

## **Financial Technology in India – Opportunities and Challenges in Indian Banking Sector**

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## **Abstract**

The research paper contains an overview on the financial technology development with regards to the Indian perspective as in the starting with the evolution of the banking and the fintech in India , the sections of the public and private sector in the same field along with the regulatory bodies having the check and balances and the way forward with the , advancement of the certain financial technologies like crypto currency , block chain and an inter-related approach with the upcoming technologies like artificial intelligence and machine learning.

**Keywords :** Financial technology , fintech , crypto currency , block chain , artificial intelligence , machine learning , User Payments Interface

## **Introduction**

India has close to 3000 startup dedicated to the fintech industry and has witnessed funding account to 14% of the global funding and with the public sector backing up the private sector with tons of investments along with competing with the private sector thus the creating an environment growing in the positive direction , but also leaving a few cracks with regards to the ongoing development along the way, hence this overview research paper aims to describe the financial technology with regards to the Indian perspective and its way forward.

## **Literature Review**

Financial technology or fintech in short is the way through which financial services are improved via the technology be it related to automation or delivery of the use of the financial services, A few examples of fintech are retail banking, investment management, fundraising, and crypto currency. In recent times emerging technologies such as artificial intelligence, and machine learning are being adapted to provide financial services much more effectively for consumers, banks, clients, and businesses who are the major users of financial technology. **Girish, P., Vijay, (2021)**

The objective of this paper is to provide information to differentiate between the public and the private sector banks and service companies around the world using and implementing financial technology along with the better practices that could be adopted by both sectors based on the study of facts and research done in this paper. Hence this paper portrays the challenges and opportunities of the fintech for the financial services provided by the public and the private sector.

The usage of technologies such as blockchain, data analytics, big data or cloud whether in developed or developing countries are implemented through the regulatory framework and the government policies have a strong probability to expand financial services to millions of people who lack access to financial services or simply a bank account. **Rashmi D., Rao (2021)**

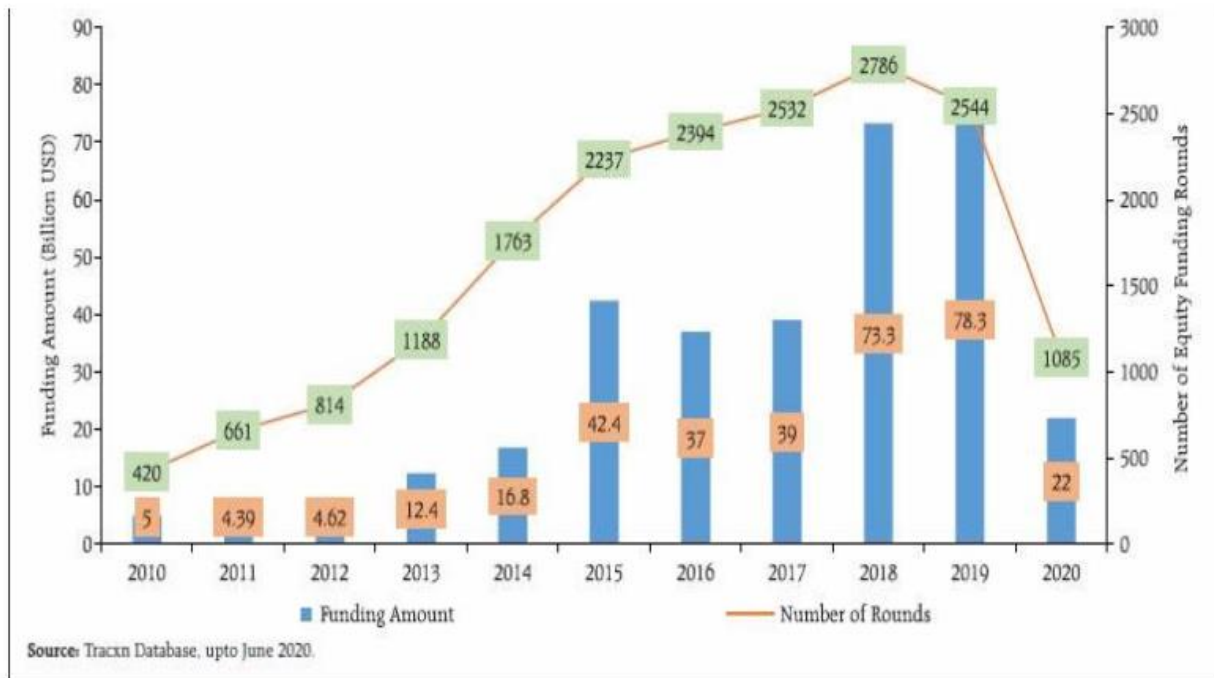


Figure 1. The Global fintech investment, **Girish, P., Vijay, (2021)**

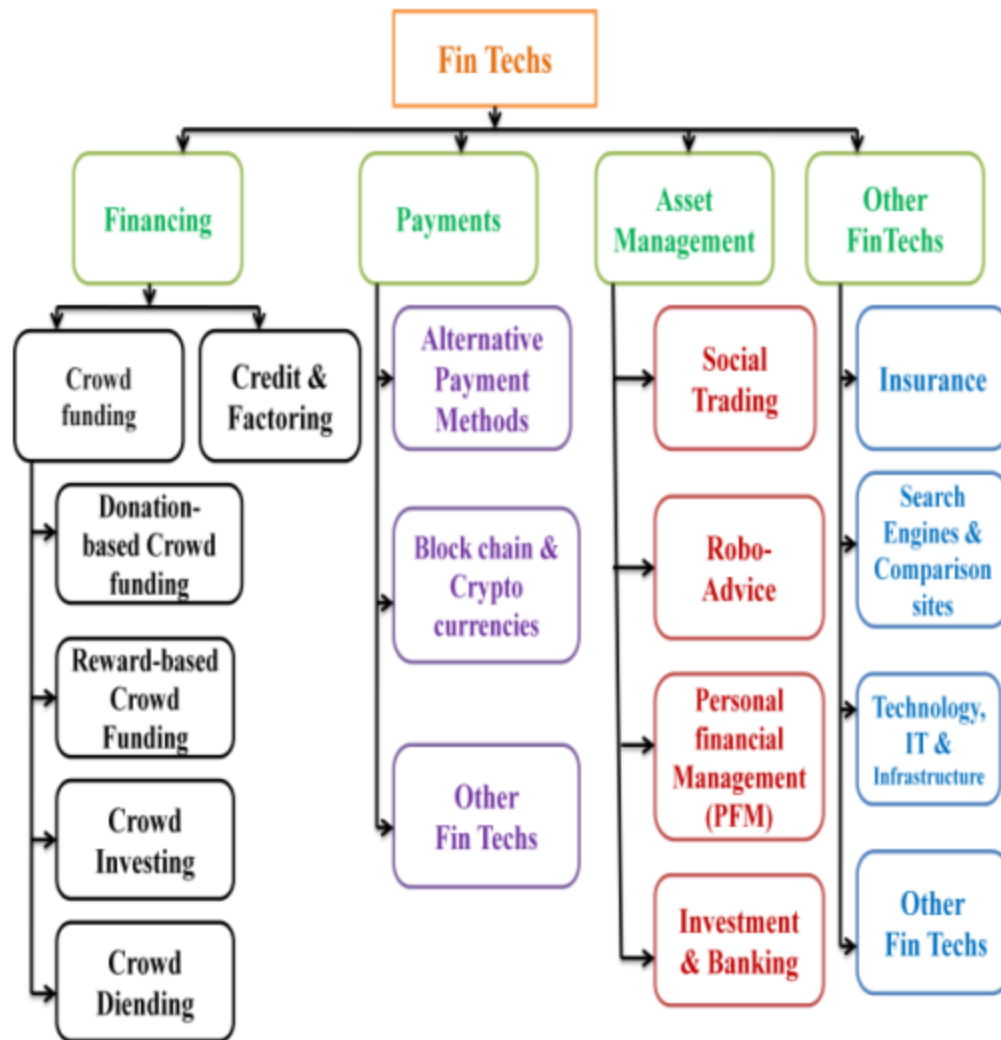


Figure 2. Key segments of the Fintech industry Krishna , P. Anusha, K., (2019)

### The evolution of fintech over the years

Financial technology was introduced in the mid-1990s and the idea was being developed in the 1970s and 1980s when the electric banking and the ATMs (Automatic Teller machines) were being introduced in 1967. Hence the development and the evolution happened year after year. Guneet K., (2023)



Figure 3. : The evolution of the fintech in the significant time of its inception from 1990s till present.  
**Guneet K., (2023)**

### **The development of fintech through the years**

#### **The 1990s till 2000**

The 1990s were the infancy stage of the fintech. The major instances were the online stock trading industry like E-Trade and Charles Schwab enhanced the accessibility and added convenience to the stakeholders. Also, electronic banking was being adopted by Wells Fargo and CitiBank along with other financial institutions.

In addition to it, processing systems such as PayPal were also introduced during the same period.

#### **2005 till 2015**

Newer services and products were being introduced, and the establishment of the fintech was getting expanded via smartphones and easy access to other digital devices along with the internet.

The concept of peer-to-peer lending platforms was also being established by the investors and borrowers without the interference of the financial institutions. The Mobile payment also enabled the easy processing of the credit card payment system.

In the 2008 historic the great recession emerged as new alternatives to the new prospects of fintech like peer-to-peer lending, crowdfunding, and blockchain technology.

#### **2015 till present**

The inception of the cryptocurrency gave the market a new perspective to see the new opportunities. Examples such as digital banking services, which provide consumers with alternative banking options, for the consumers as a new convenient, and modern banking experience.

Another historic event in 2020, COVID-19 took place and the lockdown period witnessed the addition of many users of financial technology, henceforth the expansion of artificial intelligence and machine learning kept developing and working as an engine of innovation for financial services. For example, digital insurance companies along with digital securities like Coinbase emerged. Also, open banking and open lending platforms emerged in the digital spaces as well.

### **An overview of the public and the private sector banks using**

#### **Public or government banks**

Usage of AI or artificial intelligence, for reduction of manual processing along with the identification of financial fraud.

Research and analysis on how to improve the financial technology in the banking systems. The research is practiced in Europe, especially Germany. **Fintech Erik F., et. al. (2021)**

ECB (European Central Bank) is investing in innovative technology

#### **Private sector Banks**

The private sector banks in a majority of the cases tend to put the clients first and hence try to understand and connect with the customers more in comparison to the private sector banks.

The private sector banks are more plugging into the fintech processes for agility and better speed.

The regularity of innovation in financial technology is making the banking systems more complex due to the ever-changing technology and its adoption, thus to sustain the same more focused business strategy and product provisioning is to be considered.

### **Adoption of fintech: Indian perspective**

Artificial technology, blockchain algorithms, and automation processes are being adapted rapidly to transform the banking system in India in a transformative way and in recent periods various tools and techniques have been adopted for the adoption of fintech in the Indian government banks.

In India, the Fintech adoption rate is around 87% in comparison to the global average of 64%. Henceforth India has emerged as one of the largest digital markets in the world and thus has a huge potential in India. **IDFC First Bank Web Article, 2022**

The Fintech policies are strongly backed up by the government enabling a digital infrastructure framework. **Deloitte Web Article, 2023**

If one goes by the number of smartphone users India has over 676 million smartphone users, over 1.2 billion telecom subscribers, and around 825 million internet subscribers, and out of that total, a good 39% belong to the rural areas.

Coming to the startup ecosystem, India is hosting 3<sup>rd</sup> largest spot for the same, with a total of 59,593 startups recognized by the Government of India out of the total startups in India, around 1,860 belong to the FinTech Sector and 17 Indian Fintech startups have gained the Unicorn status as on December 2021.

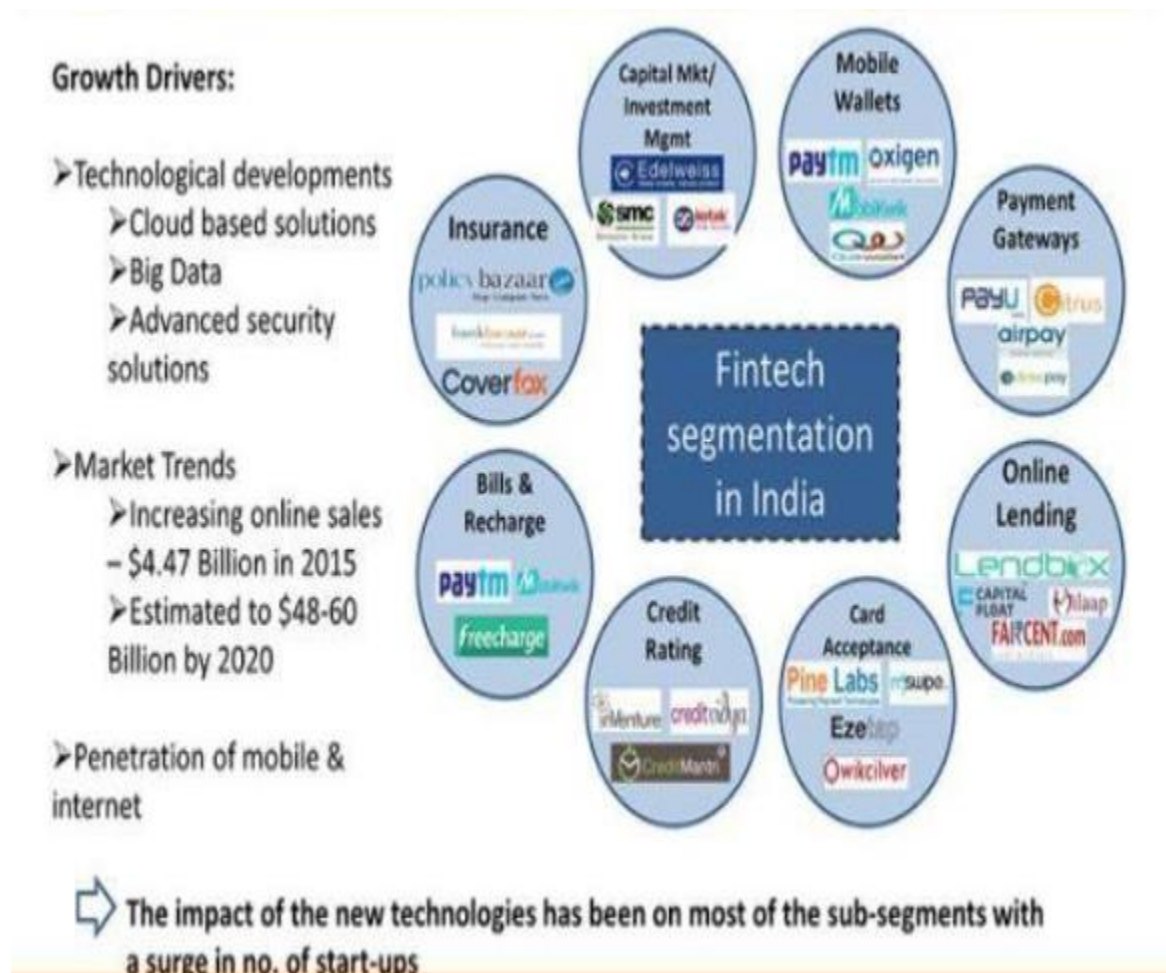


Figure 4. Fintech industry infrastructure

Fintech in Indian Public Sector organizations **Ramdeo A., 2023**

There are several measures to encourage the investment flow in India such as Pradhan Mantri Jan Dhan Yojana, Aadhar biometric identification system, Unified Payments Interface system along with JAM trinity which is Jan Dhan Yojna, Adhar, and Mobile. Additionally, a central KYC (Know Your Customer), has been developed to reduce the chaos of multiple KYCs for different financial institutions. **P.I.B Web Article , 2021**

Many other initiatives such as the Startup India initiative, and the regulatory sandbox to foster a responsible innovation in financial services are also there.

There are also various steps taken by the bankers of all banks in India, the RBI (Reserve Bank of India ) that are, RBIH (Reserve Bank Innovation Hub) for promoting innovation across the financial sector. Another scheme that is, PLI or Production Liked Incentive is also there wherein there are 14 key sectors. The IIS or Industrial Information system is developed as an Industrial Land Bank which provides a GIS (Geometric Information system) database for the industrial sectors to identify preferred locations for investment. **P.I.B Web Article , 2021**

## Regulatory Bodies in India



Figure 5. Regulatory bodies in India **Girish, P., Vijay, (2021)**

Fintech in Indian private sector organisations

There has been quite a lot of innovation happening in recent times for the Fintech establishment and adoption in the Indian private sector banks.

As, some of the methods adopted by the Indian private sector banks in fintech are :

1. **BlockChain:** It is being treated as a pilot project but has effectively reduced the cross-border remittances.
2. **Money Coach:** A robo adviser guiding the customers or the stakeholders in aiding and reaching the financial objectives.
3. **Chatbots:** The artificial intelligence-generated chatbot like Amazon's Alexa, speaking to customers to resolve queries.

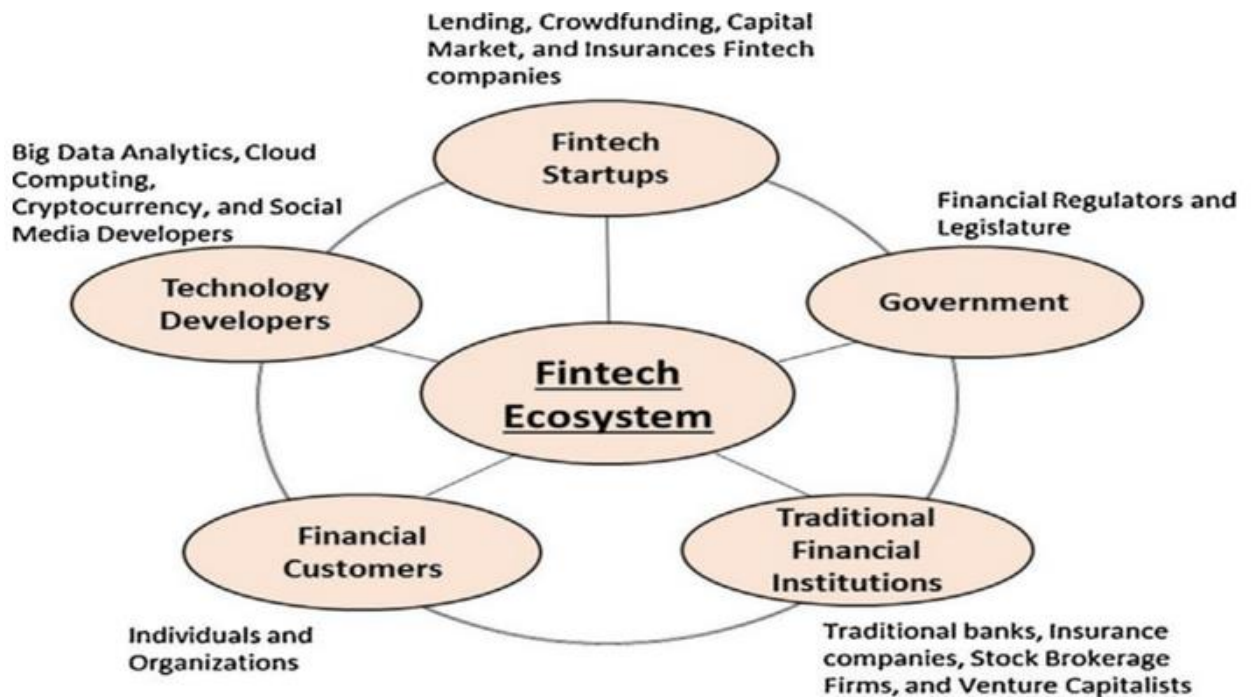


4. **Machine Learning:** In the case of ICICI Bank, a leading private sector bank in India, for estimating the farmer's creditworthiness, the usage of satellite images is adopted, thus it becomes easy for the banks to creditworthiness.
5. **API (Application Programming Interface):** A smooth service between the banking interface and the third-party client allowing various requirements such as, pay, borrow, invest, and various others.
6. **WhatsApp Banking:** Through the messaging application WhatsApp, the banks are connected with the stakeholders in a convenient way where most of the stakeholders can relate easily or simply.
7. **Smart Slips:** Smart slips act as a method of net banking and thus complete any kind of transaction like the banking outlet. **Rashmi D. and Rao (2021)**

Players	Business category	Investment Period	Total Deal value (USD Million)
Paytm	M-Wallet/Gateway	Feb 2015	890.0
Billdesk	Payment Aggregator	Mar 2016; 2012, 2006	157.5
Freecharge	M-Wallet/Gateway	Feb 2015; Sep, 2014	113.0
Mobikwik	M-Wallet	May 2016; Dec 2015; Apr 2015; 2013; Sep 2012	86.9
A leading Indian FinTech portal	Marketplace for loans and insurance products	Jul 2016; Jan 2014; Mar 2011	79.0
Policybazaar	Insurance	Apr 2015; May 2014; Apr 2013; Mar 2013; May 2011	69.6
Financial Software and Systems	Financial Planning	Oct, 2014	57.0
Source: KPMG (2016).			

Figure 6. Fintech funding in India **Girish, P., Vijay, (2021)**

#### Elements of Fintech ecosystems in India



The Five Elements of the Fintech Ecosystem

Figure 7: Elements of Fintech Ecosystem

India is in the top 5 economies of the world and with a strong and a booming economy , a flood of investments is inevitable and as a result a number of startups are mushrooming , which is resulting in an advancement of the country.

A major role of the government of India policies is also there as , the development of U.P.I(User Payment Interface) has made the ecosystem more linked with the inclusion of people inclined financially.

### Key Trends Shaping the Fintech Sector in India

An advancement in the fintech is being seen in India , with a profound growth to simplify customer service and supporting framework with an up to date development. **Varinder J. (2023)**

With regards to the key trends in fintech industry in India , the following have come out to be major ones :

#### 1. Financial inclusion

Financial inclusion considers to simply include the underbanked or unbanked population. In India approximately 190 million fall under these categories. Platforms like 'Khatabook' and 'Bharatpay' are giving an easy access to the bookkeeping tools and thus such efforts are aligned with the Indian government to enhance the digital India objective.

## 2. Digital Lending and NeoBanks

The digital only platforms , has potential to acquire around about 20 million by 2025. With the upcoming technologies like artificial intelligence and machine learning the digital platforms have a good potential to reshape the financial services and the accessibility.

## 3. Adoption of the digital payment systems

With the regulation of the U.P.I (User Payments Interface) and the regulatory bodies , and a transaction of 2.8 billion in a span of a month on an average , the N.P.C.I ( National Payment Corporations of India ) introduced U.P.I in 2016 and thus its ease of use connecting the rural and urban regions , have thus gained appreciation and huge recognition within India and outside.

## The Challenges of fintech in India

Irrespective of the growth of fintech, there are various difficulties the organizations like the banking systems or the companies have to face.

1. **Inadequate knowledge:** Many stakeholders lack adequate knowledge of Fintech as the stakeholders rely more on word of mouth rather than research resulting in the destabilization of the financial institutions.
2. **Increasing customer base:** Although the fintech firms are quite effective in raising capital, there is still a slight issue of enhancing customer and client addition as most of the stakeholders still **Krishna , P. Anusha, K., (2019)** believe in the traditional methods of banking rather than the banking technology where extensive use of technology is there, thus the stakeholders sometimes find the usage a bit complex.
3. **Protection of personal information:** It's an obvious fact that more and more financial organizations try to keep the stakeholder's data safe and thus need to upgrade and update to walk in parallel with the idea, but it is an ever-continuing process and needs a regular, continuous and a rigorous check.
4. **Access to services:** Despite having the world's second highest customer base in India, still many potential stakeholders especially coming from rural areas and the elderly section are not able to access internet assistance, thus despite the development and services being offline the stakeholders tend to make offline transactions.

## Way Forward

Although there is a plethora of information and services in the fintech industry in India, it still needs encouragement from the regulatory bodies. There has been a lot of development in the payments startups and many startups which are around 1500 have come up in recent years and are operating on a good scale, thus showcasing a gigantic entrepreneurial potential. Thus more development in adoption of the financial services is needed as adequate knowledge and more customer base must be taken into consideration. **World Bank Web Article ,(2023)**

## Conclusion

This paper focuses on the establishment of the fintech industry from its inception till the present and highlights its impact globally and in the country Republic of India. Thus improvements in connectivity and computing are capable of developing efficiency and competition among the public and private institutions' picture of the financial technology. **Emanuele B., Moritz R., (2023)** The growth can forecast new monetary innovations that can give individuals newer ways to utilize and adopt new financial instruments for transactions thus contributing to all the stakeholder's accounts.

While the fintech is an ever growing industry and therefore offers vast opportunities for enhancing the quality of the finance or banking services , resulting to improve customer satisfaction , by increasing financial inclusion , supporting economic growth and welfare gains , thus there exists a lot of potential for known and newer risks , which can act as a threat to financial stability , social welfare and economic growth.

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