

SHAPING THE FUTURE OF FINTECH: FROM A PERSPECTIVE OF CENTRAL BANKS¹

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Abstract

The aim of the paper is to examine the impact of fintech on central banks and policy objectives, but also, the role of central banks in enabling fintech in fulfilling its promises. Namely, for the financial sector fintech promises shorter, speedier transactions; greater capital efficiency; and stronger operational elasticity. For consumers, fintech promises opportunities, both in form of new products and services but also in improving the existing one at lower costs. In general, fintech promises a more inclusive financial system, with people better connected, more informed and increasingly empowered. In order to support the development of fintech central banks should consider many aspects like: exploring the use of distributed ledger technology (DLT), partnering with fintech companies and calibrating its regulatory approach to fintech developments.

KEY WORDS: fintech, central banks, digitalization

INTRODUCTION

Fintech refers to the use of modern technologies in delivering financial services. Fintech can also be defined as applications of new digital technology for financial intermediation issues. This covers a wide area of applicable technologies in the financial industry, ranging from mobile computing to DLT. The usage of fintech can range from mobile retail banking, to digital currencies, to anti-money laundering, cloud computing, machine learning etc. Furthermore, tech giants have also started to involve in fintech. Generally speaking we are witnessing dramatic changes in financial

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technology and creation of new business models, forms for performing transactions and crypto currencies with DLT. This raises the question of how the central banks will respond to these changes.

The International Monetary Fund (2018) Bali fintech agenda, lays out key issues to consider how technological innovation is changing the provision of financial services with implications for economic efficiency and growth, financial stability, inclusion, and integrity. New fintech companies are flexible and capable to gain value from new technologies and transform it into new services. Fintech creates an opportunity for dynamic development of the entire financial market, but also a numerous number of threats that can significantly affect its development. But in developing such technologies, central banks must consider the aspects of loss reporting, recording and provisioning in order to be consistent with modern regulations such as Basel III/IV, Solvency II and IFRS 9.

The aim of this paper is to examine the impact of fintech on central banks, but also the favourable response from central banks in supporting the development of fintech. This goal is achieved by examination of the theoretical analysis of relevant papers in the subject area.

The rest of this article is organized in the following manner. First, we elaborate the promises that arise from fintech. Afterwards, we examine the impact of fintech on central banks. Furthermore, we analyse what kind of support from the central bank can be provided for the dynamic development of fintech and potential approaches towards regulating the fintech. Finally, we present the final conclusions and recommendations.

FINTECH PROMISES

Fintech promises shorter, speedier transactions; greater capital efficiency; and stronger operational elasticity. The fintech creates an opportunity for dynamic development of the entire financial market by introducing more innovative, quality and efficient banking products and services offered at low prices. Doderlein (2018) argues that banks made little changes in the last 50 years and in contrast the customers' preferences progressed significantly, due to regulatory changes that allows open account access for third-party providers. This will challenge the banks' current market position and allow many new competitors to emerge.

According to a study report by A.T. Kearny (2015), the internet and mobile banking are becoming the main contact points for customers as they value simplicity, transparency and convenience highly. But at the same time they argue that banks still have a strong position, and customers will prefer banks because of security reasons and antimoney laundering aspects. Banks

have access to real money and they own the infrastructure, so that fintech companies need to interact with banks or become banks themselves.

Fintech promises opportunities, both in form of new products and services but also in improving the existing one at lower costs. The 2017 Omni-Channel Shopper Study, published by Novantas (2019) found three major shifts in consumer behaviour that will impact bank distribution and sales strategies in the future period: i) significant shift from branch dependence to digital preference; ii) redefinition of the drivers of bank consideration and purchase; iii) increase in demand for digital account opening. Moreover, according to the findings in the research performed by International Integrated Reporting Council (2019) banks almost unanimously believe that innovation is a material matter that is critical to their strategy and long-term sustainability. Increased number of requirements and expectations from the customers cannot be fully met by incumbents, including the traditional commercial banks.

The high cost of borrowing and credit rationing gives rise to financial exclusion of especially small borrowers such as small and medium size enterprises and households that play a significant role in the macro economy. According to the Committee on Payment and Market Infrastructures and The World Bank (2016), access to financial services can be difficult, particularly for low-income households, because of high account fees, prohibitive costs associated with traveling to a bank. Mills et al. (2016) argues that use of DLT may improve financial inclusion by allowing fintechs as mobile phone providers to provide financial services directly to end users at a lower cost than incumbents, and thus allowing access to customer groups not served by existing financial intermediaries.

Fintech promises a more inclusive financial system, with better connected people, more informed and increasingly empowered. They have potential to disrupt areas such as the global remittance industry, by facilitating near-instantaneous global remittance with very low transaction fees.

IMPACT OF FINTECH ON CENTRAL BANKS

Conducting monetary policy is the most important responsibility of a central bank. The appearance and widespread adoption of new forms of electronic means of payment and stores of value may fundamentally affect money demand, and thus how central banks achieve low and stable inflation. Woodford (2000) argues that even if the demand for base money for use in facilitating transactions is largely or even completely eliminated, monetary policy should continue to be effective. Furthermore, he argues that

macroeconomic stabilization depends only upon the ability of central banks to control a short-term nominal interest rate, and this would continue to be possible, in particular through the use of a "channel" system for the implementation of policy. Aaron et al. (2017) argues that rapid and widespread substitution away from central bank reserves and notes seems unlikely at this point, at least when seen through the lens of past innovations such as credit cards. Moreover, they conclude that even in that situation, central banks could still conduct monetary policy as long as they have control over a short-term interest rate.

Contrary to the above mentioned, (Bordo and Levin, 2017) argue that by introducing Central Bank Digital Currency (CBDC) with interest-bearing design and obsolescence of paper currency will contribute to greater macroeconomic stability, because interest rate adjustments will no longer be constrained by any effective lower bound in response to severe adverse shocks. Namely, the central bank might provide stimulus through credit subsidies or by financing public infrastructure spending or income transfers to households, but the viability of such coordinated monetary-fiscal policy measures could be highly depending on the change of politics.

Design and distribution of currency is the second responsibility of many central banks. Although this is not essential for conducting monetary policy, central banks around the world manufacture and distribute currencies. Fintech could affect this function of central banks if there is widespread substitution money with other forms of digital currencies. This process could potentially have a significant impact on the structure of the balance sheet of central banks. On the other hand, Fung and Halaburda (2016) argue that central banks might still choose to issue their own digital alternative to bank notes for retail transactions but the question is whether it is in the best interests of society and there are other aspects besides retail payment system efficiency. Furthermore, Fernández-Villaverde and Sanches (2018) recently performed analysis with the assumption that paper currency becomes obsolete and the central bank does not offer any form of digital currency. Under these assumptions, the analysis indicates that the economy may be subject to indeterminacy and that there may not be any equilibrium that exhibits stable prices. Their analysis finds that price stability can be assured by the issuance of CBDC in conjunction with an appropriate monetary policy framework. Aaron et al. (2017) argue that the current tiered payment structures seem to have a strong competitive advantage compared with the proposed decentralized systems, and that the biggest risks to central banks will likely come from new applications of DLT, such as smart contracts.

Finally, central banks have responsibilities to maintain a safe and efficient financial system by overseeing financial system infrastructures. Some fintech start-ups are investigating applications of DLT to create alternative clearing and settlement systems. Some central banks are also investigating applications to create settlement systems based on a central bank digital asset.

SUPPORT AND REGULATORY RESPONSE TOWARDS FINTECH

a. Exploring the use of DLT

The great potential of distributed ledgers for central banks is the enhancement of resilience. Distributing the ledger means multiple copies of the system. That removes the risk of single point failure that is inherent in centralised systems. But DLT must be robust and reliable, in order for central banks to entrust the heart of the financial system. According to CPMI (2017) DLT is a record-keeping arrangement in which the records themselves are distributed, and the update protocol is based on some consensus protocol. They argue that according to its distributed nature, the expected benefits are (i) improved settlement speed, (ii) transparency, (iii) availability, (iv) immutability and auditability of the records, (v) resilience of the system and (vi) cost-efficiency. Callsen (2018) argues that the current system of securities transactions is inefficient thanks to the existence of a large number of applications and intermediaries. Furthermore, he argues that distributed ledger could potentially accelerate the settlement process significantly and theoretically transactions could be completed nearly instantly. Finally, he concludes that implementation of DLT in securities markets has the potential to increase efficiency, enhance post-trade processes, and reduce costs of financial services, but at the same time major concerns are interoperability, governance arrangements and security of DLT. Mills et al. (2016) examine how DLT can be used in the area of payments, clearing and settlement and identifies both the opportunities and challenges. Furthermore, they argue that the potential use cases in payments, clearing, and settlement include cross-border payments and the post-trade clearing and settlement of securities and that use of DLT could address operational and financial frictions around existing services. Bott and Milkau (2017) argue that the digitization of central bank money via DLT can open new perspectives on a digital economy with efficient and secure market infrastructures, linking new technological concepts with existing benefits,

but the applicability of central bank money will be a key success factor for the breakthrough of DLT. However, they also argue that the new process and business logic may cause uncertainties compared with traditional setups and that central banks and supervisory authorities are aware of several of these challenges. Moreover, they argue that new technology of DLT must not come as entirely permissionless open systems but within 'hybrid' permissioned systems, where certain functions could be kept centralized and under the control of central banks.

One of the possible approaches is for the central bank to set up its own proof of concept. With such work central banks can learn and gain experience about the opportunities and the risks that need to be met before DLT could be used in central banking. Some of those risks are common to all existing tiered payment systems. Namely, Finan et al. (2013) identify the three existing risks as: (i) Credit risk, in that a paying bank may become insolvent; (ii) Liquidity risk, in that a member bank that is fundamentally solvent may not have the funds to settle a required payment at a particular moment in time; (iii) Operational risk, in that one of the banks involved in a payment transaction may cease to function because of some event, such as an IT failure. They also identify other risks that are more specific to DLT, like the risk of direct loss of digital currencies. The issue of privacy of the data on the DLT should also be assessed and the central bank must ensure certain distributed copies cannot be compromised by cyber-attack, both at the present time and also in the future. One way this might be achieved is to limit the distribution of the ledger to existing trusted parties, such as other public sector entities.

Obviously, in area of payments, DLT has the potential to provide new ways to transfer and record the ownership of digital assets, immutably and securely store of information, provide for identity management and other evolving operations through peer-to-peer networking, access to a distributed but common ledger among participants, and cryptography. Most importantly, innovators are exploring the potential of DLT to simplify the settlement chain, reduce its cost, and raise its speed while increasing resilience, by displacing these various middlemen. However, the challenges facing such projects are legion, including reliability, resilience, security and scale.

b. Partnering with fintech companies

Much of the data that central banks collect are subject to confidentiality and sharing particularly under strict control to guarantee personal data protection. But on other hand this data has great potential for the people and society. To allow wider sharing the option is to find a way of

anonymising and desensitizing data of course fully respecting privacy laws without losing analytical content. This data can enhance current and potential use cases of artificial intelligence and machine learning. Hendrikse et al. (2018) argue that while we are becoming aware of how technology giants are making inroads into financial services, we need to become more sensitive to how financial incumbents mimic ICT firms are aiming to neutralize the fintech challenge. They conclude that without neglecting or rejecting the revolutionary potential of fintech, findings suggest that the latest technological wave, as before, is being enclosed by incumbent financial capital, by encircling outside threats and internalizing their logics. Moreover, they conclude that despite the promise of techno-libertarian disruption prevalent in fintech business practices, the reality is that the prime playground of the tech field proper is marked by rampant digital enclosure, with the tech giant's monopolizing their respective fields of business. One of the possibilities for preventing such development is that central banks launch fintech accelerators to work in partnership with fintech firms on challenges that they face with.

The accelerator will work with new technology firms to help harness fintech innovations for central banking. In return, it will offer firms the chance to demonstrate their solutions for real issues policymakers are facing, together with the valuable 'first client' reference that comes with it. With time, the accelerator will build a network of firms working in this space for the benefit of us and them alike. How will this help the central bank? Campbell (2013) summarizes that the path to adoption of any new technology, including DLT begins with a "proof of concept." Mnohoghitnei et al. (2019) present the Bank of England Fintech accelerator project, which operates since 2016 and has two key objectives: (i) to improve familiarity with fintech services, concepts and firms: their strengths and weaknesses, their implications for financial markets, and their potential applications in central bank operations; and (ii) to give fintech firms some insight into the emerging questions and needs central banks might have, as policymakers, regulators and operators. Furthermore, they discuss that fintech solutions can enhance data analysis, leading to more personalized products. Finally, the proof of concepts spanned most aspects of central banking, including those using DLT, regulatory technology (regtech), machine learning and cyber security.

c. Calibrating its regulatory approach to fintech developments

There are also threats arising from fintech lack of regulation, big competition, risk arising from disruptive technologies, cyber-criminal etc.

The debate on how to regulate innovation is often accompanied by prejudices and undue simplifications. Werbach (2017), from the Wharton School, identified three points regarding the regulations of new technologies: (i) it is misunderstanding to assume that the online, digital world is inherently different from the offline world and that therefore we need a totally new set of rules; (ii) they challenges the assumption that innovation needs an environment with no regulation to thrive; (iii) the conscious choice by regulators of not imposing the full set of rules on a nascent technology can lead, as the technology gains pace, to a more mature and productive dialogue among innovative firms and regulators.

Claessens et al. (2018) for fintech credit and Kaal (2018) for ICOs, both find that the current regulatory responses differ widely across types of fintech activities and jurisdictions. Amstad (2019) argues that regulators essentially have three options in this regard: ignore, duck type, or code. Similar to this point of view, Arner et al. (2017) argue that the transformative nature of technology will only be captured by a new approach at the nexus of data, digital identity, and regulation and that sustainable development of fintech will need to be built around a new framework, namely regtech. Furthermore, they argue that this will require a sequenced approach. Namely, first there is the need for a holistic approach that focuses on building twenty-first century infrastructure to support market functions and second is the challenge of developing appropriate regulatory responses to fintech innovation. Moreover, they argue that the traditional financial services industry, arguably fearful of competition from new entrants unhindered by complex and expensive regulatory and compliance requirements, typically favours similar treatment for all. Finally, they conclude that the key is to balance risk and potential innovation by working closely to understand industry developments but at the same time making sure that similar activities are regulated in similar ways in order to protect against regulatory arbitrage.

Fintech affects the entrance decision and the boundaries of intermediation activities because it allows new firms to source deposits and create loans. This poses a challenge to regulators because the typical regulatory model assumes well-defined institutions. For example, the usual definition of a bank is an institution that takes deposits from the public and makes loans. Regulation based on the institution and not on the activity will be challenged by the blurring of the distinction between banks, non-bank credit providers and financial markets. Fintech presents opportunities for improved regulation in the access to data from DLT applications such as securities settlement. However, risk in this area may come from the complexity of these new applications.

CONCLUSIONS AND RECOMMENDATIONS

The fintech creates an opportunity for dynamic development of the entire financial market by introducing more innovative, quality and efficient banking products and services offered at low prices. But, central banks have responsibilities to maintain a safe and efficient financial system by overseeing financial system infrastructures.

The appearance and widespread adoption of new forms of electronic means of payment and stores of value may fundamentally affect money demand, manufacturing and distributing currencies by central banks. That's why central banks are investigating and exploring possibilities to create settlement systems based on a central bank digital assets.

Regulation based on the institution and not on the activity will be challenged by the blurring of the distinction between banks, non-bank credit providers and financial markets. Fintech presents opportunities for improved regulation in the access to data from DLT applications such as securities settlement, but risk in this area may come from the complexity.

In order of supporting the development of fintech, we recommend some of the measures that central banks may consider:

- **exploring the use of distributed ledger technology (DLT).** In area of payments, DLT has the potential to provide new ways to transfer and record the ownership of digital assets, immutably and securely store of information, provide for identity management and other evolving operations through peer-to-peer networking, access to a distributed but common ledger among participants, and cryptography. Most importantly, innovators are exploring the potential of DLT to simplify the settlement chain, reduce its cost, and raise its speed while increasing resilience, by displacing these various middlemen. However, the challenges facing such projects are legion, including reliability, resilience, security and scale;

- **partnering with fintech companies.** By introducing fintech accelerators, central banks will work together with new technology companies to help harness fintech innovations for central banking. In return, it will offer firms the chance to demonstrate their solutions for real issues policymakers are facing, together with the valuable 'first client' reference that comes with it. Fintech incubators will provide two key objectives: (i) to improve familiarity with fintech services, concepts and firms: their strengths and weaknesses, their implications for financial markets, and their potential applications in central bank operations; and (ii) to give fintech firms some insight into the emerging questions and needs central banks might have, as policymakers, regulators and operators., and

- calibrating regulatory approach to fintech developments.

Fintech affects the entrance decision and the boundaries of intermediation activities because it allows new firms to source deposits and create loans. This poses a challenge to regulators because the typical regulatory model assumes well-defined institutions. Fintech presents opportunities for improved regulation in the access to data from DLT applications such as securities settlement. However, risk in this area may come from the complexity of these new applications.

These measures are not final taking into consideration the dynamic development of fintech, and thus central banks should closely monitor the process.

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