

Master of Financial Technology

FNT 628

**Blockchain and
Cryptocurrencies**



Lecture 6

FNT 628

Blockchain and Cryptocurrencies

Prepared by Dr. Yara Ibrahim

www.midocean.ae

Crypto Currency and Traditional Banking System

Section I

An Introduction and History of the Modern Banking
Industry and Monetary Policy

An Introduction and History of the Modern Banking Industry



- The modern banking system has a rich and complex history. The idea of what banking should be, compared to what it actually is, has gone through many transformations for better and for worse over the centuries. This section will be a brief history of what the banking system is and why it is this way, as well as about monetary policy and how it has evolved over time.
- This section will also go into some of the pitfalls of the banking industry with special focus on the Federal Reserve.
- It's important to understand that entire national economies and their citizen's social well-being are balanced on the foundational need for a strong financial system (Beck, T. & Levine, R. 2008).
- If these systems are threatened or are faced with extreme change, those economies can be rearranged and either create new levels of prosperity or new levels of ruin for every entity involved in the economy.

Original Purpose of a Bank

- Before the Gramm-Leach-Bliley Act of 1999 there was two types of banks that served two distinct purposes: commercial banks and investment banks.
- This distinction was mandated by the Glass-Steagall Act of 1933 making it so that large banks had to split into separate entities to specialize and only do one of the two distinct jobs based on the individual banks' business model.
- First, let's break down what these two types of banks are and what they do. A commercial bank is what most people think of as a traditional or normal bank that functions to accept deposits and provide loans (Singh, J. 2014).
- These banks make loans, take in deposits by offering checking and saving accounts, they generally use deposits to make loans, and offer other traditional banking services.
- An investment bank doesn't deal with traditional banking but instead is limited to capital markets.
- Capital markets are financial markets for buying and selling long-term debt or equity backed securities. These banks are great at channeling the wealth of many savers and lending it to entrepreneurs, governments, and corporations who can put those savings to long term productive use.

Original Purpose of a Bank

- The reason these banks were forced to form separate business identities is because otherwise the banks would be allowed to take in an individual's money, money that those individuals thought was safe and secure in a checking or savings account, and take greater risks with that money in the capital markets.
- If a bank made too many risky investments and over leveraged themselves, all the people who thought their money was safe in the bank suddenly found themselves broke or outright bankrupt.
- To help further protect American's savings, F.D. Roosevelt also signed the Banking Act in 1933 creating Federal Deposit Insurance Corporation (FDIC) to help safely guarantee up to two thousand five hundred dollars in deposits and the number has grown to two hundred and fifty thousand as of 2016.
- However, this only protected citizens who put money into insured banks.
- To put it simply, investment banks are for people who want to store their money with the goal of seeing a larger return on investment, in exchange for the guaranteed safety of their money that they would expect from a commercial bank with FDIC insurance.

Original Purpose of a Bank

- Commercial banks do offer some loans to businesses and individuals, but these loans are relatively small compared to the large volume loans investment banks deal with.
- To put this into perspective, commercial banks would generally have their larger loans be a couple hundred thousand for mortgages and less than a hundred thousand for car loans or personal loans. Compare that to an investment banks that might make loans that are as large a couple hundred million.
- Commercial banks get the money needed to offer their loans by using the savings of other customers that the bank guards. Not only do commercial banks offer loans to people like aspiring homeowners and car owners but this bank will offer a warehouse function for all of its customers (Donaldson. J. 2016).
- A warehouse function is the function of the bank safely store and guarding your money in their vault and offer convenience services like online banking, checking and savings accounts, checks, and ATMs.
- Many of these services may cost a fee.
- So, customers are giving up on the ability to earn a higher return on their money in exchange for the safety and convenience of their money.

Original Purpose of a Bank

- All of this changed in 1999 when the Glass-Steagall Act was overturned and individual banks were able to merge and perform both functions of being an investment and commercial bank (Barth, J. et al, 2000).
- Suddenly one single bank could offer the perceived safety and security of putting money into a commercial bank and highly leverage themselves in the capital markets.
- A bank that customer thought was safe and thus trusted their money to the bank, may not be as safe as the customer thought.
- These banks are able to take far larger and riskier gambles with consumer's savings than just offering relatively small loans to people who want to buy a house or car.
- Now people's savings are in capital markets. Banks are able to advertise that consumers can have safety with their money and earn higher interest on it as well. Once it was legal for these banks to perform both functions, "too big to fail" was born (Sorkin, A. R. 2010).
- If banks lose big in the capital markets, the tax payers would bail them out and protect consumer savings with FDIC insurance.
- There was no incentive for these banks to rein in risky lending. If they won these gambles in capital markets and risky personal loans, they won big. If they lost, the tax payers would protect them and their customers deposits thanks to FDIC insurance. This created a moral hazard.

Original Purpose of a Bank

- Some people might feel that since consumers are protected by FDIC insurance and too big to fail banks have the Federal Reserve, aka the Fed, as a lender of last resort, then why is there a problem? The problem is that, like any firm in an economy, incentives will drive their behavior.
- If the government tolerates banks having high-risk behavior because of tax payer backed insurance on customer deposits, then the banks will push that tolerance to the max. If the government wants banks to act fiscally responsible, they don't need to regulate banks, they need to change the banks incentives (Leonard, T. C. 2008).
- FDIC insurance robs the tax coffers. The funds go into the pockets of banks that took on massive risk and thus it takes away from other programs that could have used those funds to better help tax payers. The Fed can be a lender of last resort but if it continually has to keep bailing out banks, how and when will it even gain the money back it loaned out? The Fed will have to turn to the printing press and causes an increase in inflation that harms everyone in the entire economy.
- The Fed is a massive drag on the U.S economy, on citizen's prosperity, and arguably not worth the cost for what few perceived benefits it provides to big banks (Rothbard, M. N. 1994).
- Before getting too far, let's break down the history and role of the Federal Reserve.

The Federal Reserve

- The Fed was established through The Federal Reserve Act of 1913.
- This however was not the first incarnation of the Fed.
- The first idea of a centralized bank was immediately after America's founding after the revolutionary war called the First Bank of the United States (Cowen, D. J. 2000).
- Jefferson was opposed to a central bank and Alexander Hamilton was in favor of one. Hamilton was in favor of a bank because he felt the U.S needed a strong central force to help handle the post-war economy, which was nearly in shambles from war debt (Syllat R. 2009).
- He felt it could bring stability to the country's new monetary system through being a credit provider to both private and public needs.
- Jefferson was opposed because he felt a central bank would undermine democracy (Flaherty, E. 2010).
- The First Bank was established in 1791 and only chartered for a twenty year period during this time Jacksonian supporters, of soon to be President Andrew Jackson, maintained a high level of hostility towards the bank and in 1811 thanks to their efforts the bank failed to be renewed.

The Federal Reserve

- There was one more predecessor before the Federal Reserve called the Second National Bank of the United States.
- Like the First Bank of the U.S. the Second Bank was born out of the war debt and inflation from the war of 1812 (Paul, R. 2009). Due to the unstable economic times and war debt, nationalists wanted a strong central banking force to help the economy. So in 1816 the Second Bank of the United States was chartered for twenty years. The Second Bank would be modeled and perform much like the First Bank.
- Also like the First Bank, the Second Bank would fail to renew its charter at the end of the twenties years largely thanks to Andrew Jackson. This put a brief end to the pursuit of a centralized bank until The Federal Reserve Act of 1913.
- Also like both of its predecessors, The Fed was created because of war. Except this time the central bank was made before the war began instead of in the aftermath of a post-war economy. World War I was started in 1914 and the Fed was instrumental in America being able to finance and join the war that was looming over Europe (Koning, J. P. 2009).
- The reason for this is that war is very costly because it could only be financed
- through bonds, borrowing, and direct taxation. Using a central bank to utilize inflation makes it politically easier to finance a war.

The Federal Reserve

- The Fed's mission per its congressional mandate from 1977 is to maximize employment output, stabilize prices (fight inflation), and moderate long term interest rates.
- The Fed fulfills its duties in four ways as listed on the Fed's official website (2016).
- Firstly, by conducting the nation's monetary policy by influencing the monetary and credit conditions in the economy.
- Secondly, by supervising and regulating banking institutions to ensure the safety and soundness of the nation's banking and financial system and to protect the credit rights of consumers.
- Thirdly, by maintaining the stability of the financial system and containing systemic risk that may arise in financial markets.
- Lastly, by providing financial services to depository institutions, the U.S government, and foreign official institutions, including playing a major role in operating the nation's payments system.

The Gold Standard

- The traditional alternative to fiat money is what is commonly called the gold standard. There are three types of gold standards that have been used in different stages of history (Paul, R. 2009).
- The first is the gold specie standard which is when actual gold coins or monetary units are used and exchanged.
- This gold standard is what America was using prior to President F.D. Roosevelt doing away with and switching the U.S to the gold exchange standard in 1932 (Rauchway, E. 2013). The gold exchange standard doesn't involve the circulation of gold coins but makes it so that government guarantees a fixed exchange rate to the currency for gold. This creates a de facto gold standard. However, President F.D. Roosevelt confiscated all US citizens' gold through the Gold Reserve Act of 1934 at \$20 an ounce and then made the fixed exchange rate \$35 an ounce, creating a \$15 per ounce profit for the U.S government essentially out of thin air at the expense of the citizens who could no longer legally own gold (Richardson, G. 2013). The third gold standard option is gold bullion standard in which gold coins don't
- circulate, but government agrees to sell gold bullion at a fixed price for currency. It wasn't until 1975 when President Ford signed bill Pub.L. 93-373 allowing U.S citizens to purchase, hold, sell and deal with gold. Now the average citizen could at least own gold again, even though the dollar was no longer connected to gold but instead to the trust and credit of the United States government.

The Gold Standard

- It was President Nixon in 1971 that officially and completely took the American dollar off of the quasi-gold standard that Bretton-Woods system had created. No longer was the dollar redeemable for any amount of gold at all. It was just paper backed by trust in the U.S. Government and nothing more. While President Lincoln had taken the United
- States off the gold standard during the civil war and created greenbacks, they were abolished and American switch from a fiat currency back to the gold standard with no major issues ensuing (Bye, J. O. 1963). Roosevelt's damage to the gold standard through
- confiscation was the second major blow to the gold standard, but Nixon put the final nail in the coffin. This act was completely unconstitutional and was known as the Nixon shock (Paul, R. 2009). This was unconstitutional because it clearly states in the U.S Constitution Article I, Section I 0: "No state shall... make anything but gold and silver coin a tender in payment of debts." The effects of the Nixon shock caused the US to initiate price controls for ten days through Executive Order 11615.
- Price controls were something the U. S. hadn't used since World War 11. As well the Nixon shock was a primary cause of the stagflation that occurred in the 1970's and causing the dollar to lose a third of its value just within the decade (Ghizoni, S. 2013).

The Gold Standard

- Why is the gold standard so powerful and so important? It primarily comes down to inflation.
- A stable money supply that is backed by gold cannot be inflated in the way that fiat money can be inflated.
- Currently the Fed doesn't even need a printing press, everything is done digitally, with a few strokes of some keys, and trillions of dollars can be created.
- In fact this was done for quantitative easing after the Great Recession of 2009 up to 2014 when the Fed was printing tens of billions of dollars a month (Finger, R. 2013).
- With a gold standard, the Fed cannot create money out of thin air. It forces countries, banks, corporations, and politicians to have financial discipline because they cannot use inflation to create money to bail their way out of bad situations.

Moral Hazard Created by Central Banks

- The term moral hazard, according to dictionary.com, means "the risk that an individual or organization will act irresponsibly or recklessly if protected or exempt from the consequences of an action".
- Having the Fed act as a lender of last resort for banks motivates banks to make riskier and riskier loans because they know they will be bailed out and their customers deposits protected thanks to FDIC.
- The Fed is technically an independent organization that is not officially part of the Federal Government.
- However, all of the Feds "profits" go into the treasury and all of its board members are hand selected by the President and approved of by the Senate.
- Also the Fed must report twice annually to congress and at technically any moment congress could vote to abolish the Fed, the Fed is as "independent" as a five year old child is independent of adults (Zarlenga, S. 2008).

Moral Hazard Created by Central Banks

- The Fed allows the government to expand, offer welfare programs, and enter into wars, more easily because the government can use inflation to pay for everything and not direct taxation.
- While congress doesn't explicitly ask the Fed to do such things, the underlying effects of the Fed purposefully creating inflation has this effect for politicians.
- Remember that inflation is bad for the economy but greatly benefits the first spenders of newly minted money.
- Since the Fed's "profits" go to the treasury first, government is one of the first spenders.
- The Fed allows politicians to make more promises for social welfare programs that don't require explicit taxation or bonds to pay for. This allows politicians to essentially "bribe" the public for votes by offering favorable programs and projects to the demographics that vote them in.
- This process weakens everyone's dollars instead of directly and overtly confiscating those dollars from them in the form of traditional taxes. Allowing moral hazards to create mat-investments is what caused the financial crash of 2008 and nearly all crashes that have come before (Mises, L. V . 2007).

Inflation and Money Vs Wealth

- There is a very important distinction to make between money and wealth.
- Money is simply a medium of exchange, meaning it's a unit of measurement and has value that people are willing to exchange goods and services for.
- There is nothing intrinsically valuable about money. Having all the money in the world and nothing to spend it on makes having trillions of dollars not only useless but also pointless.
- Wealth is simply stuff. Wealth is a bed, a car, a book, anything of value to the owner. It's very easy, and very dangerous to confuse money for wealth.
- This confusion can cause bankers, politicians and bureaucrats to try and manipulate money, thinking they will change wealth.
- They are only changing the units of what valuable things are worth, not actually creating any new wealth.
- New wealth is only created by entrepreneurs in the market who build businesses that sell products or services that other people in the market find valuable (Dom, J. 2007).

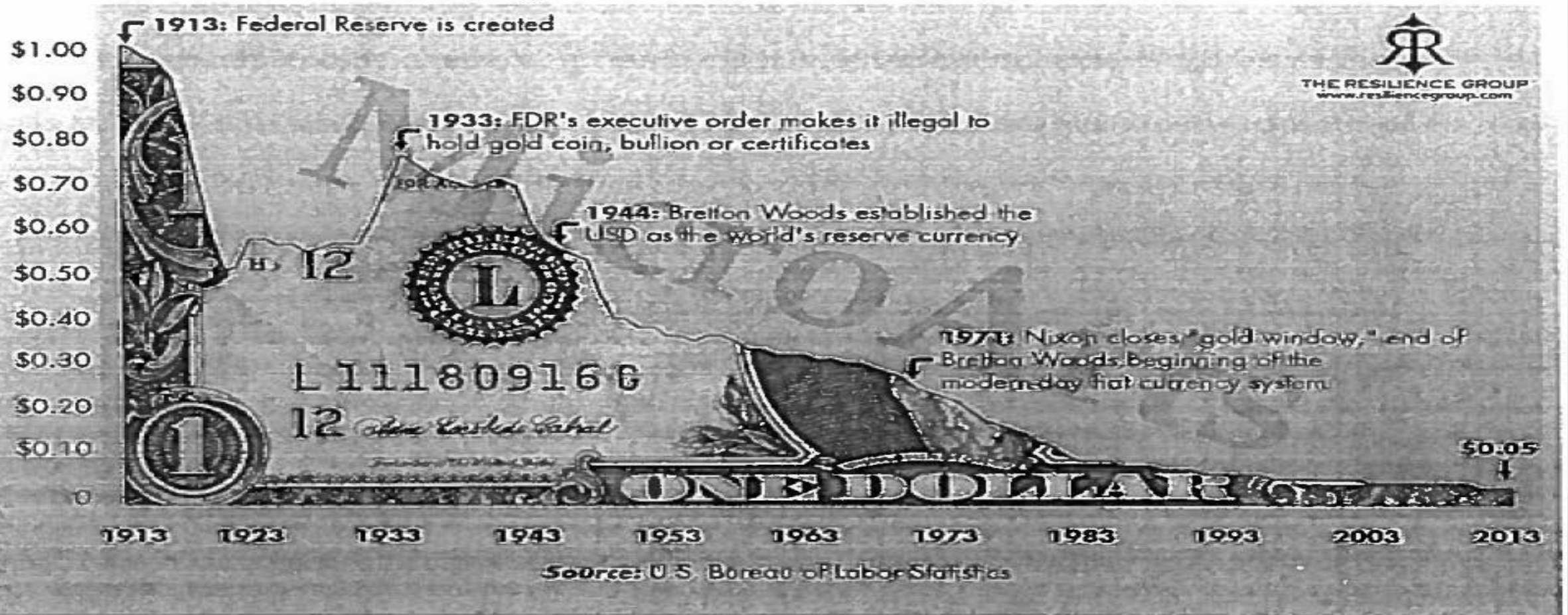
Inflation and Money Vs Wealth

- By printing or creating more money, a nation does not create more wealth. Having stable money however, helps entrepreneurs and citizens to more easily create wealth; by creating new innovations, products, and better services.
- The question is often asked "why gold?" of all the elements and things on the planet why is gold chosen as the so called "right" standard to use for money? The answer is that through voluntary exchange over time, gold evolved into money. The market chose. No international government or specific bank mandated it, the people chose it. Anything could have been picked: sea shells, salt, gems or jewels, silks, or even animals.
- The reason is that gold was chosen over everything else was because gold has all the qualities that is associated with good money: it's divisible, portable, high value per unit of weight, durable and has uniform quality. (Rowlat, J.2013) Rather gold is used for money directly, like for gold coins, or indirectly through currency that is "good-as-gold", people trust in gold over other commodities. While other commodities like silver have also been used, gold has always been the most valued.
- Also because there is a set amount of gold in the world and therefore cannot be artificially inflated.
- Even if more is mined, it cannot be inflated because no one entity in particular controls the supply of gold, unlike fiat money where the entire money supply could theoretically be double at the flick of a switch.

Inflation and Money Vs Wealth

- Knowing the difference between wealth and money is critical. Doubling the money supply doesn't double economic prosperity, allowing the Fed to tinker with the money supply and purposefully cause inflation is legal theft from every currency holding citizen.
- It allows the Fed to "tax" every citizen, poor and rich, by weakening the purchasing power of each dollar in their pockets.
- The graph on the next page shows, using data from the Bureau of Labor Statistics, the weakening of the dollar since the Fed was founded in 1913 up to 100 years later in 2013. The dollar has lost 95% of its purchasing power.
- Meaning \$100 dollars of groceries in 2013 would cost \$5 before the Fed and Presidents Nixon and Roosevelt inflated the dollar and removed it from the gold standard.
- The Fed was so damaging that even while the U.S. was still on the gold standard the Fed was able to shatter a lot of the dollar's value because it was tampering with the economy and caused the often unspoken of recession of 1920-1921 (Grant, J. 2015).
- Once the U.S. was completely off the gold standard, the downward spiral never went back up and has landed the U.S. in the position that it is in today with its 95% loss of purchasing power.

Purchasing Power of the U.S. Dollar (1913-2013)



Inflation and Money Vs Wealth

- By stealing citizens' purchasing power through the use of inflation, the Fed is robbing citizens of their ability to accumulate wealth.
- Inflation doesn't speed up or stimulate an economy as Fed supporters often claim; it simply creates an illusion by increasing nominal numbers instead of real numbers of economic prosperity and instead destroys the country's currency (Paul, R. 2009).
- Inflation is deceptive and causes delusions of grandeur with regards to wealth and knowledge. The people who "win" from inflation are people and nations that are in debt (Aizenman, J. & Marion, N. 2011).
- This is why central banks were created after times of war and why inflation peaks around times war. By weakening the dollar, the government is able to cheat soldiers and contractors by paying them in weaker dollars. The people who spend first win first.
- The person who saves money is being robbed right under their nose.
- Alan Greenspan, one of the most legendary Fed chairman even acknowledged in his article Gold and Economic Freedom (1966) stating "In the absence of the gold standard, there is no way to protect savings from confiscation through inflation. There is no safe store of value."

Inflation and Money Vs Wealth

- A healthy economy needs and depends on savers.
- It's people who save their money and thusly allow banks to loan the money to entrepreneurs that create real economic prosperity and help country to flourish.
- When central banks like the Fed eliminates the incentives to save because of destructive inflation, more people spend money on consumer goods or try to invest in riskier ventures because they need to outpace inflation for a real return on investment.
- Fed policy causes a circle of accumulating debt and risky leveraging that eats away and rips apart at a country and when everyone begins to realize that all the money that is being spent is being spent for the wrong reasons then bubbles begin to build, and soon after burst, causing recessions and depressions (Mises, L. V. 2007).

Section 2

An Introduction to Cryptocurrency

An Introduction to Cryptocurrency

- What is cryptocurrency? The technical definition according to the Oxford Dictionary is "a digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank.
- " What exactly does this mean though? It means that cryptocurrency is online money that, because of a mathematic algorithm, cannot be inflated or tampered with from any single institution like a central bank. In fact, cryptocurrencies are not backed by any government or central bank in the world.
- They are an alternative private currency developed out of the free market and new digital technologies.
- This is what Nobel laureate F.A Hayek theorized in his famous pamphlet Denationalization of Money (1978). He argues that if government removed itself as an obstacle from the free market, individuals and monetary entrepreneurs would provide the optimal quantity and variety of monetary products.
- If the forces of competition can make virtually all other products and services into better quality products and for a lower price,
- why not have that work for the monetary industry as well? What kind of benefits can come from alternative currencies according to Hayek.

An Introduction to Cryptocurrency

- Cryptocurrency doesn't need to rely on private organizations either though. In fact, the world's most powerful, valuable, and popular cryptocurrency, called bitcoin, was invented for free by a still unknown creator.
- It's a self-regulating, peer-to-peer system that is not backed by any bank, firm, institution, or government.
- Although a few companies have been created that involve bitcoin (companies help people buy, sell, and trade bitcoin), none of them control bitcoin itself.
- But if bitcoin isn't owned or managed by anyone or any single entity like every other currency, then what is bitcoin and what does it mean in the world of cryptocurrency, banking, and monetary policy?

Section 3

Predictions on Cryptocurrencies and Its Future Effects

Predictions on Cryptocurrencies and Its Future Effects

- To help put the future into perspective, let's first look to the past for an example.
- Two hundred years ago in the 1800's over 90% of the U.S workforce was in agriculture (Craig, L. A., & Weiss, T. 1998).
- Today however, less than 2% of workers are in agriculture according to The World Bank (2010).
- How did an exodus of 88% of the labor force leaving the agriculture industry not cause horrific food shortages over time? How did the economy survive and citizens' standards of living not plummet due to such a decreasing amount of farmers? It's due to the process of creative destruction.
- The term creative destruction was made famous by economist Joseph Schumpeter in his famous work title Capitalism, Socialism, and Democracy (1950). What it means is that innovations in the market cause the old and ineffective to die out and the new, more effective, and more efficient to replace them.
- In terms of the fanning example, the use of genetically modified crops that have exponentially larger crop yields than traditional crops yields, the higher levels of capital investments into advance machinery fanners can now purchase to more quickly harvest the larger crop yields, all lead to the destruction of jobs for the super majority of the farm hands and field laborers (Dimitri, C., Effland, A., & Conklin, N. 2005) and (Council for Economic Education. 2015).

Predictions on Cryptocurrencies and Its Future Effects

- There is no need to start a revolt for the individuals whose jobs go existent due to creative destruction. 88% of the workforce didn't die in a ditch or choose to endure unemployment indefinitely.
- They learned new skills for new jobs or applied their labor to different sectors of the economy (Grennes, T. 2003).
- Some may have become business owners and entrepreneurs adding new products and services to the economy and new jobs.
- In the end, everyone wins because the economy is growing and becoming more efficient.
- Food is now more affordable and plentiful, workers are learning new skills and developing new products and services, the economy grows and standard of living increases. All thanks to creative destruction.

Predictions on Cryptocurrencies and Its Future Effects

- Now look to the future. Bitcoin is the harbinger of the creative destruction of central banking, high transaction and exchange fees, and currency exchanges around the world.
- Imagine the family or business traveler, not needing to account for the 3%-5% fees of using credit or debit cards overseas, of not needing to carefully count how much of a foreign currency they have on hand before they need to go to an exchange and buy more of the foreign currency at the cost of a flat rate fee and percentage fee, or if they travel to multiple countries that use different types of currency each and not needing to re-do the exchange process every time they cross a boarder.
- The potential for bitcoin is unprecedented and with the blockchain involved, that potential is nearly unlimited. But first let's focus on how bitcoin will be the creative detection of central banks.

Bitcoin and Central Banking

- The negative impact of central banking was made clear in the previous sections: the cause of destructive inflation to the currency, the decrease in purchasing power and thus standard of living for citizens, an invisible tax on all citizens to help fund wars and social welfare programs and float the bill to later generations, the cause of too big to fail, and a host of other economic atrocities. Bitcoin can bring all of that crashing down.
- As of 2016, most individuals in the central banking industry are dismissive of bitcoin and cryptocurrency. Alan Greenspan has publicly announced that he doesn't understand how or where bitcoin gains its value from to satisfy the regression theorem; he also views bitcoins high prices as a speculative bubble (Tadeo, M. 2013). Mark Williams, a senior executive Federal Reserve Bank examiner and a contributor for Business Insider thought that bitcoins would plummet to \$10 by mid-2014 (Williams, M. 2013) yet bitcoin was instead worth between \$660 and \$550 between June 2014 and August 2014 according to CoinDesk.com (Wong, J. I. 2014).
- The Federal Government is getting to the point that they are not just dismissive of bitcoin, but are actually becoming afraid of bitcoin and
- trying to fight back. The Consumer Financial Protection Bureau has gone as far as issuing warnings about the risks associated with bitcoin to help warn and scare people away from the cryptocurrency (2014).
- So despite how much Fed supporters and the federal government attempt to down play the significance and potential of bitcoin, the market is ripping apart their predictions and assumptions and favoring bitcoin more and more every day by maintaining bitcoins high value and continued and growing use.

Bitcoin and Central Banking

- The Fed will take a long time to be ended. The first step in this process has occurred. People are beginning to question the Fed and its role in our economy, largely thanks to Dr. Ron Paul's 2008 and 2012 presidential campaigns (Blodget, H. 2012).
- The second step is where society currently is; looking for a possible replacement to the Fed. The market has produced an answer to replace and undermine the Fed; bitcoin.
- The third step is the slow process of replacing and eventually disbanding the Fed once it's clearly shown how ineffective and unnecessary the Fed is and how the alternatives (bitcoin) are more efficient and chosen by the market as the preferred option.

Bitcoin at the Present

- So just how widely accepted is bitcoin currently then? Its acceptance is growing almost exponentially.
- At first it was predominately used amongst individuals and small business owners that operated their own small scale websites that sold goods like T shirts, books or other small goods.
- However bitcoins acceptance has not only spread further than ever, but to big name companies such as Dell computers, Virgin Airlines, Overstock.com, Expedia, PayPal, and Google just name a handful of the hundreds of companies.
- Non-Profits also have been accepting bitcoin as donations.
- Organizations like Khan Academy, Students For Liberty, and Foundation for Economic Education which was the first non-profit to be given a million-dollar donation in bitcoin (Oberg, C. 2013).

Bitcoin at the Present

- A big reason many people have criticisms of bitcoin and other cryptocurrencies are because of how volatile prices are currently.
- A large reason for this is because cryptocurrencies are still a relatively new phenomena that's going through its initial growing pains but will stabilize as time goes on (Lee, T. B. 2014).
- Bitcoin has gained its massive value at a nearly incomprehensibly speed from a historical perspective. CoinDesk.com tracks the history of bitcoins value and from their data we can see that bitcoin was started in January 2009 and for months was valued at \$0.00.
- Then people started to see its potential and first wave innovators began to experiment with bitcoins. Bitcoin achieved real value in July of 2010 valued at \$0.05.
- It then only took until February of 2011 that bitcoin was equal to and then surpassed the US dollar in value. By August of 2012 bitcoin had increased in value by 1000% up to \$10 per bitcoin. Then quickly by March of 2013 bitcoin increased in value by another 1000% up to \$100 per bitcoin.
- Finally, by November 2013 bitcoin again increased 1000% in value up to \$1,000 per bitcoin. Bitcoin hit an all-time high of \$1,145.46 on November 29th 2013.
- As of writing this paper July 2016 bitcoin has been maintaining value between \$600-\$700 over the past few months and is showing more and more gradual price changes in overtime.

Future of the Blockchain

- The use of the blockchain, while it's connected with bitcoin, is not limited to just bitcoin transactions.
- On August 5th, 2014, a couple made history by having the world's first bitcoin wedding. It was registered not with any government or organization but submitted to the blockchain (Marty, B. 2014).
- The couple displayed a QR code of a 0.1 bitcoin transaction as the permanence of their vows that will exist forever.
- It's important to remember that the blockchain is the weight behind bitcoin's value.
- The blockchain is the solution for the threat of double count in the digital age.
- It's the way for two complete strangers to be able to exchange in commerce over the internet as if they were doing so with cash. No need for a third-party vendor, no massive fees, just free trade. One example of the blockchain being used is with a website called Proof of Existence.com.
- The site allows individuals to upload files to certify custody of the file at a given time without exposing any personal information or the contents of the file itself.
- This could be massive in the world of intellectual property rights. The future possibilities are massive, from stock exchanges, music distribution, and to even voting.

Conclusions and Future Study

- Bitcoin and cryptocurrencies cannot be inflated because of the mathematical algorithms that restrict and track how much currency there is at any given moment in existence.
- Central banks, as previously mentioned by Ben Bernanke are trying to purposefully cause inflation.
- In fact the Fed has a very precise amount of inflation that they aim for.
- The Fed wants to cause, on average, 2% inflation every year according to their website.
- They feel it's for economic growth, while in reality it's simply destroying every citizen's purchasing power and lowering their standard of living.
- Bitcoin can destroy "too big to fail" and end much of the moral hazard seen on Wall Street and the big banks because without a Fed to inflate the currency and bailout banks and companies, it will force financial and economic discipline.
- When put on a currency that cannot be manipulated and without a lender of last resort, banks and companies will actually have answer for over leveraging themselves and making bad businesses decisions.
- They will be responsible for their losses and no longer be able to pass it off to tax payers.
- To stay alive, they will change how they do business. The economy will strengthen and grow at a natural rate that will promote long term prosperity because of these changes.

Bitcoin in Government: Strategic Transformations

- Governments exploring Bitcoin as a reserve asset to diversify away from USD dependency.
- Integration of Bitcoin mining into national energy strategies (e.g., geothermal, excess grid energy utilization).
- Taxation frameworks built around Bitcoin transactions, mining income, and international settlements.
- Government-to-Citizen (G2C) crypto-payment pilots for aid, subsidies, and emergency disbursement.
- Blockchain-based national registries (land, identity, medical licensing) anchored to Bitcoin.
- Transparency and anti-corruption through immutable government procurement records.
- Diplomatic and cross-border settlements using Bitcoin for faster, sanctions-resistant payments.

Why Governments Might Adopt Bitcoin

- Hedge against hyperinflation and currency devaluation.
- Diversify foreign reserves beyond traditional currencies.
- Attract global crypto investors and innovation hubs.
- Enable borderless government transactions with lower friction.
- Improve transparency, reduce fraud in public spending.
- Enhance national cybersecurity via blockchain verification.

The Future of Bitcoin in Banking

- Banks offering Bitcoin custody services as part of their core portfolio.
- Bitcoin-backed loans for individuals and institutions.
- Bitcoin integrated into Basel-compliant liquidity frameworks.
- Interbank settlement through Bitcoin's L2 networks (Lightning, Fedimint).
- Tokenized financial instruments collateralized by Bitcoin.
- Real-time cross-border banking transactions without SWIFT dependence.

Bitcoin and Financial Market Innovation

- Bitcoin ETFs and structured derivatives as mainstream investment vehicles.
- Bitcoin as collateral for institutional margin trading.
- Integration with robo-advisors and algorithmic portfolio management.
- Banking stability enhanced by Bitcoin's transparent and auditable ledger.
- Insurance products built on Bitcoin risk models.

Bitcoin in Global Commerce

- Ultra-fast cross-border payments for global supply chains.
- Reduced reliance on traditional merchant processors (Visa/Mastercard).
- Micropayments for digital services via Lightning Network.
- Bitcoin-based loyalty programs and reward ecosystems.
- Fraud-free payment models with irreversible Bitcoin transactions.
- Global e-commerce expansion into unbanked regions.
- Automated smart logistics contracts linked to Bitcoin transactions.

Bitcoin in Healthcare Systems

- Securing electronic health records (EHRs) with Bitcoin-anchored timestamps.
- Immutable medical audit trails for hospitals and clinical research.
- Cross-border medical payments for patients and insurers.
- Traceability of pharmaceutical supply chains using blockchain.
- Reduced administrative costs through automated verification.
- Medical device authentication via Bitcoin-based registries.
- Patient-controlled identity and data ownership frameworks.

Final Conclusions

- Bitcoin is transitioning from a digital asset to an institutional infrastructure.
- Government, banking, commerce, and healthcare will increasingly integrate Bitcoin.
- Regulatory clarity will accelerate adoption.
- Bitcoin's role will expand from payments to security, identity, and data integrity.

References

- Aizenrnan, J., & Marion, N. (2011). Using Inflation to Erode the US Public Debt. Journal of Macroeconomics, 33(4), 524-541.
- Appelbaum, B. (2012, October 26). In Fed and Out, Many Now Think Inflation Helps. Retrieved July 2, 2016, from http://www.nytimes.com/2013/10/27/business/economy/in-fed-and-out-many-now-think-inflation-helps.html?_r=1
- Bardhan, P. (2006, March 26). Does Globalization Help or Hurt the World's Poor?:
- Overview/Globalization and Poverty. Retrieved July 16, 2016, from <http://www.scientificamerican.com/article/does-globalization-help-o-2006-04/>
- Barth, J., Brumbaugh, R., & Wilcox, J. (2000). Policy Watch: The Repeal of Glass Steagall and the Advent of Broad Banking. The Journal of Economic Perspectives, 14 (2), 191-204. Retrieved from http://www.jstar.org/stable/2647102?seq=1#page_scan_tab_contents
- Beck, T. & Levine, R. (2008) Legal Institutions and Financial Development. Handbook of New Institutional Economic, III, 251-278. Doi: 10.1007/978-3-540-69305-5_12
- Blodget, H. (2012, January 12). Hey, America, Half of Young Voters Just Voted For Ron Paul - Half! Retrieved July 16, 2016, from <http://www.businessinsider.com/young-voters-ron-paul-2012-1>
- Bradford, H. (2013, April 17). United States Postal Service is Losing \$25 Million A Day. Retrieved July 16, 2016, from http://www.huffingtonpost.com/2013/04/17/postal-service-losing-money-united-states_n_3104513.html
- Burton, D. R., & Michel, N. J. (2016, April 14). Financial Institutions: Necessary for Prosperity. Retrieved July 16, 2016, from <http://www.heritage.org/research/reports/2016/04/financial-institutions-necessary-for-prosperity>

References

- Bye, J. O. (1963). Lincoln 's Greenback Currency. Ann Arbor: University ofMichigan. Coindesk. (2015, March 20). How Do Bitcoin Transactions Work? Retrieved July 01, 2016, from <http://www.coindesk.com/information/how-do-bitcoin-transactions-work/>
- Council for Economic Education. (2015) The Mystery ofthe Amazing Farmer. Retrieved July 01, 2016, from <http://www.econedlink.org/lesson/206/>
- Cowen, D. J. (2000). The Origins and Economic Impact ofthe First Bank ofthe United States, 1 791-1 797. New York: Garland Pub.
- Craig, L. A., & Weiss, T. (1998). U.S. Agriculture Workforce. 1800-1900. Retrieved July 16, 2016, from <http://eh.net/database/u-s-agricultural-workforce1800-1900/>
- Dimitri, C., Effland, A., & Conklin, N. (2005, June). The 201h Centwy Transformation of U.S. Agriculture and Farm Policy. [PDF document] Retrieved July 16, 2016, from http://www.ers.usda.gov/media/259572/eib3_l_.pdf
- Dom, J. (2015, April 21). Monetary Stimulus Creates Only Pseudo Wealth. Retrieved July 02, 2016, from <http://www.cato.org/publications/commentary/monetary-stimulus-creates-only-pseudo-wealth>
- Donaldson, J., Piacentino, G., & Thakor, A. (2016) Warehouse Banking [PDF document]. Retrieved July 8, 2016, from <https://www.princeton.edu/bcf/newsevents/events/seminar/Warehouse-Banking.pdf>
- FDIC, (2006, July 27). FDIC: The First Fifty Years. Retrieved July 01, 2016, from <https://www.fdic.gov/bank/analytical/firstfifty/chapter5.html>
- Finger, R. (2013, September 20). The Federal Reserve Is Making A Big Mistake. Retrieved July 02, 2016, from <http://h,vww.forbes.com/sites/richardfinger/2013/09/20/the-federal-reserve-is-making-a-big-mistake/#7c4ba6fc7eOb>

References

- Flaherty, E. (2010). A Brief History of Central Banking in the United States. Retrieved July 7, 2016, from <http://www.let.rug.nl/usa/essays/general/a-brief-history-of-central-banking/>
- Fukuyama, F. (1995). Trust: The Social Virtues and the Creation of Prosperity (No. D10 301 c. 1/c. 2) New York: Free Press.
- Ghizoni, S. (2013, November 22). Nixon Ends Convertibility of US Dollars to Gold and Announces Wage/Price Controls - A detailed essay on an important event in the history of the Federal Reserve. Retrieved July 02, 2016 from <http://www.federalreservehistory.org/Events/DetailView/33>
- Grant, J. (2015, May 22). The Forgotten Depression of 1920. Retrieved July 15, 2016, from <https://mises.org/library/james-grant-forgotten-depression>
- Greenspan, A. (1966) Gold and Economic Freedom. The Objectivist, 5(7). Retrieved July 01, 2016, from http://www.constitution.org/mon/greenspan_gold.htm
- Grennes, T. (2003, Winter). Creative Destruction and Globalization. Cato Journal, 22(3), 543-558 [PDF document]. Retrieved June 30, 2016, from <http://object.cato.org/sites/cato.org/files/serials/files/cato-journal/2003/1/cj22n3-10.pdf>
- Hayek, F. A. (1978). Denationalization of Money: The Argument Refined. London: Inst. Of Economic Affairs.
- Hayek, F. (1945, September). The Use of Knowledge in Society. The American Economic Review, 35(4), 519-530. [PDF document] Retrieved July 2, 2016, from http://www.kysq.org/docs/Hayek_45.pdf

References

- Heggstuen, J. (2014, April 11). Bitcoin's Price Fluctuations Shouldn't Obscure its Value as A Payments System. Retrieved July 19, 2016, from <http://www.businessinsider.com/bitcoins-price-fluctuations-shouldnt-obscure-its-value-as-a-payments-system-2014-4>
- Higgs, R. (1 997, Spring). Regime Uncertainty: Why the Great Depression Lasted So Long and Why Prosperity Resumed After the War. The Independent Review, 1(4), 561- 590. [PDF document]. Retrieved July 2, 2016, from http://www.independent.org/pdf/tir/tir_O1_4_higgs.pdf
- Independence Hall Association (2008) War Against The Bank, The. Retrieved July 02, 2016, from <http://www.ushistory.org/us/24d.asp>
- Keynes, J. M. (1920). The Economic Consequences of the Peace. New York: Harcourt Koning, J. P. (2009, December 11). How the Fed Helped Pay for World War I. Retrieved July 20, 2016, from <https://mises.org/library/how-fed-helped-pay-world-war-i>
- Lee, T. B. (2014, February 3). These Four Charts Suggest that Bitcoin Will Stabilize in the Future. Retrieved July 16, 2016, from <https://www.washingtonpost.com/news/the-switch/wp/2014/02/03/these-four-charts-suggest-that-bitcoin-will-stabilize-in-the-future/>
- Lehman, J. (2014). A Brief Explanation of the Overton Window. Mackinac Center for Public Policy. Retrieved July 14, 2016, from <http://www.mackinac.org/OvertonWindow#top>
- Leonard, T. C. (2008). "Richard H. Thaler, Cass R. Sunstein, Nudge: Improving Decisions About Health, Wealth, and Happiness." Constitutional Political Economy, 19(4), 356-360

References

- LeRoux, C. (2014, June 11). The Inability of Bitcoin to Serve for Rational Economic Calculation. Retrieved July 15, 2016, from <http://peacefreedomprosperity.com/7776/inability-bitcoin-serve-rational-economic-calculation/>
- Marty, B. (2014, October 07). Couple Make History with World's First Bitcoin Wedding. Retrieved July 16, 2016, from <https://panampost.com/belen-marty/2014/10/07/couple-make-history-with-worlds-first-bitcoin-wedding/>
- Marx, K., & Engels, F. (2002) The Communist Manifesto. New York: Penguin.
- Menger, K. (1892, June). On the Origin of Money. The Economic Journal, 2(6), 239-255. Doi: 10.2307/2956146
- Mises, L. V. (2007). Human Action: A Treatise on Economics. Indianapolis, IN. Liberty Fund.
- Mises, L. V. (1953). The Theory of Money and Credit. New Haven: Yale University Press.
- National Bureau of Economic Research. (2010, September 20). US Business Cycle Expansions and Contractions. Retrieved July 02, 2016, from <http://www.nber.org/cycles.html>
- Oberg, C. (2013, December 1). Roger Ver Gives FEE Highest-Valued Known Bitcoin Donation, Worth About \$1 Million. Retrieved July 16, 2016, from <https://fee.org/resources/roger-ver-gives-fee-highest-valued-known-bitcoin-donation-worth-about-1-million/>
- Owen, T. (2015) Disruptive Power: The Crisis of the State in the Digital Age. New York: Oxford University Press, USA.

References

- Patterson, S. (2014, October 07). Bitcoin: Currency of Currencies. Retrieved July 15, 2016, from <https://fee.org/articles/bitcoin-currency-of-currencies/>
- Paul, R. (2009). End The Fed. New York: Grand Central Publishing.
- Rauchway, E. (2013, March 21). How Franklin Roosevelt Secretly Ended the Gold Standard. Retrieved July 19, 2016, from <http://www.bloomberg.com/view/articles/2013-03-21/how-franklin-roosevelt-secretly-ended-the-gold-standard>
- Richardson, G., Komai, A., & Gou, M. (2013) Gold Reserve Act of 1934. Federal Reserve History. Retrieved July 12, 2016, from <http://www.federalreservehistory.org/Events/DetailView/26>
- Rogers, K. (2015, April 27). How E-Commerce Helps US Small Businesses Go Global. Retrieved July 16, 2016, from <http://www.cnbc.com/2015/04/27/how-e-commerce-helps-us-small-businesses-go-global.html>
- Rothbard, M. N. (1994). Case Against the Fed, The. Auburn Ala: Ludwig von Mises Institute.
- Rowlett, J. (2013, December 08). Why Do We Value Gold? Retrieved July 02, 2016, from <http://www.bbc.com/news/magazine-25255957>
- Rykwald, E. (2014, October 19). The Math Behind Bitcoin. Retrieved July 15, 2016, from <http://www.coindesk.com/math-behind-bitcoin/>
- Santori, M. A., DeRidder, C. A., & Grosser, J. M. (2016, March 02). Blockchain Basics: A Primer. Retrieved July 15, 2016, [PDF document] from <http://bravenewcoin.com/assets/Industry-Reports-2016/AdvisoryMay2016CSTechBlockchainBasicsAPrimer.pdf>
- Schumpeter, J. A. (1950) Capitalism, Socialism, and Democracy. New York: Harper

References

- Singh, J. (2014). Commerical Bank: Definition, Function, Credit Creation, and Significances. Retrieved July 01, 2016, from <http://www.economicsdiscussion.net/banks/commercial-bank-definition-function-credit-creation-and-significances/607>
- Solman, P. (2012, April 18). Does the Fed Creat Money Out ofThin Air? Retrieved July 22, 2016, from <http://www.pbs.org/newshour/rundown/does-the-fed-create-money-out-of-thin-air/>
- Sorkin, A. R. (2010). Too Big to Fail: The Inside Story ofHow Wall Street and Washington Fought to Save the Financial System - and Themselves. New York: Penguin
- Sylla, R., Wright, R. E., & Cowen, D. J. (2009). Alexander Hamilton, Central Banker: Crisis Management During the US Financial Panic of 1792. Business Histo,y Review, 83(01), 61-86.
- Tadeo, M. (2013, December 05). Alan Greenspan Blasts Bitcoin as Beijing Moves to Ban the Virtual Currency. Retrieved July 16, 2016, from <http://www.independent.co.uk/news/business/news/alan-greenspan-blasts-bitcoin-as-beijing-moves-to-ban-the-virtual-currency-8984738.html>
- Tucker, J. A. (2014, August 27). What Gave Bitcoin its Value? Retrieved July 15, 2016, from <https://fee.org/articles/what-gave-bitcoin-its-value/>
- Volastro, A. (2014, January 23). CNBC Explain: How to Mine Bitcoins on Your Own. Retrieved June 20, 2016, from <http://www.cnbc.com/2014/01/23/cnbc-explains-how-to-mine-bitcoins-on-your-own.html>
- Williams, M. T. (2013, December 17). Finance Professor: Bitcoin Will Crash to \$10 by Mid-2014. Retrieved July 15, 2016, from <http://www.businessinsider.com/williams-bitcoin-meltdown-10-2013-12>
- Wong, J.I. (2014, December 27). Bitcoin Price 2014: A Year in Review. Retrieved July 16, 2016, from <http://www.coindesk.com/bitcoin-price-2014-year-review/>

References

- World Bank, (2012, April 19). Three Quarters of the World's Poor are "Unbanked." Retrieved July 16, 2016,
- Zarlenga, S. (2008, February 11). Is the Federal Reserve System a Governmental or Privately Controlled Organization? Retrieved July 02, 2016, from <http://www.monetary.org/is-the-federal-reserve-system-a-governmental-or-a-privately-controlled-organization/2008/02> 52



Thank You