Original Paper

Simulation of Bitcoin in Dollarized Economies

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Abstract

The objective is to study how bitcoin should be used in dollarized economies and how bitcoin is distributed to people according to their life deeds. The bitcoin contradicts all the Keynesian Economic Theory whereas bitcoin increases, its prices increase too, and this is different from the normal theory. How and why bitcoin has been built and the new universal technological techniques behind bitcoin.

Keywords

Bitcoin, Blockchain, proof of work, dollarized economies

1. Bitcoin Known as an Emerged Infrastructure

Bitcoin is considered as an emerged infrastructure and a threat to the fiat monetary policy and to the central bank. According to Ammous (2015), bitcoin is the facilitating operation based on distributed, decentralized blockchain ledger. The system reward coins to those who validate the transactions on each blockchain. The validation of the transaction is based on game theory and complex hash mathematical functions. The bitcoin innovation is for poor countries which suffer from double used currency so moving to cryptocurrencies is as moving from landline phone to smart phones. Bitcoin is a solution for dollarized countries too. USA and China have moved from malls to E-Bay and Amazon and the leap from paper-based money into digital cryptocurrency will be the next era where bitcoin will dominate the whole worldwide reserved currency. Transferring money is costly and infers lot of money so bitcoin is the solution as non-intermediary substitute for credit cards. For example, Western Union cost 3% per transaction while bitcoin charges few Satoshi. People in Dollarized countries lost their trust in banking institutions, such that they want to shift towards digital currency to avail basic financial services like opening an account, storing the funds, performing local and international transactions for international trade and clearing goods freely without additional cost. The problem is that some dollarized governments such as Lebanon banned crypto currencies and there is no local exchange or platform where people can buy BTC. Dollarized Economic situation in Lebanon is in a state or turmoil

with lots of protest happening against the financial institutions. Therefore, one of the main targets of bitcoin and cryptocurrency is banking these unbanked in these dollarized countries.

In this section, we will explain about bitcoin and cryptocurrency from a technical perspective.

1.1 How and Why Bitcoin has been Built?

According to Ammous (2015), people rely on third parties to send or receive cash to avoid the double spending problem or in other words making sure that he never sends the money to multiple receivers. With the political interference for financial intermediaries, their role in financial transactions have been regulated by governments eliminating free-market competition and transacting costs have stayed high. But then in 2008, bitcoin came when Satoshi created a nine-page paper and designed the whole payment system technology without any intermediary.

According to the Keynesian economics, transactions rely on third party intermediation to prevent the double spending and that is why Bitcoin came to ensure that the seller didn't send the money twice. Two different parties can't ensure they do the transaction without a third part custody and according to Keynesian economics, the price and quantity are inversely proportional while according to bitcoin, price and quantity move together since miners take part or percentage of the fees. Governments in the normal traditional system take part in regulation, limiting input and output of money, but this has changed in 2008 when Satoshi established bitcoin and eliminates the third-party intermediation.

Bitcoin as we mentioned is a digital currency network that enhances financial transactions to occur without any intermediary. The payment is irreversible, fast, and cheap. The average time for the confirmation of the transaction may take 8.32 minutes from 2012 until 2015. And its fee is 0.000412 Satoshi or 0.0753.3$. Bitcoin is divided into Satoshi or cents. Bitcoin can be referred in four different technologies' names. First, bitcoin can be used for transferring digital goods, or the technology behind bitcoin is a common asset ledger (blockchain), or it is a limited-supply currency and a technology for smart contracts.

The technology behind bitcoin is blockchain. Blockchain is trying to send real copies or songs or money instead of copying them. There is a public-key for cryptography on the decentralized ledger. The public-key is like the IBAN in banks. Private key is for signing the transactions. A user who has bitcoin should own the public key and private key, this is called HDD, hierarchical deterministic wallet, or HDD. Bitcoin is rival, scarce, and irreversible. All the transactions of bitcoin are registered on a distributed ledger on all computers. Blockchain is not only used for registering transactions but can be incised with data, text and codes which can be accessible publicly or encrypted.

According to Ammous (2015), the transactions in bitcoin are limited to space restrictions, unlike the personal cash transactions. The sender and receiver should not be in the same place instantly to transact bitcoin but instead payments are done instantly across the world through any device and with internet. So, Bob sends Alice bitcoin without any intermediary, or third party and the transaction is based on cryptography proof of work to validate them by Central Processing Unit (CPU) power in the whole

network. Bitcoin has done to the paper currency what email has done to mail. The transactions of bitcoin are cheap, fast, and irreversible.

According to Ammous (2015), Blockchain is the technology behind bitcoin where transactions are recorded on a chain between the members on a decentralized peer-to-peer network and broadcasts these transactions to all members of the network. There is no intermediary for recording. All network members timestamp the transactions and validate them or in other words mine bitcoin and take fees in reward of that. The members solve computer hashing power functions to validate the transactions and add them into blocks.

The main goal of blockchain protocol is to verify the transactions. Transactions are added into blocks embedded into the other block creating blockchain. Blockchain is popular and transparent asset ledger. The CPU verifies the transactions and prevents manipulation by network users. The more users on the ledger, the more CPU power to be expended.

One can verify the transaction and make sure it is accurate through knowing most of the CPU hashing power functions. If someone wants to falsify transactions in the network, then he should break more than 51 percent of the processing power in the network and enhance counterfeit. If you know less than 51 percent of the processing power, then you can discard the transaction. Transactions are added and grouped into blocks and thus recorded transactions are validated. The miners take reward for validating the transaction, they take few Satoshi or in other words the network users receive new bitcoin for every validation of the transaction and new bitcoins are in the circulated network ready to be transacted on any wallet.

According to Huang, Li, and Thürer (2019), he provides an overview of how chains in a blockchain are created:

1) *"A block is created (that represents the transaction).*

2) *The information about this block (or the transaction) is transmitted to every node in the network.*

3) *All nodes in the network must approve the transaction and validate it (this step can be automated using an algorithm).*

4) *If approved, the block is added to the chain, which completes the transaction and provides a permanent transaction record."*

Blockchain is like an intermediary board where transparent transactions occur but instead of transacting paper currency or gold, we transact bitcoin and instead of debiting the buyer's account and crediting the seller's account, transactions are listed on records and there is no alter without the consent of both users.

Bitcoin is run through blockchain largest board and it needs more than 50 percent of the total network to register a transaction. According to Ammous (2015), the size of blockchain was more than 36 gigabytes. The blockchain clears transactions without any intermediary and transactions are engraved globally on the network. The first two pizzas are sold for 10 bitcoins in May 2011 and the price

decreased later with years till 0.05 bitcoin back in 2014. Bitcoin as we mentioned is divided into 0.000000001 Satoshi.

1.2 The Advanced Features in Bitcoin Technology such as HDD Wallet, Non-custodial and Lightning Network

The hierarchical deterministic HDD non-custodial mobile wallet is designed for crypto users who value anonymity, privacy and want to transact and store crypto currency. It will allow users to manage their own crypto funds securely, perform P2P payments without been tracked, explore the marketplace for BTC and other major crypto (peer to peer trading) using 2-2 multisig escrow and e-commerce trade. So, peer to peer trading is where every user is a teller, where they sell/buy cryptocurrency in exchange of fiat money. Hierarchical wallet is where there is generation of private and public keys in every transaction. Lightning network is used in bitcoin wallets to enhance small micro-transactions.

According to Mcadam (2022), Lightning network is a second layer technology thar runs on top of bitcoin. It allows peer to peer payments without recording the transactions on the bitcoin blockchain for each payment.

2. Simulation of Bitcoin as a Cryptocurrency Solution to Dollarized Economies

Digital currencies and bitcoin rely on decentralization and enhance peer to peer transactions without any intermediary or any central bank authority. According to Cipolla (1956), History had multiple coins within the same country boarder and money has transferred from coins to paper-based to digital-one and as we said some are with and against adherence of multiple currencies and there comes cryptocurrencies to solve the dollarization or having more than one currency in a country. Therefore, the question is how bitcoin could be an emerging currency in countries having double fiat currencies or in other words how bitcoin is a solution for dollarized countries like Lebanon and El-Salvador. Bitcoin and Cryptocurrency have been perceived as advanced technological solutions to dollarized economies where bitcoin is designed for crypto users who value anonymity, privacy and want to transact and store cryptocurrency, but on the other hand it has imperfections, and it shows limitations.

Bitcoin with the embedded lightning network is a threat to the central banks especially in countries having high inflation and high vulnerability to corruption, therefore, central banks should adopt in the next decade the bitcoin cryptocurrency as a future payment method and merge with the private network mandate. Payment transaction solutions and International Trade new functionality should be taken by the Central Banks in Dollarized economies to mitigate the risk of national currency failure and mitigate the control of loss in the countries' currency value.

Added to that, some economies around the world suffering with financial restriction to buy FIAT and to move money abroad the country. Thus, bitcoin is the solution to the failed dollarized banking system. In other words, people can transact worldwide freely, and buy/sell goods with bitcoin in the E-commerce market.

44

According to Aysan and Kayani (2022), dollarized and centralized economies make the economy not easy to flow and we will have repercussions for consumers and the economy.

In dollarized countries, dollarization increases interest rates which decreases the money supply and let people save more people and conversely lowering interest rates can increase the money supply. However, Satoshi Nakamoto came and opposes this monetary policy function of fiat money.

3. Conclusions

Adoption of Bitcoin in Dollarized economies is one of the prominent solutions to dollarized economies and research have proven that Bitcoin will be distributed to people according to their life deeds. The paper investigates how and when bitcoin is emitted.

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