The Reserve Bank of India pilots Central Bank Digital Currency, e₹-W and e₹-R

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1. Introduction

The Reserve Bank of India (RBI) has launched pilots of its Central Bank Digital Currency (CBDC) in Wholesale and Retail segments. What is a CBDC? Currency is a liability issued by the central bank of a country or exclusively issued by the sovereign. Currency, usually issued in paper or polymer form is legal tender/fiat. To quote Sankar (2021), A CBDC is the legal tender issued by a central bank in a digital form. It is the same as a fiat currency and is exchangeable one-to-one with the fiat currency. Only its form is different". The CBDC pilot in wholesale segment, the Digital Rupee -Wholesale (e₹-W), was launched on November 1, 2022. Currently, the use of e₹-W is limited to settlement of secondary market transactions in government securities in this pilot. The inter-bank market is expected to be more efficient with the use of e₹-W. On December 01, 2022, RBI launched the pilot in retail segment, the digital Rupee-Retail (e₹-R). The pilot is limited to a closed user group comprising participating customers and merchants. In the first phase of the pilot, RBI identified four banks namely the State Bank of India, ICICI Bank, YES bank, and IDFC First Bank. Four more banks i.e., Bank of Baroda, Union Bank of India, HDFC Bank, and Kotak Mahindra Bank join the second phase of the first pilot making the total to eight banks. In the monetary policy press conference held on Feb 8, 2023, Shri T Rabi Sankar, Deputy Governor of the Reserve Bank of India, said that about 50,000 users were participating in the retail CBDC pilot along with about 5000 merchants. The number of participating banks is expected to be increased by RBI in the near future. The pilot is taking place in 5 cities at present and 9 more cities are going to witness the pilot soon. Mr. Sankar also added that the total number of transactions were about 7,70,000 and they were of small value in nature. Thus, RBI is moving slowly with the pilot with a gradualist approach to understand the possible impact of CBDC's use in retail segment, and the risks involved etc. This article attempts to trace the genesis of CBDC in India, the current state, and possible uptake of CBDC given the current user experience in digital payments.

2. Genesis of CBDC in India and the Current State

In the global context, a survey of the central banks by the Bank for International Settlements (BIS) in 2021 found 86% of the banks to be actively researching the potential for CBDCs, 60% were experimenting with the technology and 14% were deploying pilot projects. The global interest in CBDCs may be attributed to decreasing use of paper currency, increased use of electronic/mobile money, increased use of private virtual currencies like cryptocurrencies with detrimental consequences. The objective is to fill the public's need for digital currencies, which is unmet so far or partially met by harmful private virtual currencies. In the Indian context the discourse on CBDCs is largely seen as a response to the increased use of private virtual currencies more as speculative assets than currencies. The private virtual currencies have been a reality because of growing Fintech and the Blockchain technology being a major part of it. To quote Gandhi (2017), *"…the Blockchain Technology is also another disruptive innovation. The blockchain is an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value. Blockchains are an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. Using this technology, certain innovative products which have come on the scene have excited a large section of people around the world.*

I am referring to the BitCoins phenomenon. The way the BitCoins have caught the imagination, generated interest, and gained value has led to some quarters predicting end of the currency system". According to RBI the other advantages of CBDC lies in the following. First, in retail transactions CBDC replaces bank balances in India's pioneering Unified Payments Interface (UPI) and the settlement risk is reduced. Secondly, CBDCs globalize the payment systems making payments more real-time and cost-effective. In the Indian context, one sees a unique scenario, i.e., increased digital payments coupled with a sustained interest in cash usage. Though the currency with the public as part of the broad money supply (M3) has declined over the last few decades, the currency/GDP ratio remains high. The data from RBI's monthly payment system indicators, Dec 2022[1], indicate a sustained increase in retail digital payments through the periods of lockdown and unlocks during the pandemic. Specifically, the UPI has witnessed 71% growth in volume and 55% in value from December 2021 to December 2022. The UPI revolution has been made possible by the National Payment Corporation of India (NPCI). The NPCI, an umbrella organization for operating retail payments and settlement systems in India, is an initiative of Reserve Bank of India (RBI) and Indian Banks' Association (IBA) under the provisions of the Payment and Settlement Systems Act, 2007, for creating a robust Payment & Settlement Infrastructure in India. As on January 2023, 385 banks are live on UPI with about 70 mobile based apps available to the public for use. Is there a case for CBDC given such growth in digital payments and UPI today? Maybe CBDC will replace some cash usage as long as anonymity is assured. The segment of cash users is hesitant to go digital since they want anonymity and privacy in their payments. If adopted and used CBDC will

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[1] Payment System Indicators, December 2022, RBI, www.rbi.org.in

replace cash to some extent and reduce the cash logistics in the country including costs of printing, storing, and distributing currency.

In October 2022, just before launching the CBDC pilot, RBI's Fintech department released a concept note on CBDC. The note says, *"Reserve Bank's approach is governed by two basic considerations – to create a digital Rupee that is as close as possible to a paper currency and to manage the process of introducing digital Rupee in a seamless manner*". The concept note also discusses, *"key considerations such as technology and design choices, possible uses of digital rupee, issuance mechanisms etc"*. Further says the note, *"The key motivations for exploring the issuance of CBDC in India among others include reduction in operational costs involved in physical cash management, fostering financial inclusion, bringing resilience, efficiency, and innovation in payments system, adding efficiency to the settlement system, boosting innovation in cross-border payments space and providing public with uses that any private virtual currencies can provide, without the associated risks"*.

The key design choices for issuing CBDCs include (i) Type of CBDC to be issued (Wholesale CBDC and/or Retail CBDC), (ii) Models for issuance and management of CBDCs (Direct, Indirect or Hybrid model), (iii) Form of CBDC (Token-based or Account-based), (iv) Instrument Design (Remunerated or Non-remunerated) and (v) Degree of Anonymity.

As per recommendations of the internal Working Group (WG) set up by Reserve Bank in October 2020, RBI has been exploring the option of implementation of account-based CBDC in Wholesale segment and token-based CBDC in Retail segment vide a graded approach. In the recent pilot of e₹-R RBI declared that the e₹-R would be in the form of a digital token with legal tender character. The e₹-R would be issued in the same denominations as the current issuance of paper currency and coins. The distribution is through the banks. Users will transact with e₹-R through a digital wallet offered by the participating banks and stored on mobile phones / devices. These transactions can be both Person to Person (P2P) and Person to Merchant (P2M). QR codes displayed at merchant locations can be used to make payments to merchants. The e₹-R just replaces physical cash having the same features like trust, safety and finality in settlement. Though the e₹-R can be converted to other forms of money, like deposits with banks, it doesn't earn any interest. The e₹-R seems to have some components of block chain technology though no detail is available on the same as of now.

3. Some Insights from Research

In this section the analysis is limited to the uptake factors and related issues about CBDC in light of the user experience in India. The macro policy and legal implications of CBDC's introduction is discussed in the concept note published by the RBI. A few studies are conducted by RBI and independent researchers on factors leading to uptake of digital payments. The results of a pilot survey conducted by RBI and published in the RBI Bulletin in April 2021 indicate that cash remains the preferred mode of payment and also for receiving money for day-to-day expenses.

Another study by Saroy et al. (2022) attempted to ascertain whether the COVID-19 pandemic-led rise in digital payment transactions was a temporary or permanent response by analysing micro-level factors. The study used a stratified sample survey titled 'Tracking Digital Payments Awareness, Adoption and Use Behaviour of Households' conducted by People Research on India's Consumer Economy and Citizen Environment (PRICE), in collaboration with the National Payments Corporation of India (NPCI), comprising of 5314 households across India. Among the dominant factors, awareness and access to digital payment modes were found to play a vital role in adoption of digital finance. Also, proximity to bank and banking personnel were the other factors that could enhance the penetration of digital inclusion. For people dependent on Direct Benefit Transfer based income support; claiming their entitlements ensured their shift to digital modes of payment.

In a study by Acharya (2022)[2] conducted qualitative research and studied factors leading to digital payment uptake and digital payment hesitancy in select regions of Telangana state in India. The study found seven important factors shaping the digital payment behaviour versus cash among people. These factors are the ease and convenience of using the UPI-based apps, ways of verification in apps like a green-tick, doing the one-rupee test before making payments, transaction failures and risk perception, the role of fraud and dispute resolution in building trust, the diversified payment preferences of senior citizens, and the "cash-only" payment preference of certain users. The response to digital payment innovation and adoption varies across users. For example, very small vendors on the street prefer UPI to cash due to fungibility and ease of use. They also found it to be safe since they don't have to store cash and lie with the fear of theft on the roadside. On the contrary the educated say a group of senior citizens are more concerned about finality in digital transactions, disputes, and lack of proper dispute settlement mechanisms when transactions fail, or fraudsters dupe the senior citizens. The data from RBI shows the volume of domestic payment frauds at 1.54 lakh in volume as on December 2022.

[2] This work was conducted as an independent 2022 research project on central bank digital currency and financial inclusion, in collaboration with Maiden Labs, the MIT Digital Currency Initiative, and the Institute for Money, Technology and Financial Inclusion, and funded by the Gates Foundation.

4. Concluding remarks

To sum up, the current experience of digital payment users will decide the future of CBDC adoption in the retail segment. Studies on digital payments have been largely survey based and quantitative in nature to elicit factors underlying its uptake. The qualitative aspects are missed out in such studies. The assessment of RBI from its pilot in the closed user groups may lead to improved design choices and architecture. As RBI widens the scope of the pilot with more banks and users the assessment of the whole process of CBDC creation, distribution, and use in retail transactions may improve. What we have seen in the context of UPI is that people have been initiated, educated by their friends in the absence of adequate literacy material or campaign on payment modes by the apex bodies. Even the available material has not reached people in a big way. Thus, the adoption of retail CBDC is expected to be uneven and dependent on literacy, risk perception, privacy, and incentives given to switch to CBDC from cash. Lastly, CBDC by itself may not accelerate financial inclusion rather those already included financially may adopt CBDC faster.

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