



AN ANALYSIS OF CRYPTOCURRENCY AND ITS CHALLENGES

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ABSTRACT

The first virtual currency with the features of independence, anonymity and double-spending protection is Bitcoin. Bitcoin came into existence in 2009. It was founded by Satoshi Nakamoto. Nearly 60% of the cryptocurrency market capitalization belongs to Bitcoin. With the nascent stage of development and application of Blockchain technology to modernize payment infrastructure, cost-effectiveness and efficiency aspects related to its use remain key challenges. Price volatility and scalability issues also raise concerns about the suitability of virtual currencies as efficient and effective payment instruments, particularly in the developing country context. The study is based on secondary data collected from different journals, articles and websites etc. The study concludes that while there are significant constraints of virtual currencies in replacing physical currency, the Block chain technology underlying their design can be exploited in areas such as international trade, trade finance, cross-border remittance transfers, besides plugging leakages in social benefit transfers in low income countries. While in developing countries, it can be utilized in a variety of economic applications such as creating digital land records, financial inclusion and benefit transfers to low-income households, significant challenges persist in terms of internet connectivity, higher cost of transactions, deficits in electricity supply and low levels of financial literacy.

KEYWORDS : Cryptocurrency, Virtual Currencies, Bitcoin, Block chain

I. INTRODUCTION

Fiat money can be attributed to being as one of the biggest inventions in the history of mankind. It changed the way people used to do trade and transaction; however, using cash for purchases carries the risk of theft. With the advancement of technology, usage of cash is declining and credit/debit cards and internet banking transactions have started gaining traction. For instance, after its launch in Kenya, mobile money technology has rapidly gained popularity in many countries, given that its use poses lower risks than other informal payment channels. This includes mobile wallets and apps which are linked to bank accounts and can be directly used to make payments.

With the advent of Electronic Fund Transfer (E.F.T) and Real-Time Gross Settlement (R.T.G.S) systems, the turnaround time for payments and settlements has come down drastically. Recently the government enables 24*7 money transfer through R.T.G.S too. The Distributed Ledger Technology

(D.L.T) which is being heralded as the next revolution sitting round the corner is widely expected to change the payments landscape. It is argued that D.L.T could fundamentally change the financial sector – address persistent challenges and change roles of financial sector stakeholders to make the system more efficient, resilient and reliable (Natarajan, et al., 2017). One of the reasons for the interest in D.L.T is that many central banks operated wholesale payment systems are programmed in obsolete languages or use old database designs. Some central banks, notably, Hong Kong Monetary Authority (H.K.M.A) and Bank of France have taken initiatives in developing D.L.T-based applications. However, the technology is still in its budding stages as far as its application to modernize core payment infrastructure is concerned. It also remains to be seen how cost-effective and efficient such systems are going to be as they consume too much power and authentication of transactions is a slow process based on trial and error.



The first virtual currency with the features of independence, anonymity and double-spending protection is Bitcoin. Bitcoin came into existence in 2009. It was founded by Satoshi Nakamoto. Nearly 60% of the cryptocurrency market capitalization belongs to Bitcoin. Currently, virtual currencies, notably Bitcoin, Ethereum, Litecoins and Dogecoins etc. and the Blockchain/D.L.T that underpins them, have found wide media coverage, due to the perceived promise they hold to be the fundamentally disruptive innovations of the 21st century. They have also received attention due to the concerns around their alleged misuse for money laundering/terrorist financing. The underlying Blockchain technology, which has attracted much less attention, holds the potential to produce fundamental changes to transform the world of business – reminiscent of how the internet changed the dissemination of information. There are many facets surrounding the existence of virtual currencies and their possible impact on economic activities. The innovations cases surrounding the virtual currencies are still unraveling and are yet to withstand the trial of time. Most jurisdictions are in wait and watch mode, neither explicitly banning nor explicitly recognizing these. Even among the jurisdictions that have recognized virtual currencies legally, there seems to be a lack of unanimity in treating them as asset/security/currency.

II. HOW IS CRYPTOCURRENCY DIFFERENT FROM FIAT OR PHYSICAL CURRENCY?

Unlike fiat money issued by central banks/authorities, cryptocurrency has limited acceptability in terms of its utility as a digital medium of exchange. It's a peer-to-peer (private) digital system of payment with the transactions recorded in a public ledger using its own unit of account. One of the most striking features of cryptocurrency is that it weeds out the need for a trusted third party/central authority such as a governmental agency. The rate at which such units are created is defined beforehand and is publicly known unlike the fiat currencies, where the government/central bank controls the supply. Cryptoassets, however, do not meet, or only partially satisfy, the following key functions of money:

- a) Lack of intrinsic value, as well as the sharp fluctuations in their value, implies that they cannot be used as a reliable store of value. As these are often a product of computing, with no underlying trade/economic needs, they tend to lack intrinsic value, unlike the fiat currency.
- b) As a means of payment/medium of exchange, crypto-assets are far less effective than fiat currencies, in that

- a. Markedly higher price volatility makes it hard to be used as a means of payment;
 - b. High transaction costs entailed in crypto transactions make it unviable for retail payments;
 - c. Reimbursement in the event of fraud is not available/ensured, and
 - d. Very restricted acceptability by merchants.
- c) Given the unusually high volatility observed in top ten cryptocurrencies, very few prices are expressed using them. Cryptocurrencies exhibit such a high order of volatility as these do not have intrinsic value (unlike gold) or external backing (unlike currencies that are legal tender or fiat money). Instead of being based on a realistic assessment of future prospects, they exhibit 'classic hallmarks of bubbles'. Since Bitcoins/cryptocoins are the poor store of value and inefficient and unreliable media of exchange, they are not fit to serve and as such, do not serve as a unit of account. In view of the above, cryptocurrencies are viewed not as money, but as cryptoassets – a financial asset. Crypto assets do not have attributes of money and are unlikely to compete with legal tender. They are unlikely to be money in the future as well.

III. CHALLENGES

Cryptocurrencies are exhibited as the biggest innovation of the century, however, they also have the same problems as classic e-payment systems. The key risks can be summarized as:

- a) Trading platforms have been subject to rising cyber-attacks, compromising security. The issues that plague the digital wallets in today's payment ecosystem are also applicable to cryptocurrencies – they too are vulnerable to phishing attacks, user address error, hacking, stealing of cryptographic keys etc. According to the Ernst & Young report, of the US\$ 3.7 billion raised globally via initial coin offerings (I.C.O), more than 10% or US\$ 400 million were lost as a result of attacks.
- b) Customer/investor protection issue assumes greater importance in developing countries where financial literacy is low, mis-selling is rampant and retail investors tend to follow the herd behavior without fully understanding the risks. As such, there is no established framework for recourse to customer problems/disputes/ charge backs etc.



- c) It can be used to camouflage the unlawful origin or sanctioned destination of funds or tax evasion; bypass capital controls and international sanctions; lack of information regarding counterparties in such peer-to-peer anonymous or pseudonymous systems could also subject the users to unintentional breaches of Anti-Money Laundering and Combating the Financing of Terrorism (A.M.L/C.F.T) laws.
- d) The crypto being highly speculative assets, financial stability concerns may arise if the size gathers a critical mass. Bitcoin daily transaction volumes have exhibited high volatility with total transactions declining from a peak of US\$5 billion in mid-December 2017 to less than US\$ 1 billion at end-December 2018. On the money laundering and financial stability concerns, in December 2013, the People's Bank of China barred its banks and financial institutions from treating Bitcoins as a currency. In September 2017, China decided to ban Bitcoin trading and initial coin offerings arguing that such activities could pose major financial risks to the economy. Cryptoassets and currencies have been highly volatile in the past. If one compares the recent peak and trough for two major cryptocurrencies; Bitcoin and Ethereum prices have fallen more than five times between mid- December 2017 and end-December 2018. Without any sovereign backing and any regulatory authority, its value is going to be subject to vagaries of speculation and demand-supply dynamics. Bitcoins may, however, not disrupt currency landscape as originally anticipated, given the business model and architectural constraints. Bitcoin also struggles to support high transaction volumes. However, there may be other alternatives which may have higher transaction throughput but they are nowhere near the demands met by traditional transaction e-money processing systems used in retail payment systems in many jurisdictions. The significant vulnerability could arise if a single entity (Miner) contributed a majority of network's mining activity. Therefore, a number of challenges need to be addressed by the industry. Importantly, the scope of anti-money laundering and know your customers guidelines is to be examined. It is reported that virtual currencies, such as Bitcoins, are being traded on exchange platforms set up in various jurisdictions whose legal status is also unclear.

Hence, the traders of virtual currencies on such platforms are exposed to legal as well as financial risks.

- e) While crypto exchanges can be made to follow the law of the land, it is difficult to enforce Anti-Money Laundering and know your customers guidelines when an individual makes cross-border transfers from his private wallet using exchanges located in a third country. Every exchange/country may have a different know your customers policy. Since cryptocurrency enable fast transfers of huge amounts of money, regardless of the location of the payer and the payee, the controlled permissible cross-border transactions could be difficult to enforce and start.
- f) Another major challenge is the technical scalability - Bitcoin network can handle 3-5 transactions per second, while the interbank Visa system is estimated to handle 2,500. Moreover, validating a transaction takes around 10 minutes which is too large to be really useful in a practical scenario where hundreds of thousands of transactions may be required to be validated simultaneously. Bitcoin network was expected to overcome current scalability limitations, however, it appears to be entering the flatter part of its supply curve. The cost of mining (verifying transactions) in terms of electricity consumption and carbon dioxide emission burden (both on account of production of electricity and computing equipment) will become economically and environmentally unsustainable if transaction volumes keep growing or, demand for cryptocurrencies increases. Presently, lopsided investment also poses a challenge as market funding has been predominantly concentrated in developing crypto currency ecosystem, while other applications involving the Blockchain technology which could have immense economic/commercial uses have not attracted much investment. For instance, there has been very little funding in applications such as intra-bank payments, smart contracts, securities and settlements. In order to harness this technology, regulation should develop a conducive architecture for the development of these applications, which will also build trust and reduce uncertainty.



IV. CONCLUSION

Given the nascent stage of development and application of Blockchain technology to modernize core payment infrastructure, it remains to be seen how cost-effective and efficient the systems using this technology are going to be; more so, given the concerns around energy consumption and slow process of transaction authentication. Price volatility and scalability issues frequently raise concerns about the suitability of virtual currencies as efficient and effective payment instruments. Even countries with high-speed telecommunication network and well-performing e-currency payment and settlement have still a long way to go in establishing a safe, reliable and sound infrastructure for payments. This challenge is significantly higher for developing countries. Bitcoin and other private digital currencies could come under significant stress at times of adversity and their continued use for evading taxes, financing illicit activities, illegal trade, etc. could pose a risk to the stability of the financial system, if their scale gathers critical mass. One can safely say that cryptocurrencies in their current form are unlikely to substitute fiat currency anytime soon. While there are significant limitations of virtual currencies in replacing physical currency, the Block chain/D.L.T underlying their design can be used in areas such as international trade, trade finance, cross-border remittance transfers characterized by high transaction fee, and in plugging leakages in social benefit transfers in low income countries. More importantly, in developing countries like India, it can be used in a variety of economic applications such as creating digital land records, financial inclusion, and benefits transfer. However, significant challenges remain in terms of overcoming poor internet connectivity, higher cost of transactions, deficits in electricity supply and low levels of financial literacy.

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