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Effect of crypto currency on the government backed currency

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Abstract. As international financial systems are becoming political tools to manipulate the exchange of money for good, cryptocurrency, and its potential to avoid the international banking system becomes more popular. Thus, the question becomes what happens to the nation's monitory system if cryptocurrency's electronic payment transaction and system replace the current system? Most nation's central bank controls the financial systems, which affect institutions, rules, regulations, and laws of the land that affect this system. Robinson (2016) suggests money as a commodity in the national scope. International banks use BIC for transferring money with each other. Cryptocurrency, so far, does not need BIC to transfer money from one location to another. Bitcoin, the system is a peer-to-peer internet currency allowing verified, and decentralized transfers of value between individuals and businesses. This article is a short introduction discussing the legacy money and cryptocurrency and the potential of cryptocurrency as a new currency and its possible implications.
Keywords. Cryptocurrency, Blockchain, Currency, Money, Bitcoin, BIC, SWIFT.
JEL. O30, O35, O36.

1. Introduction

What happens to the nation's monitory system if cryptocurrency's electronic payment transaction and system replace the current system? The terms of money, currency, and cryptocurrency are defined. Money is anything that serves as a medium of financial exchange; currency is a system of money in a nation. The value of the money or currency measured by the quantity and quality of goods and services it can purchase (BusinessDictionary.com, n.d.).

Consequently, cryptocurrency is not the medium (coins or paper), but it is the system for transacting the value in exchange for goods and services. Most governments, using the central bank of their respective nations, control interest rates on loans and, therefore, affect the money supply, price of goods, and currency exchange. In turn, institutions, rules, regulations, and laws of the land affect this system as well.

According to Robinson (2016), while the physical properties of money and currency that are divisible, scarce, portable, uniform, durable and acceptable, the economic properties of money and currency keep its value as a medium of exchange and is a Unit of account. Because of these

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properties, goods and products become money – a commodity, similar to such commodities as gold or rice. The process also includes a secure infrastructure of a payment system that exists. The infrastructure is an operational network of linked bank accounts for monetary exchange, having a clearing system (by using ledgers) that are governed by laws, rules, and standards. The security of this payment system is the method used to identify, verify, and revise the user and payments. The actual payments in the payment system can either be traditional such as usage of traditional cash, checks or money order, or payments that can use a newer method entailing debit card, credit card, electronic transfer, internet banking, or e-commerce (Rigobon, 2016). In the international banking system, each bank has a unique identifier called Bank Identifier Code (BIC), also known as SWIFT (Society for Worldwide Interbank Financial Telecommunication) code, allowing them to transfer money with other international banks.

Cryptocurrencies, such as Bitcoin, are the disruptive technological revolution in financial services, although financial service providers face challenges that must get resolved (Trautman, 2016). It uses a new set of technology that is being defined and build. In 2017, the Bitcoin market was more than $40 billion, which is the most significant implementation of blockchain technology. Blockchain has many applications, some recognized and some not. This is the underlying new set of technology that is used by Bitcoin. It is anticipated that global financial and accounting transactions will cost lower when using this technology. The challenge, however, is how these transactions are flowed and tracked across economies (Catalin, 2017).

2. Bitcoin system

Bitcoin, the system is a peer-to-peer internet currency allowing verified, and decentralized transfers of value between individuals and businesses. This indicates an international currency with an international clearing and payment system, and the network is in existence (Rigobon, 2016). The foundations of the Bitcoin protocol and its central idea is "*the use of proof of work to eliminate the bank and to decentralize and secure the ledger*.

There are protocols defined for the digital currency and its building block, blockchain. Some of them are at Starting Point: centralized digital currencies, which defines the basic design of banking model; Proof of Work: Decentralizing the Currency, where the bank is eliminated, and a chain of nodes in a peer-to-peer, anonymous network of trust distributes the information (also known as blockchain). In a blockchain, the existence of venerability and attack is assumed. Therefore, this protocol is used to validate the transaction by using transaction fees and mining. Mining is the process of adding a new block to the blockchain. By doing so, not only is the ledger becomes more secure, creating new coins, it also provides a controlled and predictable amount of coins that do not involve a central bank. Blockchain is a distributed ledger with its own components, but its

job is to decide about the ownership (miners) of each bitcoin. Transactions are the coins that give their assigned ownership rights. The critical element is the transaction identifier (TXID).In relation to scripts, each coin transaction has its script (program), which uses stack-based language.

The security with regards to Bitcoin is Wallets and Cryptography, which holds the public key that has information about the user's account. For a transaction to be secure, there are two levels of verification needed, source, and coin. Bitcoin uses encryption (public and private keys). Double-spending, since there is no central authority, the possibility of double-spending exists. Furthermore, if a bitcoin is a digital code, it would be easy to just cut and paste it. However, the use of timestamp, hashes, and blockchain is an approach to deal with this situation. Transaction Malleability is the in the bug in the protocol that allows changing TXID to invalidating the transaction.

Below is an example of the table of what is in the transaction:

Field Size	Description	Data type	Comments
4	version	uint32_t	Transaction data format version
1+	tx_in count	var_int	Number of Transaction inputs
41+	tx_in	tx_in[]	A list of 1 or more transaction inputs or sources for coins
1+	tx_out count	var_int	Number of Transaction outputs
9+	tx_out	tx_out[]	A list of 1 or more transaction outputs or destinations for coins
4	lock_time	uint32_t	The block number or timestamp at which this transaction is locked: Value: 0 — Description: Not locked Value: < 500000000 — Description: Block number at which this transaction is locked Value: >= 500000000 — Description: UNIX timestamp at which this transaction is locked If all Txin inputs have final (0xffffffff) sequence numbers then lock_time is irrelevant. Otherwise, the transaction may not be added to a block until after lock_time (see NLockTime).

Pooled mining, the system strives to maintain that no one entity controls more than 50% of the computational power. However, miners more and more group into mining pools, for the ease, and they share the profit. Network: Bitcoin organizes the distributed network of peers. It uses Internet Protocol (IP) version four and six and utilizes Transmission Control Protocol(TCP) as a foundation for its communication standard. The total load on each peer is equal to the size of the system. This causes an overload to the individual node; thus, the number of hopes a query can travel is limited; a network participant usually handles no more than 128 connections at a time. Peer detection is by sending and receiving messages among peers in the network. If, after 30 minutes, there is no exchange, a heartbeat message is sent to the peer, and after 90 minutes of no incoming message, it is assumed the node is offline and has left the network. Peers maintain a list of active peers in the network; information includes IP address and timestamp. Between peers, IP addresses could have used Network Address Translation (NAT), so that the list maintained is a list of public IP addresses. To find the neighbors, Bitcoin uses three methods Domain Name System (DNS), Internet Relay Chat (IRC), and asking neighbors.

In terms of scalability, Network bandwidth, network size, and storage requirements are a challenge for any peer-to-peer network. In the Bitcoin network, de-anonymization, tracking records not only help to understand the network it also exposes the transaction but is also a challenge (Tschorsch & Scheuermann, 2016).

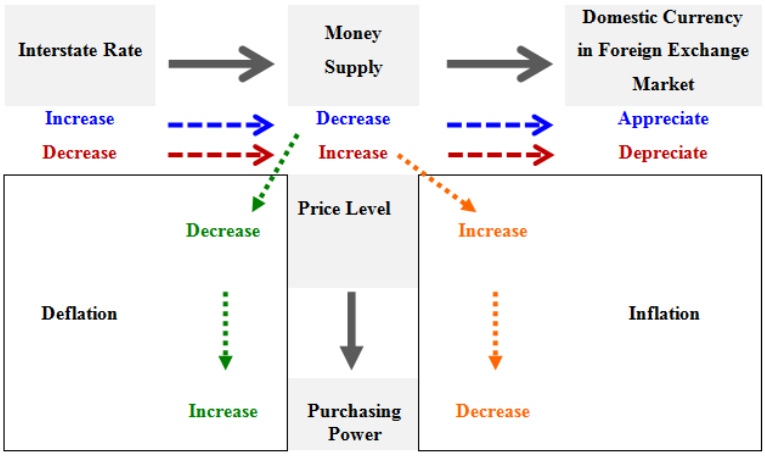
3. Existing monitory system

Most governments have agencies, systems, policies, and regulations to control their money supply and purchasing power of their currency. Changing the interest rate effects, the money supply of a nation. By printing more money, they increase the supply of money, and therefore, they can increase their spending without an increase in tax. However, this decreases the value of money for everyone else. Most democratic governments, in an open market, do not control the money supply and allow the market dictates the value of the goods and services. Furthermore, domestically a decrease in the money supply can cause the price levels to decrease and increase purchasing power - this condition is known as deflation. The increase in money supply results in the increase in price levels and a decrease in purchasing power - this condition is known as inflation.

Central banks of many countries such as Canadian, Singapore, and England are studying and experimenting with blockchain technology and cryptocurrencies to test the potential application of them. These applications can include lower settlement risk, more efficient taxation, faster cross-border payments, inter-bank payments, and novel approaches to quantitative easing.

Additionally, multinational enterprises (MNEs) conduct business across borders and, therefore, must exchange money, and governments must have a system to control the exchange rate as well. The foreign exchange rate fluctuates overtime, the amount of its change depends on the local currency's value to the foreign currency. In the government-backed current system of backed currency, this would mean the appreciation of the national currency in relation to the foreign currency. This, in turn, indicates that if there are no other factors changing, goods are more expensive for foreigners, and vice versa. This fluctuation lets people choose to purchase items and MNEs evaluate this factor to decide whether to import/export or not. The money can be, then, viewed as an asset that has value. By changing the interest rate, or money supply, the government affects the change of the nation's currency in the foreign market. Blockchain being offered by MNEs, such as Ripple, Digital Asset, and Chain, is desired to offer low cost, secure, verifiable international payments, and settlement. Their goal is to create a sufficient financial infrastructure to track and exchange financial assets.

In summary interstate rate, money supply, and domestic currency in the foreign exchange market are interrelated—a change in the money supply affects domestic price levels and purchasing power.



By governments changing the interest rate, they affect the money supply, price of goods, and currency exchange. In a completive open market, it is easier to try to determine what factor(s) impact the exchange rate.

5. Is the new currency the equalizer?

The theory of the law of one price (also known as absolute purchasing power) states that the prices are the same in a competitive open market if there were common currency. This means a good is sold at the same price no matter what location it is being sold in. It is important to note here that under this law, there are no transportation costs, tariffs, etc. It is also important to note that in international business, the "goods" are tradable goods. Therefore, this law applies to tradable goods' prices. Then, one may not resist to ask the following question: Will digital currency be that common currency? The theory of purchasing power parity (PPP) (also known as relative PPP) states that the exchange rate between two countries' currencies equals the ratio of the countries' price levels. On the other word, if the price of a country with respect to other rises faster, the currency of the first country must depreciate relative to the second country. This depreciation bust is enough to the differences between their inflation is restored to their absolute PPP balance. Furthermore, once this balance is reached, both counties' currencies will have the same purchasing power again.

The economic logic of the expected real exchange rate appreciation of growing economies not only the government's control of interest rate that needs to be considered, but there are also many factors in an economy that can affect the exchange rate. Emerging markets do have to work with other risks, and obstacles compare to developed countries. For example, while these countries are growing, and their policies and laws of the land are not as open as the developed countries yet, will have to modify to match and support the growth toward open market (Coughlin, 1990; Dosi, 1990).

Companies that locate operations in foreign countries face a set of unavoidable risks, chief among which are political and economic risks. Political risks arise from decisions that foreign governments make, including changes in government that result from wars and coups. Economic risks are often paired with political risks but can also arise from international money markets. Both risks are exacerbated by increased volatility and changes in the laws.

On the other hand, for reasons, such as, poverty and lack of trust in the banking system, over 2 billion people do not have bank accounts. There are, of course, many more reasons specific to individual countries that their citizens do not have bank accounts. They perform their transactions using cash. The security and anonymity of Bitcoin allow the digital currency to give access to the financial services to the weak economies (Woyke, 2017). In fact, the backbone of Bitcoin is its underlying technology, blockchain. Where data can be distributed, but not copied, it is a global network of computers that uses blockchain technology to jointly manage the database. That is, the item is managed by its network and not anyone central authority. Decentralization means the network operates on a user-to-user (or peer-to-peer) basis. Having a monetary system that bypasses the existing system allows for the smaller economies to be more autonomous, not having to have to depend on them or their lack of support. For example, when a nation's SWIFT code is revoked, the revocation of the code can be political, where its renewal also can become a global political debate (Staff, 2016). If the said nation could directly trade with other counties and bypass the international banking system, then they would not have to exchange national goods for a bargain necessarily. They could get the goods and projects they wanted. On the other hand, the projects the government wanted to complete were not indeed for the good of the state or its people. For example, when Iranian SWIFT was restored, their money that was in the international banks was released; however, some viewed it as they gave it to them, and they were not entitled to it.

6. Conclusion

There are significant areas that governments must work on for an internet monetary system with cryptocurrency; these can range from money management, money supply (for supply and demand), criminal behavior, to lack of reversibility. The governments must work on not only rules and regulations about the monitory aspect, but also about the technology aspect of the systems. They also must think about how they would modify the tax laws, as the anonymity of the cryptocurrency makes it nearly impossible to perform. The international monetary system, as well, must adjust itself. For example, calculating foreign exchange exposure could include many currencies in the current system, home, destination, and any currency the product or service touches. For example, if an American MNE wants to do business with Saudi Arabia, selling products that are built in Brazil, with raw material coming from China and support

provided from India, not only US Dollar and Saudi Arabia's Riyal exchange rate risk must be calculated, the risk calculation must include Chinese Yuan, Brazilian Real, and Indian Rupee. With cryptocurrency, this number is always three. The predictability and lack of regulations make it more attractive for smaller economies to use the cryptocurrency, and harder for larger economies to conform to a new system that they are not the master of any longer.

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