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Review Article

Monetary Policy Implications of Central Bank Digital Currency with special reference to India

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Abstract

All over the world, the pilot projects to introduce central bank digital currency have been running with the initiative of Bank for International Settlement. India is one of them to issue CBDC very soon after passing the law. The merits of CBDC, the digital payment situation in India as well as banking literacy are the prime issues of this paper in discussing the several analytical frameworks of central bank digital currency monetary policy avenues as developed by several economists who are involved in the research of CBDC issuances, designs and applications some of which positive impacts are still unexplored.

Key words: *Central Bank Digital Currency; Monetary Policy; Interest-Bearing; Non-Interest Bearing; Zero Lower Bound; Financial Crisis*

JEL Classification Codes-C72, C73, D53, E42, E52, E58, G21, G23

Introduction

More than 80% central banks of the world have been examining the prospects of introduction of central bank digital currency with the help of implementing projects. Peoples Bank of China had launched digital yuan in Luohu district of Shenzhen in October 2020 and in Suzhou city in 2021.In Sweden, e-krona was introduced as central bank digital currency from 2020 as a pilot project. Bahama introduced sand dollar as CBDC in October 2020 using in two districts namely Exuma and Abaco as pilot project pegging with US Dollar at 1:1. Eastern Caribbean Central Bank started to introduce D Cash as pilot projects in Antigua and Barbuda, Grenada, Saint Christopher (St Kitts) and Nevis and Saint Lucia in Eastern Caribbean Currency Union. Kenya has introduced M-Pesa as its CBDC and Ecuador has introduced CBDC as trail run. The Bank of England, Central Bank of Canada, European Central Bank have initiated to launch the central bank digital currency. Even, Federal Reserve Bank of USA showed keen eagerness to introduce digital dollar to face the catapulting impact of cryptocurrencies in the world. Reserve Bank of India has been started working on the project of CBDC with the guidance of Bank for International Settlement through the legal approval of the Government of India which had a long experience of using electronic payment systems domestically as well as internationally through wallets, RTGS/NEFT, internet banking services and so on. Sankar (2021)-the Deputy Governor, Reserve Bank of India had addressed that the monetary policy is not identical with present banking system since the patterns and structure of liquidity availability will change the banking behavior during the process of demand and supply of CBDC including leakages. In the monetary transmission the lowering interest rate towards negative rate which is unconventional monetary tool and even the CBDC might carry the technological risk of cybercrime which is to be under policy

consideration to combat for protection of customers although he emphasized that the introduction of CBDC requires fundamental legal framework via the approval of Parliament. Narula (2021) assured that if the designs and architectures are perfectly prepared, then the potentialities of CBDC to improve financial inclusion, monetary and economic implications, and to protect financial stability and to reduce risk and cost are highly innovative and acceptable.

The successful launch of central bank digital currency consists of many factors for considerations including its fundamental choice of design irrespective of its infrastructural opportunities while its progress of success depends on the effectiveness of monetary policy concern on which digital central banking structure rests upon. In this article, the author will endeavor to through light on the issues on central bank digital currency monetary policy with special emphasis on Indian economy.

Review of Literature:

Scope of Central Bank Digital Currency

Central Bank Digital Currency is a form of electronic money that will be legal tender of Government of India. It should have store value and exchange value where government is liable to guarantee of its unit of account as like as fiat currency as of now without fiduciary reserve system although any government can introduce it by keeping reserves either in metals or in foreign currencies or in SDR that will give the guarantee of stability of the currency. The introduction of CBDC has potential to provide significant benefits such as reduction of cash dependence, lower transaction cost which will produce higher seigniorage, lowers settlement risks and will be legal tender with one to one exchangeable between notes and CBDC which will be more robust, efficient, trusted and regulated(Sankar,2021).CBDC produces very fast transaction process having millions of transactions per second with minimum cost under the block chain technology with distributed ledger. The centralized block chain technology bears less risk with control mechanism at the hands of a government or agency. It will accelerate the process of development of Fintech and Bigtech houses in functioning the payment mechanism both domestically as well as internationally under the multi-design CBDC models of transactions. On the contrary, redistribution of monetary base of an economy will switch to the Fintech and multinationals more speedily than the poorer people if it is decentralised. If the system of risk factors, money laundering process, shut down of banks, quick regulations of non-banks and financial institutions including foreign banks can be controlled by the efficient monetary policies of central bank and by the legal framework of the government, then the CBDC must be a revolutionary process in changing the concept of history of money. The cross-border payment system will be fast, secured, trustworthy, authenticated with less cost in which conducting of exchange rate mechanism among cross countries will be more calculative, easily accessible, perfect and scientific and stable. The most socio-economic and geo-political advantages of CBDC are [i] to control crypto currencies, [ii] to control private money, [iii] to involve fair competition against private financial institutions and non-banks around the world, [iv] forthcoming financial reform can be integrated with the technological innovation to achieve faster growth. Prasad (2021) thought that a central bank can implement monetary policy effectively in retail CBDC even when interest rate is zero or negative. A central bank could reduce deflationary risk substantially by injecting outside money in weak economic activity or looming crisis when banks slow down since central bank can increase or decrease supply of outside money to escape from liquidity trap. Even government can create to insist central bank to substitute CBDC by creating budget deficit.

Issues of monetary policy

The heart of CBDC lies on its formulation of design by which the monetary policy depends upon. Since the experiments and the outcomes of CBDC have just began then its implication of monetary policy raises many issues of analyses as developed by expert-economists in the wide ranges. According to Bjerg (2017) the monetary policy is simple in the central bank digital currency system because it is understood that the money supply would actually become a money supply and the central bank is the

sovereign and supreme institutional power to increase or decrease the stock of money since it is only the source of supply of money. Therefore, the monetary policy of the central bank will not depend on central bank reserve, interest rate adjustments and commercial bank money creation.

However, the monetary policy of CBDC in general related with its features and design. Since CBDC is electronic, fiat liability of a central bank and is used for settling payments and treated as store of value then CBDC can support monetary policy, perform financial stability, protect national payment system, can provide universal access to electronic payments. CBDC may be interest bearing, short term as well as long term which are liability to central bank that can stabilise inflation and output. It can pay interest to banks and nonbanks in two different rates. Former regulates monetary policy later regulates demand for CBDC. Zero interest rate of CBDC could not perform monetary policy. CBDC is freely convertible to reserves and cash in central bank and commercial bank deposits to ensure monetary stability. CBDC should be interest bearing in conducting monetary policy when accessible and freely convertible to bank money and commercial bank deposits to fulfil the macroeconomic objective of stability. If central bank uses CBDC as substitutes for bank notes, then there will be no implication of monetary policy but when it starts servicing monetary policy has many implications. In floor system interest bearing CBDC, central bank needs to expand money supply, but demand is less than supply under quantitative easing programme because no sector other than central bank hold reserves. Central bank can pay different interest rate to bank and non-bank holders of CBDC in which banks play in the monetary transmission mechanism. The spread between the banking-sector CBDC rate and the nonbank CBDC rate would therefore provide an extra dimension to the stance of monetary policy (Meaning *et al*., 2021).

Pfister (2017) emphasised that the widespread use of CBDC may produce deflationary situation in a growing economy which will disturb the potentiality of monetary policy and business cycles. These risks materialize if sovereign currencies were hit by a major credibility loss. Also, the limitation of monetary policy transmission mechanism may prevail. Central bank will be able to set negative interest rate till its existence. Yet, the lender of the last resort function of central bank could be enlarged due to increased substitutability between liabilities of central and commercial banks. Both will compete and public will accept it on the question of refinancing. Central bank may reduce its demand for reserves and form monetary policy by withdrawing rather than supplying liquidity. Kumhof and Noone (2018) suggested that the fundamental ability of depositors to exchange commercial bank money for central bank money on demand is to maintain the confidence in bank deposits. The functions of lender of last resort, liquidity regulations, and deposit insurance of the central bank ensured it, and this is always possible.

CBDC would most probably have an impact on monetary policy implementation, transmission mechanism and in extreme cases on the monetary policy strategy. However, the scale of these effects would depend on demand for this new form of money, as well as design. Many explanations admitted that the introduction of CBDC might impact monetary policy transmission mechanism only if CBDC is interest-bearing. In the opposite case, the transmission mechanism is affected only if the interest rates are close to zero (Beniak, 2019).

Brokke and Engen (2019) ensured that an entirely digital CBDC could in theory introduce more flexibility for the central bank's monetary policy effectively by passing the current zero lower bound. If the central bank issued a CBDC with deposit accounts at the central bank, which pays interest, then consumers would be incentivized to move their funds there. That is unless the commercial bank can offer a higher interest rate on their deposits. This interest-bearing CBDC would serve a similar role to short-term government bonds as it would be the risk-free rate in the economy, but it would have far lower friction when transferring funds. Therefore, an interest-bearing CBDC would set a floor for the rate on short-term government

bonds while banks would be able to compete effectively with a CBDC as long as the interest rates were not too high, but there might be a modest contraction of intermediation, increased volatility, and less funding for the commercial banks. In this context, Williamson admitted that cash is the only withdrawal option when interest rate is zero. When nominal interest rate is safe and liquid asset is high then it has incentive to run spreading to high level because holding cash has a large opportunity cost and so households know that banks do not hold much of it. In the sub-optimum strategy, banks do not expect much cash. Thus, Williamson concludes that CBDC issuance may encourage banking panics, which may go hand-in hand with panics in a world with physical currency.

The floor level interest rate on CBDC in the money market to provide liquidity can be analyzed on four existing transmission channels like interest rate channel, bank lending channel, credit channel, exchange rate channel and most probably all of them could strengthen because CBDC can become a new instrument affecting interest rates. Since CBDC provides more flexibility to central bank in conducting monetary policy to monitor portfolios of CBDC and can cross subsidize between different types of agents, but these actions are not possible if agents use cash because of its anonymity during making transactions, then central bank can circulate both cash and reserves to control the response of monetary policy transmission channels. When negative interest rates stimulate economic agents to use cash then low or zero demand for cash is required to achieve negative rates. That is why the reduction of the number of high denomination banknotes in circulation is an important condition for the successful overcoming of zero lower bound (Mondello, Sinelnikova & Trunin, 2020). If CBDC is introduced, central bank need not consider commercial bank as intermediary but can purchase directly from non-banks with quantitative easing which can remove the lower bound on nominal interest rates and allow central banks to conduct policy solely by changing the interest rate on CBDC (Barrdear & Kumhof, 2016).

Gross and Schiller (2021) analyzed that in case of non-interest- bearing CBDC, the central bank cannot directly govern the demand and prevent substantial accumulation. Two alternative policies can mitigate CBDC induced disintermediation other than the strong commitment to full allotment, e.g.,[i] the central bank can limit the supply of CBDC by introducing a cap on CBDC holding of an individual,[ii] policy-makers could target the perceived risk in the financial sector by providing deposit insurance schemes which can helped to maintain trust in the financial sector during the global financial crisis.The CBDC will be able to bear a new monetary policy as a risk-free, liquid and creditworthy asset if CBDC is considered as non-interest bearing and replace the majority of the cash. In this situation the financial institutions can challenge CBDC as a store of value by providing complete services like wealth management and the switch from deposit accounts and traditional instruments would not be as drastic and the possibility of risk and the intensity of financial crisis would be low. Above all, a non-interest bearing CBDC would have no direct impact on the interest rate decisions but if CBDC would bear interest, it should be integrated into the implementation of the monetary policy.

Auer *et al*. (2021) examined that it is possible that the zero lower bound could contribute to establish optimal inflation targets during the courses of business cycle and could able to eliminate the presence of liquidity traps. At the Central bank's monetary policy strategy CBDC would allow to move inflation targeting to price level targeting as Bordo and Levin (2017) explained that price level targeting would facilitate the formulation of consumption and investment plans of households and firms because the cost of a representative basket of consumer items (as measured in terms of the CBDC) would be reasonably stable over the medium run and roughly constant in the longer run. It could benefit also the lower-income households and small businesses in cases of any risk.

Nuño (2018) rightly claimed that even if non-remunerated, the introduction of CBDC if it is

non-interest bearing might affect financial stability because central bank money could be perceived as safer than the deposits at commercial banks during the financial crisis.
The introduction of a new risk-free asset (especially if remunerated) would necessarily affect the profitability of the banking sector and might encourage depositors to withdraw funds particularly during bouts of banking panic.
Williamson (2019) could not deny that due to bad investment choice banks can go bankrupt. Without knowing the causes but based on some observations, the depositors expect that bank may fail for which the depositors may switch their deposits to the "safe harbour" of a central bank liability. Williamson assumes that bank deposits circulate as a means of payment while in Digital Deposits are savings and consider for deposit insurance during a bank's default which is costly because it disrupts the payment system.

McLaughlin (2019) tried to conclude that the fight between commercial banks and CBDC for deposits and payment services might have considerable influence on financial stability and credit creation within the banks. The competition compels the commercial banks to escalate the deposit rates which can expand bank deposits and is beneficial for the financial system.

In the cross-border payments conducting exchange rate mechanism, Monetary Authority of Singapore (2021) observed that in introducing CBDC-based foreign exchange market under multi-currency CBDC platform in Singapore, there is no adverse impact on existing foreign exchange market given CBDC bank deposits which retains effective leverage over the operational target of monetary policy.

Finally, all the analytical issues developed by the experts are theoretical and extreme cases but the empirical issues according to the economic and political status are still uncovered even today all of which are in the experimental stages for verification, so that the ultimate monetary policy implications would rather bring out in successive periods.

Implications in India

Indian banking structure is basically unorganized and technologically backward than high income economies. The rural people are unaware of the central banking and commercial banking functions, banking crises and failures and other non-banking activities. They are unknown about digital currencies. The Global Findex Survey-2017 of The World Bank (2018) assured that 31% adults (15+) or 1.7 billion people in the world remains unbanked in which India constitutes 190 million or 11% where globally 56% adult women and 44% adult men are unbanked. Inequality also persists because poorest 27% and richest 13% adults are unbanked. The educational level of 62% unbanked adults is primary or less and remaining 38% are secondary or higher secondary level. The reasons of unbanked are many such as distance, requirement of documentations, distrust on financial system, religious reasons, one-member family, cost factor and lack of enough money. The survey stated that 93% adults in high income economies,79% adults in developing economies as well as 69% adults in India have mobile phones where both mobile and internet access constituted 82% in high income countries,40% in developing countries including India while men owned 43% and women owned 37% respectively.Globally,76% account holders made at least one digital payment in last one year in which 70% account owner live in developing countries in comparison with 97% in high income countries who generally use mobile banking through credit or debit cards. In developing countries the share of digital payment increased by 12% during 2014-2017 where the gender gap of using digital payment is 5%.(72% for men and 67% for women).In India ,66% mobile phone users with inactive account have been continuing digital payment(highest in the world).In the developing countries,18% adults reported that they use internet to check bank balance by the phone and globally,22% adults use internet to pay bills in past one year and 24% use to buy on line .The report confirmed that 80% adults in India have bank account in which 79% are in rural areas but in high income economies it is 94% as against 63% in developing countries.

Verma (2021) reiterated from the RBI report that India's Financial Inclusion Index is 53.9 in 2021 as against 43.4 in 2017 where 35% in access,45% in usages and 20% in quality were

assumed as weights in calculating Financial Inclusion Index. In India,80% adults have bank account where 77% are women and 40% poorest household constitutes 77% and 40% richest households are 82% so that gap of inequality is 5% only although 48% bank account holders are inactive in 2021.RBI Bulletin 2020 emphasized that digital payment through net banking, mobile banking, debit and credit card uses, mobile wallets, grew at the compound rate of 30%(1142 million in 2015 to 1928 million in April 2017).Mobile banking transaction grew more than 5 times from 19.75 million in April 2015 to 106.18 million in April,2017.Mobile wallet transactions rose from 387.6 million in April 2015 to 15408 crore in January,2020.In India the use of UPI, real time payment system and G-Pay increased from 17.9 million transactions per month to 1.3 billion per month in 2020.

Indian banking system is multi-dimensional where, commercial banks (private, nationalized and public, foreign), regional rural banks, state and central cooperative banks, and other financial institutions including non-banks co-exist under the regulation of Reserve Bank of India. Therefore, both the wholesale and retail CBDC introduction will produce good outcome. Centralized blockchain technology with distributed ledger design in both accounts based, and token based CBDC should be the strategy of implementation in India because rural banking structure will not be benefited in the process of fully digitalization of CBDC. Since, Indian people are less literate in digital banking therefore the claim of CBDC in both the directions should have attraction and confidence. So, the flexible monetary policy with interest bearing will facilitate the monetary base in domestic payment system as well as cross border payments where the probability of risk and banking crisis would be minimized.

Discussion

In case of wholesale CBDC system, if the interest rate of central bank is greater than the interest rate of other banks and financial institutions then funds will flow to central bank from the other banks and financial institutions which induced [i] a rise of purchase of bonds, and securities that will leads to inflation and [ii] fall in profit of commercial banks and financial institutions which implies a fall of purchasing equities, bonds and securities that will dwindle investment opportunities and loss of production and creates deflation. The offsetting effects will determine the net impact on the economy. Thus, the both anti-inflationary and anti-deflationary monetary policies may be required as needed for the circumstances.

In case of one-tier CBDC design, the increasing interest rate bearing CBDC may have greater impact of the demand for deposit of cash in the central bank otherwise the deposits will transmit to other financial institutions and non-banks, then the control over money supply for investment opportunities will be less effective that might lead to increase in private investment (Gnatenko, 2020). On the contrary, if non-interest bearing CBDC is the objective of central bank then the depositors will suffer from its store value as well as purchasing power of money and on the other hand, inflationary situation may hamper the monetary policy objective of price stability for strengthening capital market which will produce volatility in stock prices and in due course financial crises will arise where commercial banks and other institutions will face loss of supply of liquidity.

Conclusion

Price stability and financial stability of the monetary policy of central bank may fall in a great question on the design choice issues in India than in high income economies because the models developed by the economists in conducting monetary policy are mostly fitted in the cashless economy under CBDC regimes where zero bound level or negative interest rate have the possible effects from which the behaviors of central bank and financial institutions were worked out which are not suited for India in the initial stages of introduction rather India should improve its financial inclusion status speedily vis-à-vis financial sector reforms. The performances of India’s nonbank and private financial institutions are huge, India’s rural banking structure is unhealthy for issuing CBDC, India’s high NPA structure and low profit scenario of banks having unstable banking growth are the destabilizing factors of introduction of CBDC in India. However, it has ample scope to develop gradually step by step approach if CBDC

envisaged in actual socio-economic conditions in India. Above all, the progress of electronic payment system in India is mostly favorable to introduce CBDC in several stages. But it cannot be denied that the regulations and dimensions of controls of Reserve Bank of India must be enhanced and updated to confront with any financial and banking crises.

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