Forecasting the Implication of Block chain Technology in Banking Industry

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Abstract

Of all sectors, the financial and banking sector in particular is very likely to be the most impacted by the technology's potential for disruption. In this research, we presented the essential aspects of blockchain technology and the new transactional model that the technology brings. Blockchain technology, along with distributed ledger technology (DLT), has caused quite a stir over the last year as many experts now consider that it has the potential for facilitating multiple bursts of creativity and catalysing an exceptional level of digital innovation not seen since the advent of the Internet. We then outline what we estimate to be the main areas of applications of DLT to finance, whether for capital markets or corporates. In the end, we had attempted to evaluate the likely impact of DLT on financial markets. Also indicated the some of the key areas of improvement for the technology in finance and banking sector.

Key words: Blockchain, Technology in blockchain, distributed ledger technology (DLT), financial markets, corporate finance and governance, disintermediation, OTC, Payment method.

Introduction

Blockchain technology is not simple when you dig into the practical details; the basic idea is not too hard to follow. It is effectively a database that is validated by a wider community, rather than a central authority. It is a collection of records that a crowd oversees and maintains, rather than relying on a single entity, like a bank or government, which most likely hosts data on a particular server. Of course, tens of thousands of peers could never manage in a physical database kept on paper. That is where computers, and the internet, come in. Each "block" represents a number of transactional records, and the "chain" component links them all together with a hash function. As records are created, they are confirmed by a distributed network of computers and paired up with the previous entry in the chain, thereby creating a chain of blocks, or a blockchain.

The entire blockchain is retained on this large network of computers, meaning that no one person has control over its history. That is an important component, because it certifies everything that has happened in the chain prior, and it means that no one person can go back and change things. It makes the blockchain a public ledger that cannot be easily tampered with, giving it a built-in layer of protection that is not possible with a standard, centralized database of information. Though generally not used for it yet, blockchain could be used to maintain a variety of information.

Although blockchain technology has only been effectively employed in the past decade, its roots can be traced back for further. A 1976 paper on New Directions in Cryptography discussed the idea of a mutual distributed ledger, which is what the blockchain effectively acts as. That was later built upon in the 1990s with a paper entitled'.

Why are People So Excited about Blockchain?

In their pursuit of offering attractive environments for investment, many of the governments experimenting with blockchain seem to recognize the inherent advantage of being first movers in an emerging area. However, the gains will likely not just go to those who attract industry. What many public sector actors are realizing is at once profound and simple: Technology need not be revolutionary to be highly impactful. By reducing dependence on existing intermediary institutions and their accompanying layers and costs, blockchain can potentially eliminate

significant resource burdens. Moreover, by accelerating transactions and simultaneously lowering their costs, blockchain can help to eliminate layers of redundancy, ease regulatory compliance burdens, and introduce recordkeeping efficiency and generally smooth government operations across a number of areas. The key characteristics of blockchain may help to explain the depth of public sector interest in the topic and many of the pilots taking place around the world (Distributed Ledger Technology, 2017).

Banking

Banking system is an important constituent of overall economic system. It plays a crucial role in the attainment of macro-economic objectives. It acts as a vehicle for socio-economic transformation and as a catalyst to economic growth. It plays an important role in mobilizing the nation's savings and channelizing them into high investment priorities and better utilization of available resources. Hence, banking system is described as a key player in the chariot of economic progress. Banking industry all over the world has undergone transformation since the early 1980s under the impact of deregulation, advances in information technology and globalization. These forces have increased competitive pressures which have (a) unleashed the strong forces of restructuring and consolidation with the number of banks declining all over the world and (b) prompted banks to seek new sources of revenue beyond traditional products. These, in turn, have led to the blurring of distinctions among providers of various financial services and emergence of financial conglomerates.

Banking continues to remain in the forefront of the financial system. During the last three decades, this sector has achieved substantial progress on many fronts. By transforming class banking to mass banking, from wholesale banking to retail banking and from macro banking to micro banking, the banking system has become a potent tool in the socio-economic development of the economy.

Literature Review

Blockchain technology, along with distributed ledger technology (DLT), has caused quite a stimulation over few year. In this article, authors presented the essential aspects of the new transactional model that DLT brings about. Here the researcher cover the outline of what

estimates to be the main areas of applications of DLT to finance, whether for capital markets or corporates. Finally, author attempted to evaluate the likely impact of DLT on financial markets, with a particular focus on the post-trade infrastructure for which DLT seems particularly promising. Alexis Collomb & Klara SOK (2016)

Blockchain technology becomes embedded in the finance and financial services industries, cryptocurrencies gain prevalence, and the potential for additional blockchain applications continues to grow, industry participants are likely to face heightened regulatory scrutiny, even as the regulatory landscape shifts and evolves with the technology. Counsel to clients engaged in blockchain-related activities and, in particular, virtual currency transactions, should understand the key aspects of blockchain technology, learn to identify conduct that may be subject to regulation, and follow best practices for counseling a client through a regulatory investigation. Michael J.W.Rennock, Alan Cohn & Jared R. Butcher (2018)

Similar to any other technology, computer code is far from simply neutral but programmed by humans with particular biases, particular ideologies and interests. Having initially evolved and been applied in a community of "wildcat bankers" explicitly positioned against sound banking, blockchains contain certain underlying attributes constituting relationships between technology and technologists in specific manners. This article highlights, there is often a significant gap between the theoretical objectives pursued by the creators and designers of technologies like blockchains and their actual material applications. This is not simply because of some unbridgeable gap between "theory" and "practice". Rather, the relative disconnect between theoretical challenges and actual developments in practice is because technologies come into being within both new and pre-existing networks of people and objects. The potential uses of technology, for good or ill, often sizably exceed those originally intended by its designers due to the existing networks into which they are applied. Malcolm Campbell-Verduyn & Marcel Goguen (2018)

Blockchain technology and Cryptocurrencies are playing an increasingly important role for organizations that seek to build social and solidarity-based finance. Blockchain technology has emerged as a potential disruptor for the financial industry. Cryptocurrencies and blockchain technology may help develop organizations that seek to build social and solidarity-based finance. Blockchain technology has emerged as a potential disruptor for the financial industry. Its disruptive nature is beginning to feel across other industries, where its perceived benefits could

enable a new age for Internet commerce and business, ushering in new business models and organizations. This promises to bring greater security, transparency, auditability, and efficiency to currency transactions. This article seeks to explore this technology and its influence for greater financial solidarity across the globe. Strategic reflections on the role of blockchain technology in supporting finance practitioners to evaluate the potential of cryptocurrencies within their respective organizations have highlighted important opportunities for new innovative developments in financial activities. Brett Scott, John Loonam & Vikas Kumar (2017)

Research and Findings:

Secondary data has taken as a main source to analyze the concept and researcher developed the article based on qualitative research methods to deliver the concepts of "Blockchain technology and its implications in Banking and Finance industry".

Blockchain technology and its multifaceted potential for financial applications:

During this decade, Blockchain technology has become one of the focal points of many financial practitioners eager to understand how it could make impact, and possibly alter, their ways of business operations. The effects and function of blockchain technology in various financial applications are discussed below -

Financial reporting and compliance

DLT shows a promising path for automating financial reporting and enforcing compliance procedures. Indeed as a comprehensive and immutable repository of a firm's past transactions, it should facilitate an auditor's work, and even a regulator's monitoring of a firm's activities. For banks, and financial institutions in general, this feature seems particularly relevant. One could hope that enforcing the capital or liquidity requirements embedded in these directives should be facilitated by a shared blockchain infrastructure. This vision of leveraging DLT for automating compliance procedures still seems futuristic but since the technology is getting a lot of attention from regulators and audit firms alike, DLT is fueling innovative thoughts on how to improve and simplify compliance procedures by redesigning reporting channels and automating financial reports.

Risk monitoring system through Blockchain

Beyond the perceived advantages of DLT for settling trades, it has a particular regulatory appeal, again due to its promise of immutable and comprehensive transactional traceability. Let us see why market participants, in particular regulators, could be very keen to use the technology. The recent global financial crisis put the spotlight on the proliferation of Over-the-Counter (OTC) derivatives transactions, and the potential risk the latter represented for financial markets' stability.

An instance of the potentially devastating effect of unchecked derivatives transactions could be found with the bankruptcy of AIG Financial Products (AIGFP) and the near collapse of its parent company, the insurer AIG that had to be saved by the US federal government after the company was deemed of systematic importance. This rescue was conducted once public officials realized that letting AIG go bankrupt risked having a devastating and rippling domino effect across global financial markets: the fall of AIG was likely to drag along some of its major counterparties, especially those to whom it had significant liabilities in the credit default swap (CDS) market.

Since then in Europe, the European market and infrastructure regulation (EMIR) has required derivatives dealers to clear through a central counterparty clearing house (CCP) all OTC derivatives trades deemed to be liquid and standard enough by the European Securities and Markets Authority (ESMA). In fact, EMIR has cast "CCPs as pillars of the new global financial architecture".

In addition, among its various constraints, EMIR has imposed the establishment of Trade Repositories (TR) for centrally collecting and maintaining the records of derivatives. TR are dedicated to “a central role in enhancing the transparency of derivative markets and reducing risks to financial stability". With the establishment of TR, the spirit of EMIR is quite clear: to avoid a repeat of the last financial crisis and avoid situations where risks of devastating financial contagion are discovered at the last minute and at the worst possible time. Regulators need to have a clear view of counterparties' exposures to all others - especially for Systemically Important Financial Institutions (SIFI). To accomplish such a mapping of systemic and contagion risks, there needs to exist a comprehensive record of all derivatives trades. And there again DLT, with its distributed and immutable characteristics, could lend itself well for collecting and recording all these derivatives trades, all the more if major global financial institutions decided to use a common dedicated blockchain.

Recent evolutions in settlement systems

Continuous link settlement (CLS) and Real-Time Gross Settlement (RTGS) systems have been set up to replace Deferred Net Settlement (DNS) procedures at the bank level for both intraday payment and credit. RTGS systems use and rely on the SWIFT messaging system. RTGS has been considered safer than DNS as each transaction is settled "as soon as it enters the system". Yet, "a side effect of settlement in RTGS mode is that the associated intraday liquidity needs required to settle an equivalent of underlying payment obligations are higher than in a DNS environment" while it also creates an increased need for "collateralization to support liquidity demand".

What this illustrates is that the design of any new DLT-based system should take into account this trade-off between

(i) Aiming to provide settlement as early as possible to decrease liquidity risks on the one hand (this should be quasi-instantaneous with DLT) and

(ii) Minimizing the collateral requirements, which can be costly. It is worth noting that liquidity-saving features have been introduced into RTGS systems in order to allow "bilateral or multilateral compensation with real-time settlement functionality (for instance, CHIPS in the United States, T2 in the EU)" and that other types of commands based on real-time information have been added in order to lower users' liquidity-related opportunity costs.

These features were added to modify the order of a transaction in the backlog, the time at which it should settle or some credit limits controlling the amount of funding allowed going out. As for dealing with the increased collateralization generated by RTGS, adjustments have been made by Central Securities Depositories (CSD) to introduce automated self-collateralization features.

Standard vs. blockchain-based transactional models

Lastly, it is worth observing that in order to increase security and trust, RTGS systems have prompted the dismantlement of revocable operational systems (in France, ESES began replacing Relit+ in 2007) in favor of irrevocable settlement systems for the delivery-versus-payment of securities. Overall, some of the latest changes in European capital markets, such as the transition to real-time and irrevocable settlement systems bode well for the introduction of DLT. Surely,

many other challenges would need to be answered such as dealing with increased needs for diversified collateral or with the growing use of commercial bank money instead of central bank money for multi-currency settlement. One of the main hurdles that a blockchain-based architecture would need to overcome is the post-trade infrastructure scale of operations.

Corporate finance and governance

DLT is full of promises when it comes to corporate finance. This is mainly because it could be used as a firm's new informational backbone. Blockchain technology resonates particularly well with chief financial officers and treasurers because of the ownership traceability it could provide. Indeed, a firm's ownership is not always easy to trace. Surely, publicly traded companies have to know their significant shareholders, and regulations force shareholders to disclose ownership when crossing certain thresholds. However, minority shareholders are often difficult to trace, so much so that in certain situations such as a corporate takeover, a firm's management may have a difficult time reaching out to them. DLT could bring about significant improvements to these fuzzy situations where management is unsure of "who has what?" In addition, DLT could turn out to be very useful for corporate governance, facilitating shareholder consultation at annual general meetings through secure electronic voting. This more granular tracking of a firm's stakeholders should also greatly facilitate dividend payouts to shareholders or coupon payments to bondholders.

Payment systems

It seems fair to say that it all started there for finding a cheap and reliable, way to make decentralized payments. It has been hailed as an effective means of making international transfers and paying remittances, with lower transaction costs than standard banking fees and a much speedier settlement about ten minutes for the first confirmation as opposed to a couple of days for an international bank transfer. In addition, blockchain technology has been the subject of growing interest and various experiments as a payment solution.

Visa has tested the Blockchain while the Korean KB Kookmin Bank has been developing a DLT-based solution for its fund transfers, currently done on SWIFT. One of the key questions is whether the Bitcoin network, or any other DLT like network using a consensus mechanism, will

be able to achieve transaction throughput comparable to major payment networks such as Visa or MasterCard. Scalability issue has sometimes set off passionate debates on the technological adjustments that would be needed such as whether the block size should be increased or not. There has also been a lot of discussion as to what types of payments should be conducted on blockchains. For instance, many think that the Bitcoin blockchain should not be used for trivial payments but that its bandwidth should be saved for authenticating and storing key consolidated information such as daily net balances of sidechains dedicated to certain types of micropayments. It is still too early to know where these technological chips will end up falling but it is important to bear in mind that what is particularly interesting with DLT. This transactional generality, not only can it be used for payments but it can be used for many other applications such as storing digital assets or digital certificates and proof-of-existence information.

Conclusion

We can draw a few conclusions from this brief study, along with key questions that in view remain open now.

Firstly, the new decentralized transactional model made possible by DLT is likely to influence e-commerce significantly over the next decade. If one of the original focal points of application of the technology was payments and international transfers, in the flurry of initiatives and of household names joining them - a clear signal that DLT is likely to prosper and have a deep impact on the economy, not just payment services.

Secondly, the DLT looks promising on paper for corporate finance, corporate governance, cash management and treasury applications, and more generally for many of a firm's management processes. It is important to separate what is specific to DLT from other IT improvements. For instance, blockchain-enabled innovations should not be confused with improved database management. In addition, one should not forget that some key DLT concepts such as having a decentralized and hence hard-to-corrupt authentication mechanism could be lost in a private or a consortium setting. At least, one of the sure virtues of the blockchain-related technological debate is that it is forcing firms and institutions alike to think hard about their digital transformation, just like the Internet ended up doing in the late 90s.

Thirdly, it is still too early to see how its landscape will evolve, and how interoperability between different blockchains will be assured, and on what scale and with which bandwidth and throughput. There are different competing initiatives, whether public or private, but at the time of writing it seems fair to say that the Bitcoin blockchain remains both one of the most resilient and robust chains, and a central point of reference for new initiatives to be compatible with. When it comes to consortium or private blockchains a contradiction for some, as the latter tend by design to be controlled by a small number of permissioned participants research still needs to be done on the appropriate consensus mechanisms, and the way for instance database immutability is guaranteed.

Finally yet importantly, the issue for capital markets' adoption of DLT, and particularly for its integration in the current post-trade infrastructure, is that there is no margin for error. Capital markets cannot be paused. DLT integration seems relatively easy to do for peripheral or niche activities, such as a low-frequency private securities market. It may have been easier to start from scratch, but post-trade infrastructure is just the opposite it has grown organically over the last decades, and ends up today being complex and filled with legacy systems. Governance, standards and interoperability are also key issues for an efficient large-scale DLT deployment in capital markets, let alone the regulatory adjustments that are likely to be needed to reflect any significant change in capital markets' infrastructure. There are enough doubtful at this point that a major and comprehensive overhaul of post-trade infrastructure could be jointly decided by key stakeholders such as financial institutions, central banks and regulators. Tend to believe that effective DLT integration is more likely to come from various initiatives, some of which have been mentioned above, of post-trade major players. Nevertheless, this will only succeed provided these major post-trade participants work out both the internal substitutions needed, over which they should have control, and the external interoperability is required. As the DLT environment is changing very rapidly, assessing the technology’s impact on the financial sector is ongoing and exciting research.

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