FinTech: New Technology for Future Banking and Finance

A Report based on RIS-IIC Webinar on FinTech 2020-2021
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Foreword by Sachin Chaturvedi, Director General, RIS and N. N. Vohra, President, IIC vii

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Banks and financial institutions worldwide are facing a rapid technological transition enabled by new digital technologies like Big Data, Artificial Intelligence, Block Chain, Distributed Ledger Technology, Machine Learning, etc. Financial technology (FinTech) is one such dynamic sector which is growing at a faster pace with enormous potential for bringing efficiency and cost-effectiveness in intermediation, financial inclusion and retail payment services. During COVID-19, digital mediums and digital payment solutions have grown tremendously. FinTech-based retail payment solutions for national and cross-border transactions are widely being chosen by people over the brick and mortar bank-based physical transactions. E-commerce has got a boost due to an entire variety of payment options through Mobile Apps, Mobile Wallet, etc. While the FinTech-enabled financial services appear to be user friendly, affordable and easily accessible, there are equally important questions to address including cyber security, regulation, and data localization issues.

It is time to understand how banks and financial institutions embrace new technologies, FinTech in particular; in their business models e.g. deposit mobilization, lending, financial consultancy services. Moreover, the possible ways in which FinTech can help achieve better financial intermediation and meet social objectives like serving the unbanked/under-banked population in developing countries and LDCs is of utmost importance. Likewise, there could be many innovative ways through which FinTech can promote financial inclusion in India and other developing countries. Most importantly, Indian experience in Aadhar-based United Payment Interface (UPI), BHIM, RuPay Card, etc be scaled up and shared with other countries especially in South Asia, BIMSTEC and Africa. Since FinTech solutions involve new digital technologies
the emerging regulatory challenges particularly with respect to adequacy of existing regulations, need for new regulations and the role of self-regulation needs to be efficiently addressed.

To discuss pros and cons of FinTech and the opportunities it offers to the field of banking and finance, RIS and India International Centre (IIC) organised a webinar on April 23, 2021. The webinar was successful in raising debate on important policy issues relating to adoption, use and regulation of FinTech. In view of this growing interest and provide a fresh, comprehensive and consolidated picture on the subject, we are bringing out this publication comprising of key messages of the panelists of the webinar.

We hope this timely publication would be highly useful and serve as a handy resource for the policy makers, academics, scholars and businesses.

Sachin Chaturvedi

N. N. Vohra

7 June 2021
It is always a sound principle to break an issue down to its basic, simple components. Simplicity, as Karl Popper the philosopher said, is more testable and therefore has greater empirical relevance. It would therefore be useful to clarify what we mean by banking or finance and how FinTech interfaces with banking, if we are to engage in a meaningful discussion on how FinTech impacts banking. Financial sector intermediates between savers in an economy (basically households) and borrowers. The core part of this financial intermediation is done by banks – through acceptance of deposits, extending of credit and enabling of payments. Since virtually all money (other than currency) is held as bank deposits, banks are at the centre of the payments system.

The above simplified financial intermediation structure is overlaid by other institutions. Financial markets enable direct transfer of funds from savers to borrowers, bypassing banks to that extent. Entities like insurance companies, pension funds and asset management companies assume varied degrees of importance in financial markets as alternatives to intermediation by banks.

There is one important distinction between the role of financial markets and that of banks in bringing savers and borrowers together. Banks bridge gaps in distance and time between savers and borrowers. The gap in distance occurs when a saver and a borrower do not know...
each other, or are in different locations. The gap in time occurs when the borrower needs money after a month but the saver has money now. This later gap is bridged by banks through provision of liquidity services – a bank would take a deposit from the saver now and lend to the borrower after one month. Banks are uniquely placed to provide this service because they can create money and act as liquidity providers to the economy.

Similarly, in the field of payments, banks are uniquely placed since all digital payments transactions are transfer of money from one bank account to another. All other payment service providers facilitate transfer of money from one bank account to another, and in that sense play a secondary role.

Now let us similarly try to understand the role of FinTech. At its most basic level digital technology enables speed – speed in processing information and speed in communication. Since a payment transaction involves processing a withdrawal from one bank account and deposit into another and communicating this to various stakeholders, digital technology can, and has, revolutionised payments by virtually eliminating processing time and communicating instantaneously. This has, for example, enabled RTGS real-time settlement and fast payments systems like UPI and IMPS. Instantaneous communication and the ability to process large databases has enabled use of Aadhar for transaction authentication which in turn has made it possible to effect large scale Government transfers instantaneously and directly into the bank accounts of beneficiaries. eKYC has contributed safety of on-line payments. Transactions have been made safer through AFA such as PINs and OTPs. FinTech has similarly revolutionised the on-line economy and ecommerce.

“Instantaneous communication and the ability to process large databases has enabled use of Aadhar for transaction authentication which in turn has made it possible to effect large scale Government transfers instantaneously and directly into the bank accounts of beneficiaries.”
P2P Lending or Crowdfunding platforms are gaining popularity in substituting for bank credit. Technology such as AI/ML has been used in such diverse areas as investment advice, fraud detection, HelpDesks etc. High Frequency Trading has changed the way financial markets function.

By enabling speed and ability to process huge amounts of data, technology has been and will continue to change the way financial services are delivered. At the same time the limitations of technology should be appreciated. For instance, technology cannot help in providing liquidity services – one would still need banks to warehouse the liquidity risk. While technology can improve calculation and management of risk it cannot make subjective risk decisions (e.g., to hedge or not) for a company. Also technology cannot replace subjective human judgement.

An appreciation of the abilities and limitations of technology prepares us better to manage the change that FinTech would have on banking and finance. It would also enable an effective approach to regulating FinTech and the fast-mutating financial system. In particular,

FinTech can add efficiency to delivery of financial (or banking) services. While the form of banking may change (e.g., we may have entirely virtual banks) FinTech cannot make banking redundant. The essential function of banks – deposit-taking, making advances and effecting payments – would continue in an economy. This realisation is one reason why in almost all countries, entities other than banks are not allowed to directly deal in deposit or deposit-like money.

FinTech can enable better management of financial risks but it cannot essentially change the nature or extent of financial risks. In other words, while FinTech can improve the delivery of financial products or enable better business models, they cannot create new financial products.

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 Nonetheless, the benefits of technology in improving efficiency and reach of the financial system, as well as the concomitant benefits for economic growth and to financial inclusion call for a systematic non-disruptive adoption and encouragement of such technology in the financial system. Because FinTech can improve the efficiency of intermediation by driving down costs, sachetisation of products and services, improving customer service and expanding the reach of financial services, it poses a challenge to the incumbents and forces them to adopt / change the way of financial intermediation. There is a natural incentive for existing financial institutions, including banks, to scale up adoption of FinTech solutions. Such adoption can be internal to the bank’s systems or, banks can look to outsource the services of FinTech players to meet their objectives. The ideal approach is for FinTech companies to be considered as enablers and partners by banks or other financial institutions. In such a scenario, competitive threat to banks comes not from FinTechs but from other banks which leverage FinTechs better.

The growth of the FinTech industry in India has been substantial with an adoption rate of 87 per cent compared to global average adoption rate of 64 per cent. According to a report by Boston Consulting Group (BCG) and FICCI, India’s financial technology companies are poised to become three times as valuable in the next five years, reaching a valuation of USD 150-160 billion by 2025. India’s dynamic FinTech industry has over 2,100 FinTechs of which 67 per cent have been set up over the last 5 years alone. The FinTech market in India is expected to expand at a compound annual growth rate (CAGR) of approximately 22.7 percent during the 2020-2025 period across diversified fields like digital payments, digital lending, Peer to Peer (P2P) lending, crowd funding, block chain technology, smart contracts, etc.

To enable orderly adoption of FinTech innovations, the Reserve Bank of India has come out with an
enabling framework for Regulatory Sandbox with the objective of fostering responsible innovation in financial services, promoting efficiency and bringing benefit to consumers. RBI is currently in the process of testing the entities selected for the first cohort with the theme of ‘retails payments’ and processing requests received under the second cohort with theme ‘Cross border payments’. The Reserve Bank Innovation Hub (RBIH) was set up to promote innovation across the financial sector by leveraging on technology and creating an environment which would facilitate and foster innovation. The Hub would not only identify emerging technologies useful for finance, it would also encourage FinTech innovations in specific areas of priority. This is sought to be achieved by setting up an eco-system where the financial system can freely interact with the FinTech community and academic institutions such as IITs/IISc to ideate, incubate, nurture and develop technology solutions to meet the needs of finance.

Reserve Bank of India has taken initiatives to set up key institutions that have played a seminal role in the evolution of the financial technology. These include Institute for Development and research of Banking Technology (IDRBT), National Payments Corporation of India (NPCI), Indian Financial technology and Allied Services (IFTAS). These institutes have contributed to establishing key technological infrastructure in the financial sector – INFINET, SFMS, ATM network, UPI etc.

The Reserve Bank of India also makes efforts to promote the use of technology through its regulation -- to enhance access to finance, ensure safety and security of customers and their data, and reduce emergent risks of new technology. A range of innovative financial products and services such as digital payments (UPI, Aadhaar Enabled Payment System, Bharat QR code, digital wallets, etc.), peer-to-peer lending, digital loan companies,
Invoice trading (Trade Receivables Discounting System (TReDs)), account aggregation, mobility payments have evolved in the last decade as a result of those efforts.

Broadly, Reserve Bank of India’s regulation has played an enabling role. It has on-tap permanent authorisations for operators; it has a public and transparent oversight framework; an SRO arrangement is being set up to help development of industry standards and promote responsible behaviour. The identified deficiencies in acceptance infrastructure is sought to be addressed through introducing inter-operability and scalability, popularising the use of QR codes and directly subsidising the cost through the Payment Infrastructure Development Fund. Customer safety is ensured through AFA, transaction alerts, switch on/switch off rights and positive pay requirements. Major systems (RTGS, NEFT, UPI) are available round the clock. Measures like local data storage, ombudsman scheme and the requirement of turn-around-time for failed transactions. Managing introduction of services like peer-to-peer lending platforms, open banking services such as Account Aggregation is an essential component of Reserve Bank of India’s regulatory approach.

Going forward, the focus will be on targeting areas that are still characterised by pricing infirmities such as cross border transactions, foreign exchange pricing for retail customers, access of digital payments for offline customers such as those using feature phones. The need to manage the entry of big-tech into financial space also needs to be managed in a non-disruptive manner. Concentration in the retail payments space could give rise to competitive weaknesses necessitating regulatory intervention. The overall theme of speeding up FinTech absorption in the finance space without undermining the integrity or stability of the financial system would continue to remain as the basic challenge for regulators in the next decade or so.
During the COVID-19 pandemic, FinTech and the digital revolution played a prominent place and emerged as a key priority. It presents an excellent opportunity to reshape our payment and lending landscape to maximise the benefit to society. How humanity could have coped up with the consequences of pandemic without faster access to the internet and e-commerce is an interesting question. It is also the time to enhance the awareness of the potential of the FinTech sector. In the UK, we celebrate a national FinTech week every year to highlight the strength and potential of the FinTech sector.

Potential of FinTech in Reducing Cost of Intermediation

We expect financial institutions to transfer savings into investments and ensure sound financial intermediation. Technology is an enabler to support the providers and speeds up the financial intermediation. But, the evidence gathered over the years does not strongly support the role of technology in reducing the cost of financial intermediation. In this context, the benefits of FinTech, particularly in enhancing competition and stability to the system, need to be evaluated more closely.

Based on 130 years of US data, Thomas Phillips found that the unit cost of financial intermediation in the US was stagnant until the financial crisis in 2007. So surprising to see that the so-called
technological change in the financial sector barely contributed to financial intermediation. This finding leads to a broader question about the contribution of financial innovation to make financial intermediation affordable and consumer-friendly. However, this study has also noted that the cost of financial intermediation has come down since 2007. A very interesting finding, since the application of FinTech in the financial sector has grown significantly after the crisis period. More and more FinTech reforms have affected the reduction of the unit cost of financial intermediation. This finding implies that FinTech has enormous potential in reducing the cost of financial intermediation.

Challenges of Using New Technologies in Banking

FinTech has enhanced competition in the financial market. For instance, in the UK, the technology applications in banking led to a new set of institutions such as Intelligent Finance (https://www.if.com/) and retailers such as Tesco and Sainsbury into the banking sector in the 1990s. Initially, most of these institutions use internet and telephone facilities to keep in touch with their customers. The next set of banking institutions, such as Monzo (https://monzo.com/) and Atom Bank (https://www.atombank.co.uk/), started with measures such as app-based services and other marketing techniques to maintain their customer base. In addition, they use cost-effective approaches in technology applications, such as running their platforms on cloud infrastructure.

However, the long years of existence and the trust generated by traditional banking institutions are significant. Trust is central in the financial services industry. Although new technologies are getting cost effective, a reasonable mistrust exists in society towards them. With their long years of existence, traditional banking institutions generate

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and maintain a high level of trust with the user groups. Considering this difference in trust, the ideal way out would be the complementary existence of FinTech and the traditional banking institutions, or FinTech could become a support system to the existing banks. It would interest to observe how all the variants of the FinTech business model taking shape in the future.

Financial Inclusion
How to reach out to 1.7 billion of the world population is challenging for the banks and financial institutions. FinTech can provide more to ensure verifiable identity and to strengthen the Know Your Customer (KYC). Financial technology has helped target and identifies the right group of beneficiaries for many schemes in India for the last 10-15 years. A look at the emergence of microfinance over time shows a high level of indebtedness among borrowers in many countries. The lack of registries and unhealthy competition among loan managers develops a space for multiple borrowings. Given this challenge, to what extent can FinTech contribute to financial inclusion? FinTech has helped altered the lending platform towards P2P platforms. For instance, Kiwa has more than US$1.2 billion of micro loans to the millions of unbanked others around the world. They have different credit models using the cloud platform, which assess the creditors entirely differently. Further, they use big data technologies to evaluate the creditors, whereas conventional banks mostly rely on contacts and relationships. The P2P lenders use credit scoring algorithms daily, whereas the major traditional banks use them quarterly or monthly. The P2P lending, the FinTech firms employ multiple parameters to examine the creditworthiness of the borrowers.

Besides lending, the other benefits of FinTech to the borrower and investor are reduced application processing time and faster processing. But, there

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are some pitfalls, particularly concerning greater risk and uncertainty, particularly considering higher liabilities than the deposit size. Mainly, FinTech companies act as brokers and leave the credit risk on the investors and get a commission from both sides. Therefore, the discussions on the role of FinTech in mainstream banking warrants close monitoring on these issues.

In a nutshell, FinTech has the potential to reshape banks and other institutions. However, harnessing that potential for the betterment of the population requires providing the suitable regulatory fabric through closer engagement with stakeholders and creating a ‘sandbox’ environment for FinTechs. The confidence and trust that regulation can deliver would encourage the public to use more and more FinTech products. It is timely to note the views of the IMF Managing Director, Ms Kristalina Georgieva, who argues for returns to the financial services industry to what it is supposed to be - an industry that serves people. Thus, reconnecting with customers, we can make the best out of a FinTech revolution — an excellent opportunity for the global South and countries like India to develop the newer models for FinTech regulation.
In the domain of regulation in FinTech, two questions often surface upfront. One, what are the regulatory challenges to enable development of FinTech? And, the other, how are the regulators trying to overcome these challenges. These two dimensions constitute important areas of FinTech regulation. With respect to the first question, it is imperative to understand the scope and coverage of the new FinTech regulation, as existing financial regulations typically focus on prudential aspects such as risk management and capital adequacy. Unlike financial regulation in general, FinTech regulation however expands to new areas like digital technology risks. Within digital technology, concepts such as privacy and data protection are emerging as important policy areas. In addition, there is also societal dimension in terms of the role technology is going to play in promoting or suppressing social equity. For instance, a key question in this context is to examine how do principles of fairness, accountability, and transparency of artificial intelligence impact the objectives of financial inclusion or financial exclusion.

Lexicon of Regulation
While the regulators need to harness the emerging challenges of digital technology risks, surprisingly not all terms in FinTech are known and understood equally by all the participants. For example, people use Bitcoin, block chain and distributed ledger interchangeably. The
A fundamental difference between a blockchain and a distributed ledger technologies require both to be examined differently in terms of the FinTech regulation. From this perspective, the regulatory lexicon is very important step in laying down FinTech regulation. Similar challenges are also observed for the area of digital currencies as well. For instance, there are lot of differences between digital currencies, virtual currencies, e-currencies, and also there is a difference between currency and token. And within the tokens, there are differences between security tokens, exchange tokens and utility tokens. The regulator need to define each of these terms in such a way that the market and the regulator understands these terms consistently, so that in case of any dispute with regard to regulation, the interpretation stands out in a manner that is beneficial for all the stakeholders in the market. In essence, the greatest challenge in this dimension is basically defining the scope of different aspects of regulation and developing the lexicon.

**Differentiated Approach to Regulation**

FinTech industry comprises of two types of players- the FinTech start-ups and the big tech firms competing for a vital share in the financial sector. The tough challenge for the regulator is to differentiate between the regulations applicable to these two entities. Internationally, regulators such as the People’s Bank of China are attempting to lay down antitrust regulations on big tech players (such as Alibaba). Similar regulatory developments in other jurisdiction are also emerging in recent times. While this is important dimension in case of big-tech firms (because the regulators grapple with issues such as monopolistic tendencies), the same regulatory focus may not be applicable for FinTech start-up firms. In case of such firms, the regulation ideally should be to nurture and encourage innovation. So, it is quite a balancing task to have this differentiated regulation operationalised in the context of FinTech.
Need for Co-Regulation

Another crucial dimension of FinTech regulation is the model of regulation. In most cases, regulations are primarily state regulations which are basically driven by the regulator itself. On the other hand, certain other areas of FinTech regulation in FinTech sector have evolved over a period of time by the industry players themselves through self-regulation. The challenge therefore is to mix and match the objectives of state regulation with that of self-regulation, because in most of the areas like digital currencies, crypto exchanges, and digital lending, FinTech firms are not only dealing with businesses as self-regulatory organizations, but also they are trying to help the regulators in terms of coming up with regulations in a graduated manner. In view of this phenomenon, the real issue it to ensure that these self-regulatory organizations’ efforts are also factored into the state regulation when it is finally announced. In essence, this is a kind of a co-regulation model, which is the right balance between the state and the self-regulation. How does the regulator maintain that balance is going to be a challenge that needs to be addressed going forward.

Regulators’ Response to Challenges in FinTech

By comprehending the nature of regulatory risks and challenges, the next step the regulators worldwide are embarking upon is undertaking capacity building programmes. In this context, it is worth recalling the experience of the regulators in dealing with regulatory frameworks during the previous episode of financial engineering in 2005-2006. At that time, regulators had allowed the financial engineering models to evolve themselves by the industry. Most of the times they had left it to the private players for developing these models as risk management tools. Unlike this approach, it can be seen during the FinTech developments of recent times, regulators
realised that they cannot afford to remain mere spectators.

For this purpose, the regulators themselves are trying to incorporate in their own functioning certain pilot projects of digital technology to understand the ramifications and also to see whether the promises being made by the FinTech players are really achievable on the ground. For example, the Bank of England is experimenting with machine learning based regulation and its applicability for the regulatory reporting. This will enable the Bank of England to examine how machine learning can be fully applied in a regulatory context and the kind of promises that are being made by the machine learning experts are really met on the ground or not. Similar examples can be found in the Central Banks of Brazil and South Africa, where the block chain technologies and the distributed ledger technologies are being used by the regulators for information exchange in the case of Brazil, and for the purpose of facilitating interbank payment systems through the distributed ledger platform through a project called as Project Khokha in South Africa.

Regulators are therefore not leaving their capacity building requirements to the outside players. They are taking upon themselves in terms of the pilot projects.

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regulatory models. Such networks are important platforms for understanding and exchange of information relevant for FinTech regulation and policy among the regulators.

Apart from the cooperation, regulatory collaborations with FinTech industry are also critical for achieving nimble regulatory frameworks. For example, the Monetary Authority of Singapore, together with the International Financial Cooperation (IFC) has also set up something called as an ASEAN Regulatory Sandbox. The start-up entities can experiment their business models within this closed ecosystem in which the regulated experience in terms of a sandboxing environment can also enable the regulators to gain experience for the purpose of laying down certain key regulatory aspects for this space.

To conclude, unlike financial regulation that focuses on prudential risk management and capital adequacy, FinTech regulation poses additional challenges. These include development of regulatory lexicon and arriving at regulatory frameworks suited to the type of industry players. In order to address these challenges, regulators are evolving co-regulation models (by partnering with industry in developing regulatory frameworks). In addition, they are undertaking capacity building programmes through in-house pilot projects and developing international cooperation for sharing regulatory experiences. Together with regulatory sandbox collaborations with industry, these initiatives could assist the regulators in arriving at a nimble regulatory approach for FinTech industry in a graduated manner.

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**AGENDA**

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<th>Time</th>
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<tr>
<td>4.00- 4.05 PM</td>
<td><strong>Welcome Remarks:</strong> Professor Sachin Chaturvedi, Director General, RIS, New Delhi</td>
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<td>4.05- 4.20 PM</td>
<td><strong>Keynote Address:</strong> Mr. T Rabi Sankar, Executive Director, Reserve Bank of India, Mumbai</td>
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| 4.20- 5.00 PM | **Panel Discussion**<br><br>Chair: Prof. K.J. Joseph, Director, Gulati Institute of Finance and Taxation, Thiruvananthapuram<br>Panelists:  
  - Professor Thankom Arun, Director, Centre for Accountability and Global Development (CAGD), University of Essex, UK  
  - Dr. Srinivas Yanamandra, Chief of Compliance, New Development Bank, Shanghai |
| 5.00- 5.15 PM | Q&A                                                                     |
| 5.15- 5.20 PM | Vote of Thanks: Dr. Priyadarshi Dash, Associate Professor, RIS, New Delhi |
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