

Can cryptocurrency replace institutionalised banking??

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Abstract- In this paper I will be first discussing what bitcoin is, how it reached such prominence and the problems in the bitcoin industry. I will also discuss about the institutional banking structure and the problems with the current banking structure in the world. The main purpose of this paper is to validate whether bitcoin claims to be the currency of the future hold any ground or not, as well as discuss some other models of banking also. Last but not the least I will also discuss and explain in detail about what blockchain technology is and how it can bring prosperity and change the future for good.

Keywords- Cryptocurrency, Blockchain, Bitcoin(BTC), Fiat Money, Decentralized, Subprime mortgages, Mortgage Backed securities, Collateral debt obligation.

Introduction-

If you have not been living under a rock for the past few months, you might've heard about a thing called cryptocurrency.

Bitcoins, Dogecoins (a coin which started as a joke, as a satire, has now a market cap of 50 billion dollars). In the late 2010s, 1 Bitcoin was valued at 0.39 dollars. In April 2021, 1 bitcoin was valued at 63,000 dollars. So, How did it all start?

Let me take you through a history lesson. Previously, there used to be a barter system of payment, which relied on coincidence of wants. This system was, however, not the most efficient. People needed a medium of exchange. Thus, countries started using paper money which was backed by gold (also called the gold standard). This was abolished in the US after it left the gold standard in 1971. The value of the dollar is decreed by the government and we all agree to it. This gave the government and the central banks more control over our money supply. This type of money is known as FIAT money. In the 1980s, a group of people known as the cyberpunks were against the government due to fears of privacy. They believed in Cryptography, which is essentially used for secure communication. They were distrustful of the banks. We trust our banks that they will properly manage our money, that they won't collapse, however, this is not always the case. In 2008, the world faced the most severe financial crisis since the great depression, and the crisis had its roots in risky lending by banks, leaving millions unemployed and homeless. A historic financial institution, The Lehmann brothers, collapsed on 15th September 2008. Trust was the problem that Bitcoin was set out to solve, but has it been successful?

1.) What is Cryptocurrency?-

In this part, I will be essentially answering the question as to what exactly is bitcoin? And how is it decentralized??

Well, to put it simply, bitcoin works on blockchain technology, in which transactions are made on a ledger, and every transaction on the ledger is recorded. This was first introduced by a mysterious individual or a group of individuals named Satoshi Nakamoto in their white paper released in 2009. Banks also work in the same way, by verifying every transaction. However, the main difference is that bitcoin (BTC) is decentralized i.e no one single entity or

authority has ownership over the ledger or block upon which transactions are being made. So how does BTC verify whether the transactions being made are legit or not? Well, the BTC system is based on a peer to peer system and a ledger system. Instead of 1 single central authority owning the system, the ledger is distributed amongst all the other systems in the BTC network. Each time a transaction is made, the ledger will verify whether a transaction is legitimate or not, by solving complex algorithms. When consensus is reached and the transaction is valid, then the transaction is stored on the ledger, and after each ledger is filled, a new ledger is created which is linked to the previous one, thus creating a chain of blocks or blockchain. Each block is linked to the previous block in the chain. The entire process of validation of the transactions on the BTC network is called mining of bitcoins, and every miner is rewarded with some amount of bitcoins for solving the problem, provided they are the first one to do it.

Bitcoin allows us to see every transaction without altering it and thus decentralizing it. No trust is required in this scenario.

2.)What gives bitcoin value?

What we all know is that the dollar has no value on its own. Unlike precious metals, which are valuable on their own, it is simply a piece of paper. However, what gives it value is the fact that the government decrees it has value and we agree to it. The value of a currency comes from TRUST. Fiat money relies on the stability of the government, however BTC does not operate in the same way. BTC relies on computer code, it is built by computer code. Bitcoin since its genesis has been playing a game of Trust and Reputation, in order to increase its demand. Because if there is demand, there is value, and bitcoin certainly has generated a lot of demand and interest as well in the past few years. The big question is, what is fuelling this demand? And can it last? Until and unless bitcoin is widely adopted, it is walking on a tightrope.



3.)Bitcoins against Fiat Currency-

Scarcity-

When bitcoin was launched in 2009, its developer stipulated in the protocol that the supply of the token will be capped at 21 million. To give you some context, the current supply of bitcoin is at 18 million, and according to the recent trends, it will cross 19 million in the year

2022. The protocol will not be changed. The government has a degree of control over the Fiat money in circulation, however, this is not the case with bitcoin. There is a limited number of bitcoin in circulation, and with a robust mining community, the limit of 21 million can soon be reached. Generally, as is the case with precious metals like gold and diamond, scarcity can drive the price higher up. This also seems to be the case with bitcoin.

Divisibility-

21 million bitcoins are much smaller than the current currency in circulation, however, bitcoin is divisible upto 8 decimal points. The smallest unit is equal to 0.00000001 Bitcoin, is called a "Satoshi". This allows for quadrillions of individual units of Satoshis to be distributed throughout a global economy. The bitcoin is divisible than the US dollar to a much larger degree, as well as other currencies. It is this divisibility that makes bitcoin status as a currency viable, as well as its scarcity. 1 bitcoin amounting to 60,000\$ would be much more difficult to use for transactions, however, because of its divisibility it is possible to use it.

Utility-

One of the major selling points of bitcoin is that it is based on blockchain technology, that it is decentralized. It is this privacy and anonymity which it allows for its user is what makes it so attractive. The blockchain network is unhackable. The fact that it is decentralised means it is a system which does not require trust to work, something which has been lacking in the current financial system.

Transportability-

Due to the currency being completely digitalised, and thanks to various cryptocurrency exchanges and wallets, bitcoin is transferable between parties within minutes, and the fee required is also very less, a case not seen with Fiat money, which takes high fees and days to transfer. Individuals do not have to hold a physical representation of the coin at any time.

Durability-

The fact that bitcoin exists digitally on the blockchain and is the reason why it is so valuable. A dollar bill can be torn, crumpled, burnt and destroyed in which it will lose its value. However, this is not the case with bitcoin. It is not susceptible to physical harm in any way. This does not mean that a person cannot lose his bitcoins. If someone forgets their cryptographic key, the bitcoin in those wallets could be lost forever. However, unlike paper bills, they cannot be destroyed in any form.

Counterfeitability-

The major problem with paper currency is that it can be counterfeited. This acts as a major problem with a large amount of fake bills in circulation in the current economy, with counterfeiters getting innovative as to exactly replicate the original currency, so that they won't be caught, ultimately fooling innocent people. However this is not the case with bitcoin. The fact that bitcoin exists digitally on the blockchain network makes it impossible to counterfeit. An attempt to counterfeit the currency would require extremely huge efforts, money and computing power, making this task nearly impossible.

4.)The impossible rise of the bitcoin-

We know that price is a matter of demand, however, how did the demand for bitcoin ever reach so high?? Let's briefly analyse the history of bitcoin. The first transaction ever made by bitcoin was for the purchase of 2 pizzas in exchange for 10,000 BTC. The 2 pizzas were

valued at 25 dollars. In 2011, we were introduced to alt coins, coins which were cryptocurrency but different from bitcoin. A very unique example of an alt coin is of ethereum. While bitcoin is a digital currency, Ethereum is more inclined in the usage of blockchain technology to develop smart contracts, which we will discuss later on. Bitcoins reputation also took a hit in this time. With the usage of public private keys, all transactions made by bitcoin were anonymous, and some people were engaged in criminal activities on the dark web, with the purchasing and selling of drugs to the financing of terrorist organisations. During this time, there was also the collapse of Mt.Gox- the 1st exchange for cryptocurrency. With all of this happening, the speculation around crypto increased.

However, it wasn't until 2017 that Bitcoin changed. It was accepted as a legal tender in Japan, and the price of the coin soared. Companies started adding blockchain to their names and saw their share prices increasing daily, and as history repeats itself, just like the dot com bubble, the bubble burst, and the price came falling down.

The main player responsible for the rise of the price of bitcoins are the institutional investors. Money is the main reason why the institutions are interested in Bitcoins and thus this is fueling the prices of the coin. For example, Venmo allowed bitcoin payments, Tesla also at a point accepted that the payment of their vehicles can be made through bitcoin. Tesla had also bought a huge amount of bitcoin. The narrative around BTC has changed. In the white paper, it was a currency, a currency of the future, however, people are now seeing it as an investing asset. A lot of CEOs and Economists have also concluded that the price of bitcoin is being manipulated by the big players in the market.



5.)The problems in the Bitcoin Industry

The Bitcoin Civil War-

There is a problem of scalability going on in the bitcoin network, between the big blockers and the small blockers which has led to a bitcoin civil war, of sorts. Let me explain to you what it means.

Each Block on Bitcoin can hold upto 1MB of transactions. Blockchain ensures that it takes 10 mins to form each new block, as there is a set difficulty on bitcoin. With this current system in place, BTC can guarantee about 4.6 transactions per second, whereas on the same hand VISA is able to handle 24,000 Transactions per second. Quite a big difference, isn't it. Due to this problem of scalability, there is a rift between the big blockers and the small blockers in the industry. What the big blockers demand is that for any currency to become a legitimate currency, it needs to handle a lot of transactions, and they call upon to improve the Block size limit. On the other hand, the small blockers argue that if the block size is increased, the average person will not be able to run the BTC network due to sheer size and scale, which will ultimately cause the big owners to take ownership and this will ultimately lead to bitcoin becoming centralized, something which it goes against the founding principles of the currency.

Energy problems in bitcoin-

On 12th of May, 2021, Tesla stopped their vehicle purchases using bitcoin, due to the fact that the mining of the coin was causing huge energy problems for the environment. The single tweet caused bitcoin's value tumbling down. Bitcoins games are all about reputation and trust. Bitcoin consumes half of the energy of the UK, and it consumes more energy than the entire nation of Argentina, according to a study by Cambridge university. So, why does bitcoin require so much energy?

Well, the miners have to prove their work in order to validate the transactions made, by solving complex numerical problems, which consumes a lot of energy. The more computers are on the network, the more complicated the problem is, and thus more energy is used. This is all a cycle, ever repeating and consuming more energy than it did before. You will require big mining farms to mine bitcoins now, with hundreds of computers all plugged in. This is a big ethical burden on Bitcoin and its future.

Critics of Elon Musk say that all of this is propaganda by him. Bitcoin does not want to be a country, it wants to be a currency. They say that the miners are incentivized to use renewable energy. The energy costs are very expensive in mining bitcoin, thus, this gives them a much needed cause to switch over to renewable energy, as they want to reduce their energy costs. However, it is still very difficult to predict how much renewable energy Bitcoin uses, if being used at all. While the current banking system uses more energy, they are dealing with far more transactions as compared to bitcoins.

Whales and Manipulation in the bitcoin industry-

Tether is regarded as a stable coin, as it is pegged against the USD. Converting bitcoin into a stable coin like Tether is a much quicker process than converting it into USD. Many bitcoin holders will move their money into tether if the market becomes too volatile. 57% of all bitcoin trading was done in Tether. Tether is a huge source of liquidity in the market. However, a paper which was released suggested about the unbacked creation of Tether coins, which were then swapped with Bitcoins to artificially drive up the demand. This paper

became a huge deal in the cryptocurrency space, launching an investigation by the US Justice Department. The Investigation concluded that Tether was not at all times backed by the dollar as previously believed. Ultimately an 18.5 million \$ fine was paid by Tether.. This brings to light the issue of market manipulation.

BTC WHALES- Bitcoin whales are those individuals who own large sums of Bitcoins.there are more than 2000 people owning more than 1000 bitcoins. The founder of the currency, Satoshi Nakamoto owns more than 4.7% of the total BTC there ever will be. However, the question is, what if they all sell their coins?

A Bitcoin whale has the power to cause large price movements especially if they were to sell. There are twitter accounts dedicated to tracking the ownership of these coins. However, bitcoin's greatest asset might become its major flaw. Bitcoins decentralisation and the anonymity of those who own it can cause some of the people with ill intentions to artificially manipulate the market. How much of it is being manipulated is hard to tell.

Bitcoins energy issues, its poor scalability and its potential to foster large amounts of market manipulation certainly dents the currency's ambition to replace fiat currency, but the story doesn't end here.

6.)Case study- Blockchain technology and ethereum.

What are assets? It can be anything ranging from money, IP,Stocks,Bonds,Votes, Futures, Contracts etc. For the exchange of all of this, we need intermediaries, which perform all sorts of tasks. However, the problem is that they are centralized, i.e, They can be hacked. They exclude billions of people from the economy (people who don't have enough money), they slow things down (days or weeks for money to move around the world) and they take a big piece of the action (10-20% just for transferring money). They also capture our data. We cannot monetize or use it to better manage our lives and our privacy is being undermined. We have wealth creation in society, but we also have growing social inequality. We need not only an internet of information, but an internet of value. A vast global distributed ledger on millions of computers where every kind of asset could be stored, managed and transacted without powerful intermediaries. People often confuse blockchain with bitcoin, however it is important to note that both of them are very different. You see, bitcoin is an asset, it goes up and down. However, blockchain is a technology on which cryptocurrency/Bitcoin is based on. Blockchain technology was designed by clever code, which makes it decentralized and makes it unhackable. One of the features of blockchain is Smart Contracts. These are contracts which self-execute without any 3rd party. Ethereum is a company which is working on various uses of blockchain technology. They are developing new models of the stock market to new models of democracy where politicians are accountable to the people. There is a need to rethink the financial services industry, and that is where the blockchain financial industry comes in, as it does things quickly. We have an internet of information, wherein we have wealth creation, but no prosperity. This lack of prosperity that we see growing in the world is the root of all problems. Rather than redistributing wealth, can we redistribute wealth? Can we democratize the way wealth gets created in the first place? There are 5 suggestions in which we can do so-

Protecting rights through Immutable records-

70% of the people who have land, have a very tenuous title to it. A dictator can come and say that the farm does not belong to you. This happened on a mass scale in Honduras. This is the no 1 issue in the world regarding economic mobility, because if you don't have a valid title for your land you cannot borrow against it, you cannot plan for the future.. Essentially you are left helpless. Land titles on Blockchain become immutable. No one can hack it. Thus, we can protect land through immutability.

Create a true sharing economy-

The big corporations like Uber, Airbnb etc are based on a great idea that peers come together and share and create wealth. However, in reality, these companies are not sharing wealth. They are successful because they DON'T share wealth. They simply aggregate services together and sell them. Now imagine if rather than Airbnb, there was an application on the blockchain network owned by all of the people who have a room to rent. If someone wants to rent a room, they can simply go on the blockchain database, search for the room, and the blockchain helps them with the contracting, identifies the party, handles the payment through digital payments and even handles the reputation.

Ending the remittance ripoff-

The biggest flow of funds from developed to the developing world is not through corporate investment, or foreign aid. It is remittances. The people who have left their ancestral homes and are sending money back to their families are getting ripped off. A bank teller takes around 10% fees, just for sending money, takes 4-7 days for the money to reach, and people take out several hours out of their week to do this. Instead of all of this, there exists a blockchain application on the database, in which you can send money directly to the person, takes just a 2% fee, and the nearby teller gives it to her within minutes. This is a big opportunity for prosperity.

Enabling citizens to own and monetize their data (and protect their privacy) -

Our data is a new asset class, and maybe even bigger money. We are the ones who create data. We create this asset. We leave a trail of digital crumbs throughout our life, and this is converted into a virtual us, a mirror image of us. There are Companies working to create our digital identities in a black box. A virtual us, owned by us. This box moves with us like a shadow, basically it's with us wherever we go, and it is very stingy, giving out only a shred of information which is required. In a lot of transactions, the seller doesn't even need to know who we are. Through blockchain we can sweep up all our data and we can .Also monetize it, for our privacy. As privacy is the foundation for free society.

Ensuring fair compensation for artists and content creators-

The system of intellectual property has been broken since the 1st era of the internet. Musicians are left with crumbs. Songwriters and artists receive pennies compared to what they used to before. However, artists are nowadays putting their work on the blockchain system. Suppose a song from an artist has a smart contract, and it self markets the song on the system, creating it into a business and protecting the IP rights of the artist. It is all specified. They control the industry rather than the intermediaries.

7.)WHAT IS INSTITUTIONAL BANKING?

The banking structure is an enigma. There are around 30,000 different banks in the world, and the top 10 banks manage more than 25 trillion dollars. Let us see how it all began-

Earlier, when merchants from all around the world used to trade, there were too many currencies in circulation. The merchants had to deal with a lot of coins and exchange money constantly. The difficulty in travelling, increase in counterfeit money and the difficulty in getting a loan got people thinking of forming a new business model. Thus, banks were established and spread all over Europe, even giving credit to churches and kings. Banks are in the risk management business. People keep their money in banks and get interest. Banks take this money and lend it at a much higher interest rate. It is a calculated risk because some lenders will default on their credit. Banking is essential for the economy because it allows people to buy houses and for the industries to expand and grow. Banks take funds unused by savers and turn them into funds society can use to do stuff. Other sources for income include saving deposits, credit card business, buying and selling currencies, custodian business and cash management. However, the problem nowadays is that banks have abandoned their roles of long term financial products in favour of short term gains that carry much higher risk.

8.)BANKING SYSTEM CONS (2008 SUBPRIME MORTGAGE CRISIS)

Although the banking system is essential for an economy to grow and prosper, of late the banks have abandoned their roles as providers of long term financial products and services. During the financial boom, banks adopted financial constructs that were barely comprehensible and did their own trading to make fast money and earn their executives and traders millions in bonuses. This was nothing short of gambling and damaged whole economies and societies like in the 2008 financial crisis.

2008 subprime mortgage crisis- The 2008 financial crisis is regarded as one of the most major financial crises in history, leaving millions of people unemployed and homeless in the US and in various parts of the world. This crisis could have resulted in a 1930s style great depression. Millions of dollars were evaporated from the economy, and bankers became some of the least trusted professionals. Let me explain it to you what happened-

Someone who wants to buy a house borrows money from a bank, and in return banks get a paper, or essentially a mortgage. Every month the homeowner has to pay back a portion of the principle, plus interest, to whoever holds the piece of paper. If they stop, they default, and whoever has the paper gets the house. The banks often sell these mortgages to some third party. Traditionally, it was hard to get a mortgage if you did not have a stable job or if you had bad credit. The lenders didn't want to take a risk. The investors wanted low risk high return investment, so they started investing in the housing market. They thought that they could get better return on interest rates homeowners paid on their mortgages. They started buying mortgage backed securities (which essentially means thousands of mortgages are bought, bundled up and then shares of it are sold to a pool of investors). All of these looked like safe bets, because who in their right mind wouldn't pay for their house? The home prices were going up and lenders thought that in the worst case scenario, if the borrowers default on the payments, they would just sell the house for more money. The credit rating agencies told the investors that these were a safe bet, and gave them a AAA rating. The investors wanted to buy more of such mortgage backed securities, so the lenders started creating more of them. To create more, they needed more mortgages, so they started lending money to high risk individuals, people with bad credit scores. This was known as subprime mortgages. They were given loans without any verification of income. The investments were becoming less

and less safe all the time. There was another thing which was also traded, known as collateral debt obligation, or CDOs. they were even more risky, but had the same good rating from credit rating agencies. The lax lending requirements and low interest rates drove housing prices up and up, which only made mortgage backed securities and CDOs seem like an even better investment. The one thing to note is that this was all a bubble, and bubbles have an annoying tendency to burst. People were not able to pay for their houses or mortgages, and as a result more and more houses ended up back on the market. As there were no buyers, the supply was high, and the demand was low, and as a result, home prices started tumbling down. As prices fell, some buyers had a mortgage of way more than what their homes were currently worth.

Due to this, more stopped paying their mortgages, and there were more defaulters. The supply again increased, with demand decreasing. The house prices fell even more. As a result, the problem spread to the big investors, those who had made risky lending to individuals in order to make gains for themselves. Big financial institutions like the Lehmann brothers collapsed, while others had to be bailed out by the government. The stock market crashed around the world, with millions of people losing their jobs and houses. Millions of dollars of money simply disappeared from the economy, and bankers became some of the least trusted professionals. Banks had to pay huge fines, and the US and EU had to put out huge bailout packages. New regulations were formed to prevent any such crisis from taking place in the future, however, other such legislations were blocked by the banking lobbies. All of the distrust towards the banking industry was the major driving motivation towards the creation of bitcoin



9.) Different types of banking structures-

Apart from the traditional institutional banking system, other models are gaining ground, like Investment banks. They charge a yearly fee, don't take any commission on sales and their only motivation is to work in the best interest of the clients. The 2nd type is Credit Unions,

these are cooperative unions which were established in the 19th century to circumvent credit sharks. They provide the same service as banks but focus on shared value, rather than profit maximisation. Their main goal is to help members create opportunities like starting small businesses, expanding farms, building family homes, while investing back into the community. These are controlled by the members, who also elect the board of directors democratically. They vary significantly worldwide, with some having hundreds and thousands of members and managing billions of dollars. They focus on the benefit for the members and it impacts the risk credit unions are willing to take. The credit unions survived the last financial crisis much better than banks. There is also another thing known as Crowdfunding, which basically means loans from groups of small investors, circumventing the banks as middle men. They have been very helpful for the establishment of industries. The risk is also spread that if the project fails, the impact is minimal.

Final thoughts and conclusion-

While Both the cryptocurrency network or the traditional banking structure have various benefits, they certainly come with their flaws too. The only difference is that the Traditional banks have existed for centuries, and most probably will continue to do so, with most of them also expanding into the cryptocurrency market.

Bitcoin's ambition was to become a currency of the future, however due to various factors and its high volatility, it is difficult to say it will become so, because the price can literally change within a matter of seconds. Bitcoin's adoption rates are low and it virtually has zero government support. Until and unless there is government support for the currency, it is a longshot away from becoming a currency of the future. However, what it has introduced us to is blockchain technology, and this is what will define the future. With the various new applications of blockchain coming to light, it will be interesting to see what all pathways are opened up from here. Through the process of evolution only will we get to see how this story develops. Because that's what it is, it's not a scam or a fad, but a story. The internet also was called as a fad years ago, a joke. However, internet companies nowadays are some of the biggest in the world. The Internet is one of the biggest innovation in centuries that we have seen, and just like the internet story, we are in the process of seeing the blockchain story.

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