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Dr. Kaushal Jay
Former Research Scholar,
Ph.D., Management under
Faculty of Commerce,
Department of Commerce and
Business Administration,
LNMU, Darbhanga, Bihar,
India

Correspondence
Dr. Kaushal Jay
Former Research Scholar,
Ph.D., Management under
Faculty of Commerce,
Department of Commerce and
Business Administration,
LNMU, Darbhanga, Bihar,
India

Impact of Central Bank Digital Currencies (CBDCs) and digitalization on financial market in India

Dr. Kaushal Jay

Abstract

In the recent years the financial sectors rapidly grow by various innovations with advancement of technologies in the financial field. In the financial market these new technologies directly effect on consumers, investors, traders and other stake holders. Its regulations i.e. implementation or application of financial technologies cause great change in stakeholder's financial and economic activities. The central Bank (RBI) had recommended the amendment in RBI Act 1934 to broaden the 'banknote' definition and include money in electronic format. See-25 of RBI Act 1934 Provides the forms of bank notes.

RBI has been examining use cases and Working out a phased implementation strategy for the introduction of CBDCs, and for analysis about digital disruption. I analyses in this article, how ongoing digitalization of economy is changing the financial behavior of stakeholders in order to pay, investment decisions and so on. Financial instruments were traditionally traded when stock brokers and traders met at trading floors and executed transactions. At present scenario is being changed after digitalization. The Journey of financial development is being fast after digital transformation in the field of financial transactions. In India Bombay Stock exchange (BSE) and National Stock exchange (NSE) plays a major role in trading of financial securities like equity, bonds, debentures and other financial assets. The second considerable point about cyber security of E-currency transaction i.e. CBDCs which is future of and Finance.

Keywords: Fintech, digital disruption, digitalization, financial development, cybersecurity

Introduction

Digitalization of Financial Market resulting a drastic change in the mode of trading and in the level of financial literacy of retail investors. Stock exchanges in India plays a crucial role in Indian Stock market. Bombay stock Exchange (BSE) and National Stock exchange (NSE) provide a well settled platform for trading in Securities and its derivatives. Digitalization with financial Literacy and digital transparency enhanced and increased Stock trading process efficiently. The set-up of well structure and organised functional scenario creates a reliable economic environment in terms of listing process of Companies strictly follow-up the rules, regulations, Procedures and Standards which codified into the Act namely the Securities Contracts (Regulations) Act (SCRA) 1956. Securities Exchange Board of India (SEBI) as a main statutory and regulatory institution which established in the year 1992 for smooth and unrestricted flow of the trading of financial instruments. All the companies which are trading in financial market must be comply and fulfill the requisite guideline and documentation process and standard provided by the regulatory authorities. The other services such as timely and exactly information about financial position of the listed Companies, timely execution of trade orders, Electronic trading by simple process of transaction by electronic devices like Smart phones, Laptops, Tablets and others E-devices provide by the stock exchanges. The financial and technical analyst ready for any trading assistance for traders and investors, real time Settlement of trade, and other various trading functions are provide by these main Exchanges i.e. NSE and BSE in India. This scenario made this market more effective. The Brokerage houses and financial intermediaries act as a bridge between traders, investors and Stock Exchange and provide an organised platform to ensure smooth and unrestricted flow of trade and investment.

The all above scenario extremely impact on the investing behavior of individual and institutional investors such as Foreign Institutional Investors (FIIs) and domestic institutional investors (DIIs) and the other Stake holders of financial market. They tend to invest in stock market in order to positive return on their investment.

They feel security about their fund despite of greater risk associated with these types of investments.

But in this year 2022 month of December Central Bank (RBI) starts trial for Digital Currencies (CBDCs) which creates environment of various questions regarding data security and Privacy Concern about their fund, due to national and international exposers i.e. Cyber fraud, Hacking of data and other causes concerned. In India all civilians are not user friendly with smartphones or other technological devices due to non-awareness about fund transfer and other related financial activities. There is no any cyber Security cell for their redressal grievances if any issue arise during transactions.

In this digitalization era most of the task done by the help of technologies in the area of finance and other trading activities like E-Commerce business. Fintechs are at blooming stage in India, Financial development with economic stability is possible by digitalization Process. In the mean period of time central bank trial Digital Currency which creates various types of questions, queries, doubt and suspicion about their fund and cash management system among the small retailer, poor persons, less-awarded people and other stakeholders in India. This sentiment can effect on the economy which leads to financial development. Digital disruption is the biggest Challenge before the Government and the professional trial and analyses about pros and cons of CBDCs. Digital Disruption in financial market is to be managed by strongly implementation of data Protection technologies.

Central Bank Digital Currencies (CBDCs) are a digital form of Paper Currency, and unlike crypto currencies that operate in a regulatory vacuum, these are legal tender issued and blocked by a central bank.

- Bahman has been the first economy to lunch its nationwide CBDC– Sand Dollar.
- Nigeria is another country to have rolled-out e-Naria in 2020.
- China become the world's first major economy to pilot a digital Currency e-CNY on April 2020.

Types of digital Currency

There are two types of digital currencies launched by central Bank.

1. Central Bank digital currency for Retail (CBDCR)
2. Central Band digital currency for Wholesale (CBDCW).

Those above type based on usage and functions Performed by the CBDC and considering of different levels of accessibility.

Impact on monetary policy and financial development from introduction of CBDC

CBDC is in Electronic form of Currency and it is fully guaranteed by the central bank with no risk of losing its face value and easily stored in large amounts. The banking sector would likely to have important Consequences for both aggregate Supply and demand in the economy. Any fall in the total amount of bank lending would also lessen the Importance of bank lending in the overall transmission of monetary policy. However, such issues can be addressed by ensuring limits on CBDC holdings and transactions.

According to Bank for international settlement (BIS), Committee on Payments and Market infrastructure (CPMI) and Market Committee (MC) Report (2018), CBDC does

not alter the basic mechanics of monetary policy; rather, it has the potential to enable timely transmission of monetary policy. The implications of central bank digital currency (CBDC) for monetary policy essentially depends on the way it is designed and its degree of usage. In particular, it would depend on the following policy decisions:

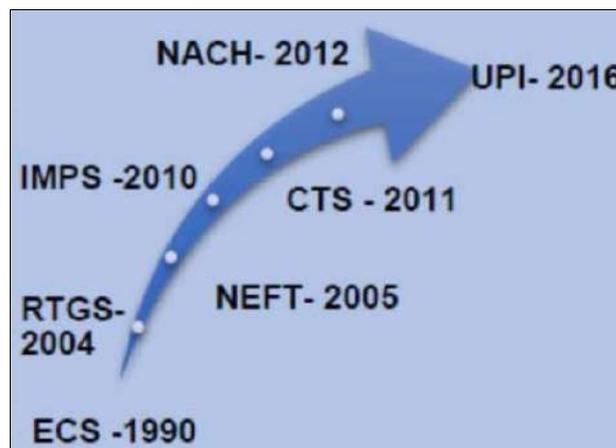


Fig 1: Developments in India's payment systems

Firstly whether CBDC will be non-remunerated or remunerated; and second whether it would be widely accessible just like physical currency, or limited to wholesale customers such as banks (as in the case of central bank reserves); and third whether it will be anonymous like physical currency or ownership will be identifiable, which leaves the trail of different entries.

Asper above policy If the CBDC could function like physical cash and fetch no interest income, in normal times, economic agents would prefer to keep their money in interest bearing bank deposits as opposed to CBDC. However, in the tail-risk event of economic instability or a system-wide bank run, CBDC could be viewed as a safer substitute of bank deposits. It is fully guaranteed by the central bank with no risk of losing its face value and easily stored in large amounts. This easy switch to CBDC can potentially speed up a bank run. The consequent impairment to financial intermediation would directly weaken the efficacy of monetary policy. An associated reduction in the availability, and/or an increase in the cost of credit from the banking sector would likely to have important consequences for both aggregate supply and demand in the economy. Any fall in the total amount of bank lending would also lessen the importance of bank lending in the overall transmission of monetary policy. However, such issues can be addressed by ensuring limits on CBDC holdings and transactions.

Another school of thought advocates that interest bearing CBDC could transmit monetary policy actions directly to economic agents, increasing the efficiency of monetary policy. Under this modality, economic agents could also switch to CBDC from bank deposits, which could lead to a deposit outflow. This outflow of deposits (or banks' durable liquidity) to CBDC could motivate banks to compete for deposits, which in turn could increase deposit rates and thus also retail lending rates, despite no increase in the policy rate. To avert this risk, the central bank may have to pro-actively inject larger durable liquidity to the banking system more regularly.

In conclusion, the potential impact on monetary policy from an introduction of CBDC is still unclear and is purely

speculative given that only limited CBDCs are currently in existence as few nations have issued till date.

Technology consideration for CBDC

CBDCs being digital in nature, technology shall always remain at its core. The technology is what will constitute any CBDCs and technology is what will translate the abstract policy objectives to concrete forms. This intended objective may include first the strong cyber security, technical stability and second one is sound technical governance. The first fundamental objective can be achieved by effective technology platform. The feature of platform should be developed in India for CBDCs should be as follows.

- Highly scalable to support very high volume and rate of transactions without performance degradation.
- Robust to ensure stability of financial ecosystem.
- Tamper-proof access control protocols and Cryptography for safety of data, both CBDC and transactional data.
- Cross platform support, to allow development of large variety of client applications using CBDC for financial services.
- Ability to integrate with other IT platforms in the financial ecosystem must be at the core of platform design.
- Configurable workflows for quick implementation of policy level directives issued by RBI from time to time
- Comprehensive administration, reporting, and data analytics utilities.
- Highly evolved fraud monitoring framework to prevent occurrence of financial frauds.

projected by the central bank to plan and execute its ‘discretionary’ liquidity (injection/absorption) measures. An increase in demand for CBDC (just as an increase in demand for physical cash) is a leakage (of deposits) from the banking system. The change in form of the currency (from physical to digital) may bring about a change in the behavior of public holding of money (i.e., currency versus deposits, and within currency between physical and digital). The nature of change cannot be gauged a priori given that most of the central banks are still exploring issuance of CBDCs.

There would be a much larger impact on reserve money, money supply and net demand and time liabilities (NDTL) of banks if CBDC is remunerated because of potential scope for substitution of deposits of commercial banks by CBDCs. Consequently, commercial banks will be constrained for funds and rely more on central bank liquidity provisions. As a result, the central bank balance sheet will get bloated increasing reserve money due to financial disintermediation. Non-remunerated CBDC can significantly minimise potential disruptions to monetary policy and the financial intermediation process. Interest bearing CBDC, in turn, would require a comprehensive review of the operating framework of monetary policy, and even the monetary policy framework, as that would require a decision on the rate of interest to be paid on CBDC, and also to deal with the challenge of financial disintermediation.

The impact of CBDC on key monetary variables can be summarised as

Impact of CBDC on Monetary Variables		
Impact on	Non-remunerated CBDCs	Remunerated CBDCs
Reserve Money	Yes/No	Yes
Money Supply	No	Yes
Velocity	No	Yes
Money Multiplier	Yes/No	Yes
Liquidity Conditions/LAF	Yes/No	Yes
Monetary Policy (Repo Rate)	No	Yes

Implications of CBDC for Financial Stability

Bank for International Settlement (BIS) has set out three common foundational principles for considering issuing a central bank digital currency (CBDC). The first of these principles was “do no harm” – this does not mean “have no impact”, but rather that new forms of money supplied by the central bank should continue supporting the fulfilment of public policy objectives and should not impede and ideally enhance, a central bank’s ability to carry out its mandate for monetary and financial stability. This principle arose from a recognition that while a CBDC has the potential to provide benefits to the operation and resilience of the financial system, it could also affect existing financial market structures and business models, which may pose risks to financial stability as the financial system evolves, particularly via the potential disintermediation of banks.

Potential demand for a CBDC is highly uncertain. It would be affected by its design and implementation framework (Group of central banks (2021a and 2021b)). However, there are two main concerns: first that, in times of financial crisis, CBDC may hypothetically result in faster bank runs; and second, financial disintermediation could lead banks to rely on more expensive and less stable sources of funding.

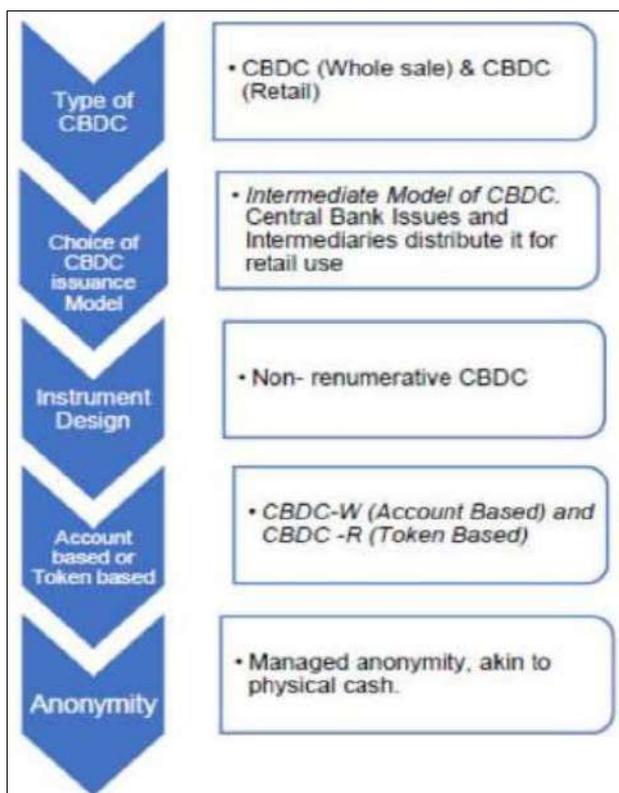


Fig 2: Design Choices snapshot

Implications of CBDC for Liquidity Management

CBDC – Like Physical Currency – will be an autonomous source of system wide change in liquidity which needs to be

However, such scenarios can be addressed through appropriate limits on CBDC holdings and transactions.

Central banks are exploring safeguards that could be built into any CBDC to address financial stability risks; although such measures may need careful consideration before they are used. Central banks might consider measures to influence or control CBDC adoption or use. This may include measures such as access criteria for permitted users, limits on individuals' CBDC holdings or transactions, and particular choices around CBDC remuneration.

Many studies argue that CBDC is likely to weigh on bank profitability and lending. If banks respond to a CBDC by increasing reliance on market funding, then depending on the type of market funding banks' maturity transformation and their liquidity risk may face upward pressure because of more reliance on less stable funding sources, or some downward pressure if market discipline increases. The volatility of market-based funding may also increase the pro-cyclicality of bank lending.

Legal Implications of CBDC

CBDC requires a legal framework that clarifies whether the central bank has the mandate to issue CBDC and what status it would have legally. Existing legal frameworks were typically enacted in a pre-digital age and investigating CBDC therefore also entails ascertaining whether law reform is necessary to ensure that a CBDC can be issued by the central bank.

The legal considerations for issuing CBDC will mainly be dependent on the final operational and technological design features. Depending on the forms of issuance either as account or token based CBDCs, they shall carry different legal significance. The account based CBDCs which is like the existing account forms of money shall not be considered to be a new form of money, instead as the digital form of 'book money', which are credit balances on accounts. In contrast, token-based CBDCs are a new form of money where the central banks' liability is incorporated in the token.

Most of the central banks derive their powers from their laws to issue a currency in the form of banknotes and coins, book money and bills. Some central banks even have broader remit to issue currency more generally, which could encompass CBDC. If the central banks decide to issue token based CBDCs, central banks shall need to have the power to issue currency in general rather than limiting their powers to only banknotes and coins. Similarly, if the central banks decide to issue the CBDCs in account form, legal amendments shall be required to allow central banks to open accounts for the public since currently the central banks are generally capable of opening bank accounts but with certain restrictions as to who can hold an account with the central banks. The issuance of CBDC in token-based form shall create a parallel payment system and if the payment system function of central banks is restricted to only interbank systems, the implications of the CBDC issuance on laws pertaining to payment systems shall also need to be considered.

Along with the central bank laws, the monetary law of the country also needs to be changed on the issues including the right of issuance of CBDC, legal tender status, and criminal law protection from counterfeits etc. However, there isn't much distinction between central bank and monetary law and the amendments in the legislation shall be replicated in

the central bank law. Accordingly, in order to create and issue CBDC, we need to carefully consider the potential amendments of existing laws or the creation of laws before CBDC issuance.

The introduction of CBDC in India by the Reserve Bank required enabling legal framework since the legal provisions were made keeping in mind currency in paper form. Under the Reserve Bank of India Act, 1934, the Bank is empowered to "...regulate the issue of bank notes and the keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage" (Preamble). The Reserve Bank derives the necessary statutory powers from various sections of the RBI Act – with respect to denomination, form of banknotes, status as legal tender etc. The necessary amendments to the Reserve Bank of India Act, 1934 relating to enhancing the scope of the definition of 'bank note' to include currency in digital form and non-applicability of certain sections that are applicable to physical currencies alone and not relevant for digital currency, have since been passed by the Parliament.

Merits of Central Bank Digital Currency

A Combination of Traditional and Innovative: CBDC can gradually bring a cultural shift towards virtual currency by reducing currency handling costs.

CBDC is envisaged to bring in the best of both worlds - the convenience and security of digital forms like crypto currencies, and the regulated, reserved-backed money circulation of the traditional banking system.

Easier Cross-Border Payments: CBDC can provide an easy means to speed up a reliable sovereign backed domestic payment and settlement system partly replacing paper currency.

It could also be used for cross-border payments; it could eliminate the need for an expensive network of correspondent banks to settle cross-border payments.

Financial Inclusion: The increased use of CBDC could be explored for many other financial activities to push the informal economy into the formal zone to ensure better tax and regulatory compliance. It can also pave the way for furthering financial inclusion.

There is a need to enforce strict compliance of Know Your Customer (KYC) norms to prevent the currency's use for terror financing or money laundering.

Risks Associated with CBDC

- **Privacy Concerns:** The first issue to tackle is the heightened risk to the privacy of users—given that the central bank could potentially end up handling an enormous amount of data regarding user transactions. This has serious implications given that digital currencies will not offer users the level of privacy and anonymity offered by transacting in cash.
- **Compromise of credentials** is another major issue.
- **Disintermediation of Banks:** If sufficiently large and broad-based, the shift to CBDC can impinge upon the bank's ability to plough back funds into credit intermediation.
- If e-cash becomes popular and the Reserve Bank of India (RBI) places no limit on the amount that can be

stored in mobile wallets, weaker banks may struggle to retain low-cost deposits.

Other risks are

- Faster obsolescence of technology could pose a threat to the CBDC ecosystem calling for higher costs of up gradation.
- Operational risks of intermediaries as the staff will have to be retrained and groomed to work in the CBDC environment.
- Elevated cyber security risks, vulnerability testing and costs of protecting the firewalls
- Operational burden and costs for the central bank in managing CBDC.

Measures to Overcome the Risks of CBDCs

In order to obviate some weaknesses of CBDCs, the usage should be payment-focused to improve the payment and settlement system. Then it can steer away from serving as a store of value to avoid the risks of disintermediation and its major monetary policy implications.

The data stored with the central bank in a centralised system will hold grave security risks, and robust data security systems will have to be set up to prevent data breaches. Thus, it is important to employ the right technology that will back the issue of CBDCs.

The sizing for the infrastructure required for the CBDC will remain tricky if payment transactions are carried out using the same system. The RBI will have to map the technology landscape thoroughly and proceed cautiously with picking the correct technology for introducing CBDCs.

The financial data collected on digital currency transactions will be sensitive in nature, and the government will have to carefully think through the regulatory design. This would require close interaction between the banking and data protection regulators.

Also, the institutional mechanisms would need to ensure that there is no overlap between different regulators and chart out a clear course of action in case there is a data breach of digital currencies.

Conclusion

All the above discussed Scenario reflects a clear image of CBDCs and digitalization era with pros and cons analysis. Digitalization and e-currency is concern with the area of financial technologies i.e. implementation of technologies into the field of finance is very sensitive in nature and the government evaluate various risk and challenges before full-fledged launching of any programme by skilled Professionals and technical Person. Here the capital or fund of all stake holders involve and with digital skill and technologies. Big-techs companies and other popular Information technology companies may play a major role in the Management and security of Data.

Last but not least in this transformation scenario adaption is the key of Success. While considering the security aspect of the CBDCs may be guided by some of the most-used risk and security frameworks, guidance, and standards. CBDCs, the central bank digital currency, holds a lot of promises by way of ensuring transparency and low cost of operation among other benefits and the Potential to expand the existing Payment systems to address the need of a wider category of users. This Concept note provides a high-level view motivations for the introduction of CBDC in India, its

potential design, features, implications on various policy issues and the possible requirements of a technology platform. All these above steps being leads to boost the Indian economy with the development of financial market.

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