



A Central Bank's Perspective of the Economic Implications of the Crypto Era

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I. Introduction

It is such a pleasure to be back at the University of Balamand, especially when it is marking its 30th anniversary.

"Once upon a time computers were for thinking... That's no longer true. Computers are for communicating now, and networks allowed that to happen." This quote is a flashback to the year this esteemed university was established, i.e. 1988, and it was mentioned by a computer expert then in the Washington Post, as one of the first articles proclaiming the emergence of the Internetⁱ. Similarly, nowadays, blockchain is said to do for transactions what the Internet did for information. This means that it is supposed to reinforce the information age with an additional dimension, that is the crypto era. Thus, blockchain is expected to revolutionize transactions and business networks allowing increased trust and efficiency in the exchange of almost anythingⁱⁱ.

In my talk today, I will introduce some of the fundamental principles of blockchain, specifically on the financial level. Then I will highlight some monetary implications of blockchain from the central banking perspective, highlighting the major strengths and weaknesses of virtual currencies. Finally, I will present Banque Du Liban's stance towards the emergence of the blockchain technology and cryptocurrency phenomenon.

II. Blockchain: the Implications of a Revolution

a. Definition

To begin with, it is crucial to present a simple definition of blockchain, being a shared/distributed and immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. Moreover, it is important to differentiate between "blockchain" and the famous "bitcoin". In fact, blockchain is the underlying digital foundation that supports applications and cryptocurrencies such as bitcoin. But we should be aware that the reaches of blockchain extend far beyond bitcoin.ⁱⁱⁱ

Based on the definition of blockchain, the two basic features of this technology is sharing/distribution and irreversibility. This reflects the initial context in which it was developed, which is the need for an efficient, cost-effective, reliable, and secure system for conducting and recording financial transactions. This need has been exacerbated by the fact that many business transactions remain inefficient, expensive, and vulnerable, suffering from limitations pertaining to inclusiveness, time, efficiency, and security^{iv}. On the level of trust, the 2018 Edelman Trust Barometer reveals a global stagnant distrust that has fallen back to low levels of the 2008 great recession^v. Furthermore, alongside these limitations, transaction volumes worldwide have been growing exponentially through e-commerce, online banking, in-app purchases, Internet of Things, and the increasing socialization-localization-mobility (SoLoMo) of people.^{vi}

b. Remedial Features and Design Principles

In response to the aforementioned, the blockchain network was founded as an economical and efficient platform that eliminates duplication of effort and reduces the need for intermediaries. In addition, through using consensus models to validate information, it is supposed to be less vulnerable, enclosing transactions that are secure, authenticated, and verifiable^{vii}. As for trust, in the emerging blockchain world, trust is said to be derived from the network and even from objects on the network, the ledger itself being the foundation of trust. This is unlike the traditional transactions where trust derived from individuals, intermediaries, or other organizations acting with integrity. To be clear, “trust” here refers to the trade of goods and services and to the integrity and protection of information^{viii}. Diveristy wise, it can be employed for the registration, inventory, and transfer of all assets – not just finances, but property and intangible assets as well, such as votes, software, health data, and ideas.^{ix}

Whereas the first era of the digital economy was launched through a convergence of computing and communications technologies, the second crypto era would be powered by a clever combination of computer engineering, mathematics, cryptography, and behavioral economics. In this context, the seven design principles of the blockchain economy can be summed up as follows: (1) encoded networked integrity; (2) peer-to-peer distributed power; (3) value as incentive to all stakeholders; (4) security through confidentiality, authenticity, and nondenial of activity; (5) privacy; (6) transparent preservation of rights and freedoms; (7) inclusion through lowering the barriers to participation.^x

c. Blockchain and Business

From a general business perspective, how do the advocates of blockchain justify its attractiveness? According to them, blockchain for business doesn't rely on the exchange of cryptocurrencies with anonymous users on a public network (as is the case with bitcoin). Instead, a blockchain for business is a private, permissioned network with known identities and without the need for cryptocurrencies. Hence, blockchain technology has the potential for revolutionizing business networks through the adoption of four key concepts:^{xi}

- Shared ledger: an immutable record of all transactions on the network, to which all network participants have access;
- Permissions: a permissioned blockchain provides each participant with a unique identity, which enables the use of policies to restrict network participation and access to transaction details;
- Consensus: transactions are verified and committed to the ledger through various means of consensus (agreement);
- Smart contracts: the smart contract is the tool for the agreement, consisting of a set of rules that govern a business transaction; it's stored on the blockchain and is executed automatically.

In addition, blockchain advocates suggest that blockchain is capable of decreasing market friction, which is anything that impedes the exchange of

assets, such as taxes, regulations, bureaucracy, fraud, intermediaries, delays, and so on. These common types of market friction include information frictions (imperfect information), interaction frictions (high cost, long distance), innovation frictions (restrictive regulations and technology threats).^{xii}

d. Blockchain and Financial Services

From the financial services perspective, blockchain technology is said to satisfy three levels of needs:^{xiii}

First, on the level of commercial financing, blockchain can fulfill the businesses' need to purchase goods and services on credit with end-to-end visibility, enabling them to avoid and resolve transaction disputes.

Second, on the level of trade finance, blockchain equips businesses with the ability to streamline the process of obtaining approvals from multiple legal entities (customs, port authorities, transportation firms, etc.) for the movement of goods across borders.

Third, on the level of cross-border transactions, through blockchain, banks can manage nostro/vostro accounts (interdisciplinary accounts between domestic and foreign banks) transparently and efficiently through automated reconciliation of accounts.

However, blockchain is believed to have considerable disruptive effects on several financial functions. These functions include: (1) identity and value authentication by intermediaries; (2) value moving, storing, and lending by financial institutions; (3) value exchanging through financial markets; (4) funding and investing through intermediaries; (5) value insurance and risk management agencies; (6) value accounting through traditional accounting practices.^{xiv}

III. Blockchain and Central Banking: a Remedial Approach

The creation of Bitcoin in 2009, the first decentralized cryptocurrency, initiated the popular rise of cryptocurrency. Since then, over 1,000 cryptocurrencies have emerged, each having its own unique approach to development, data encryption, and transactional utility. Six prominent cryptocurrencies emerged after Bitcoin, namely Litecoin (2011), Ripple (2012), Dash (2014), Monero (2014), Ethereum (2015), and Zcash (2016). A quick glance at major statistical figures reveal the following: Bitcoin is accepted at over 15,000 online retailers, such as Expedia and Microsoft; total market capitalization of all cryptocurrencies is currently \$414 billion; 28.5 million is the total number of Bitcoin wallets worldwide; Bitcoin transaction volume for this year has increased by 55%.^{xv}

The mechanism of cryptocurrencies is characterized by decentralized control and the use of cryptography encryption techniques, whereby cryptocurrencies operate as secure independent alternatives to traditional central banking. In this context, virtual currency is created and stored using blockchain technology. Cryptocurrency mining occurs using special computers and softwares in order to validate transactions in the blockchain and release new currency into the market. Moreover, currency is stored in

digital wallets, equipped with public and private keys that allow it to receive and spend funds. Advantages of cryptocurrency can be summarized by being: (1) fast and global; (2) pseudonymous (detached from users' real identities) and key-secured; (3) free and controlled (free software that is used to regulate the amount of currency in the market).^{xvi}

Advocates of harmonizing the role of central banks with cryptocurrency claim that this harmony is achievable from the three major perspectives of central banking. On the level of financial stability, the central bank's role of liquidity provider of last resort can be maintained by simply holding reserves in cryptocurrencies, as they do in other currencies and assets, and requiring financial institutions to hold reserves at the central bank in these non-state currencies. On the monetary stability level, advocates suggest that digital currency could be denominated by a government in a national currency or as a cryptocurrency; thus, central banks can manage alternative blockchain-based currencies as they do foreign reserves. On the regulatory level, advocates stress on addressing blockchain issues through coordinating and collaborating with other central banks and with global institutions like the Financial Stability Board, the Bank for International Settlements, the International Monetary Fund, the World Bank, and others.^{xvii}

From the viewpoint of the International Monetary Fund (IMF), virtual currencies fall short of the legal concept of currency since it is not supported by the sovereign legal framework providing for central issuance of banknotes and coins and regulation of the monetary system. Moreover, according to the IMF, virtual currencies do not completely fulfill the three economic roles associated with money: (1) serving as a reliable store of value (due to high price volatility); (2) use as a medium of exchange (due to small size and limited acceptance network); (3) use as an independent unit of account (since their value is represented in fiat currency).^{xviii}

The IMF further considers that the potential for rapid change in the financial industry produced by virtual currencies is a challenge for financial regulators and supervisors. Despite their potential benefits, the absence of effective regulation has left the risks that virtual currencies pose unaddressed. According to the IMF, these risks are not limited to them and fall into a wide range of adversities that are related to financial integrity (anti-money laundering/combating the financing of terrorism), consumer protection, tax evasion, and the regulation of capital movements. Concerns about financial stability and the implications for monetary policy are less immediate but require further analysis and monitoring.^{xix}

Though Germany has recognized Bitcoin as a legal electronic currency, many central banks, including those of China, France, and Russia, have warned against the use and purchase of these virtual currencies, signaling the imminent emergence of legislation and legal provisions to monitor these currencies or prevent them from being traded apart from central banks. The European Banking Authority has also joined the warnings. The bankruptcy of one of the largest Bitcoin stock exchanges, the Japanese MTGOX, suffering losses estimated at about half a billion dollars has sparked controversy over the future of the virtual currency.

IV. Banque Du Liban's Viewpoint

Central banks globally are taking varying approaches from progressive to conservative in dealing with the blockchain technology, Banque Du Liban (BDL) has chosen to adopt a conservative, but foresighted approach.

According to the the Law of Money and Credit, BDL's mandate includes the development and regulation of payment methods and systems and cash transfers, including electronic transfers. Consequently, BDL has banned the issuance and dealing with electronic money as early as 2002¹. In December 2013, BDL was the first regional central bank to explicitly warn against Bitcoin², especially after its recent boom. The warning addressed banks, financial institutions, and the public and discouraged buying, acquiring, and using virtual currency, especially Bitcoin, due to the potential risks and losses involved. These risks are mainly connected to the following considerations:

- The platforms or networks through which these currencies are issued and traded are not subject to any legislation or regulation. Hence, in case of losses, there is no legal framework for protection that provides refund.
- This money is not issued or guaranteed by any central bank and is, therefore, subject to sharp and rapid price fluctuations, which could reach zero value.
- Operations via virtual currency facilitate their use for criminal activities, especially money laundering and terrorism financing.
- Incorrect or unapproved operations or transfers executed by such money can not be reversed.

Many countries today are seeking to expand their payment systems and digital economy and issue their own digital currency through developing their financial systems, especially their protection measures. The economic logic behind this is that the more advanced payment systems are, the healthier the commercial flow will be, thus promoting economic growth.

Being at the forefront of developments in the field of financial technology (Fintech) and payment systems and the financial sector in general, BDL is fully aware that the digital currency has significant future prospects, given the expectation of its global spread under the surveillance of the IMF. Therefore, BDL is seriously seeking to create a digital currency that will be issued and subject to its supervision and control. But before that, we have to make the necessary preparations and have full readiness in our digital infrastructure, especially in terms of protection against cybercrime. Our priority is to maintain confidence, consumer safety, and national wealth, so that the digital currency constitutes an added value for the Lebanese citizen and the banking and financial sectors in Lebanon.

¹ BDL's basic circular No. 69, dated 30 March, 2002.

² Announcement No. 900, dated 19 December, 2013.

V. Conclusion

As tectonic shifts are revealing the limits of governments in an age of accelerating innovation, there emerges the necessity for practicing prudent regulation and implementing genuine governance in the context of coping with the trend of digital currency. From this perspective, regulation and governance should go hand in hand, and central banks should act as collaborative peers to other sectors of society, rather than as the heavy hand of the law^{xx} to reinforce such a foundational technology towards the future.

Thank you.

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