regarding the adoption of cryptocurrencies in your opinion? *

That they are perceived more as vehicles for speculation rather than payments. They are not trusted. Perhaps typical cryptocurrencies are not trustworthy either.

Does the adoption of cryptocurrencies diminish political power? If yes, do you think politicians are willing to give up that power? *

Perhaps in the sense that widespread use of cryptocurrencies might lead to tax evasion. However, I do not think politicians currently think this as a credible threat.

APPENDIX 3

Impact of Public Speculation on Cryptocurrencies

<https://docs.google.com/forms/u/0/d/1zSqTye6VJAMZx9HRDn-aiW...>

Impact of Public Speculation on Cryptocurrencies

The objective of the study is to examine how public discussion and speculation in society and media concerning cryptocurrencies affects their adoption. This study tests the conclusions and results of the thesis. The following ten questions present a view acquired from the articles and literature concerning the adoption of cryptocurrencies and decentralized banking. I will present these views in order to get professional opinions to support or disagree with my findings. The study is part of a thesis for Vaasa University of Applied Sciences by Michele Ilomäki.

Sähköposti *

klaus.grobys@uwasa.fi

Some researchers (Panzarino & Hatami, 2021) see decentralized banking and cryptocurrencies as an attempt to bring back the customer to the center of the services. *
Would you agree that decentralized banking will be the next phase of the banking industry?

Aleksi Grym, head of the Digital Central Bank process in the Financial Stability and Statistics Department at the Bank of Finland, argued that a blockchain network would be slow, would be poorly scalable, would have latency issues, and would be complicated to govern. He also emphasized that "because you have a centralized issuer, it really doesn't make sense to then decentralize the record keeping." I agree with Aleksi Grym.

Would you agree that countries with monetary instability are more keen on adopting cryptocurrencies? *

Yes, we have seen that in countries such as Central African Republic (CAR) and El Salvador.

Do you see financial inclusion being a problem in developing countries? *

I'm not sure about this issue.

Do you see cryptocurrencies presenting an alternative for people in countries where getting a bank account is difficult due to not having proof of income, savings and residence? *

Getting a online wallet isn't much easier than opening a bank account. Unemployed people with no income can open a bank account. I don't see this as a reason for adopting cryptos.

In your opinion, does high inflation correlate with the willingness to adopt cryptocurrencies? *

If we consider Central African Republic (CAR) and El Salvador as show cases, I guess my answer must be "yes".

What kind of regulation and legal framework would cryptocurrencies need in order for them to be adopted more widely? *

Well, the same regulation as with banks.

What are the biggest challenges regarding the adoption of cryptocurrencies in your opinion? *

Fraud in terms of cyberattacks, money laundry, price manipulations, instability.

Does the adoption of cryptocurrencies diminish political power? If yes, do you think politicians are willing to give up that power? *

It depends if its a CBDC or not. If it's a CBDC then, of course, not. Otherwise, yes.

Do you see a future for cryptocurrencies in Finland? *

Not at this stage. Finland is (luckily) quite conservative in this (and other) regards with helped survival of the country across all domains. So, I hope Finland will not be among those countries that first adopt this blockchain-based technology.

Does the current state of the world with war in Ukraine, post pandemic era, high inflation rates and global warming affect the valuation and adoption of cryptocurrencies in your opinion? *

I don't see an economic rationale for why this should be so. However, I assume that the extremely high prices for energy could have an impact on the willigness to mine cryptos such as Bitcoin - which is extremely costly as it takes enormous amounts of energy and computer power to solve the cryptographic puzzles required to maintain the blockchain.

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