IMPACT OF CENTRAL BANK DIGITAL CURRENCY ON THE INDIAN ECONOMY

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ABSTRACT

To facilitate transactions, cash has been around for a long time, evolving from paper to digital forms. It has been a powerful force in establishing the modern payment system and now forms a crucial part of the global economic foundation. Central bank digital currency, or CBDC for short, is a digital currency backed by a central bank, supported by the government and issued by the country's central bank. The growing popularity of online payment platforms and other financial sector developments have brought into sharp focus the gaps in the current payment infrastructure. Since the advent of crypto currencies like Bitcoin in 2008, the role of central banks has been called into question. As a corollary, global monetary authorities' credit Central Bank oversight for fostering public confidence in the banking system. According to data supplied by the Bank for International Settlements (BIS), the percentage of international central banks planning to develop a CBDC has risen from 60% in 2017 to 80% in 2019. (Todd and Rogers, 2020). The purpose of this research is to investigate the impact that CBDC will have on the Indian financial sector.

Keywords: Coinage, Economy, Payments, Innovation, CBDC

INTRODUCTION

Adopting CBDC has various benefits, including fostering financial integration, enhancing transaction efficiency and security, and lowering the price of international money transfers (MAS & Bank of Canada 2019). The benefits of CBDC will be more apparent in nations with a less established financial system. CBDC's introduction will facilitate the elimination of many of the system inefficiencies that now limit the growth of the market and the world as a whole. Issuing CBDC might help governments with high inflation at home and foreign penalties from the international community. CBDC is preferable for any nation, established or developing, whose currency is vulnerable to counterfeiting since it lowers the cost of currency issuance, circulation, and monitoring. A counterfeit e-wallet is possible, but it's simpler to track down thanks to advances in technology.

In addition, the growth of CBDC may hasten the shift to a multi-polar reserve currency, which is an escape route from the present asset price inflation environment brought on by the worldwide competitive quantitative easing program. As a result, the central bank may be able to better account for the money supply, its structure, velocity, multiplier, time and space distribution, via the deployment of digital currency, which would improve the precision of monetary policy operations. Since CBDC is supported by reliable governments and is based on domestic accounts, it may be used to fight the widespread acceptance of privately produced digital currencies. Private stable coins (like Libra, recently rebranded as Diem) are another kind of digital currency that is difficult to control and has hazards to monetary policy and data privacy and exploitation of personal information.

REVIEW OF LITERATURE

These implications for a monopoly bank are the subject of Abdelfattah's (2018) research. With interest-bearing CBDC, the bank, which earns a profit in equilibrium, increases the equilibrium deposit rate to the same level as the interest rate on CBDC, rendering depositors indifferent. Key consequence is that the demand for deposits rises, both intensively (as current depositors are urged to save more) and extensively (as new depositors are also...
encouraged to save) (individuals who otherwise would choose to be unbanked are encouraged to pay the cost of accessing the banking sector). Therefore, CBDC's competitive pressure may ultimately lead to an increase in banks' depositor base. While it's conceivable that CBDC compensation reduces "banks' franchise value" (earnings), this may not always lead to increased interest rates on loans. Abdefattah maintains that disintermediation is avoidable since banks may still issue loans so long as they have access to the central bank's lending facility, which is the case in any corridor system.

The concepts of Barr dear and Kunho (2018) are expanded upon by Chiu et al. (2020), whomodel CBDC as an interest-bearing asset that competes with banks' deposits and investigate the effect of CBDC on bank lending. As with Barr dear and Kunho (2018) model, the banks in theirs are imperfectly competitive, which is the economic mechanism behind their baseline findings. Chiu et al. (2020) extend the theoretical work of Barr dear and Kunho (2018) by examining CBDC designs that take into account government instruments other than determining the rate of interest it pays, as well as the scenario where banks may hold CBDC to fulfill their reserve needs. Chiu et al. (2020) calibrate their model to the US and show that the implementation of a CBDC may boost lending by as much as 3.55 percent if the compensation rate is set appropriately. If the interest rate on CBDC is lower than that on checkable deposits, there is no influence on banks' activity; however, this is only true in a subset of the parameter space. If the CBDC interest rate is greater than the deposit interest rate, but not by too much, banks will react by raising deposit rates and expanding lending. The opposite is true if the interest rate on CBDC is too high; banks will reduce their deposits and lending.

Similarly, CBDC is seen as an asset having the same liquidity attributes as bank deposits by Brunner Meier and Neerpelt (2019). As in (2018), the creation of a CBDC need not alter the equilibrium allocation if the central bank loans to commercial banks. As long as I deposit liabilities are replaced by central bank loans to commercial banks and (ii) there is no effect on the constraints faced by households or the wealth distribution across households, they show that exchanging households' deposits for CBDC has no effect on the equilibrium allocation. It stands to reason that the portfolio choices of individual families and, by extension, the distribution of wealth across households will not change if CBDC does not alter the payoffs of households or ease or tighten the restrictions they confront. For private banks, the equilibrium remains the same only if the total amount of liabilities remains the same. As a result, the authorssuggest making the central bank's implicit lender-of-last-resort guarantee official.

Later research by Fernandez-Villa Verde et al. (2020b) analyses a model of bank runs in which banks might provide nominal contracts in the vein of Diamond and Diving (1983). 4 CBDC is conceptualized in their paper as bank deposits. A crucial trade-off is brought to light by their framework: when a run occurs on CBDC, the central bank is forced to liquidate its assets to compensate depositors, which raises prices and reduces real consumption. In the event of a bank run, the central bank may prohibit further withdrawals from being at their face value by raising prices. The price of this inflation is the abandonment of inflation targeting, however. It doesn't matter how much of a mandate the central bank has to keep prices stable; if there's a big enough run, it will fail. It is shown here that there is a positive chance of runs, and that a negative interest rate on CBDC is desirable during financial panics to control inflation.

Williamson (2019) investigates the CBDC's function as a form of payment in place of cash, which is vulnerable to theft, and bank deposits, which have a limited commitment from the bank to fulfill payback. Since the CBDC pays interest and is presumed to be theft-proof, its introduction into a society where households endogenously choose into banked (i.e., deposit users) and unbanked (i.e. cash users) may be Pareto enhancing and always raises the welfare of at least unbanked households.

Keister and Monnet (2020) examine the impact of CBDC on the government's policy space during times of economic crisis, with a particular emphasis on the liquidity features of CBDC as a method of payment. The central bank is better able to gauge the health of the financial system and intervene swiftly, when necessary, by carefully selecting the interest rate on CBDC to make it more appealing in times of stress. This paves the way for the government to prioritize welfare-enhancing policies above the best policies that could be implemented without a CBDC.

There are still many unanswered questions in this new literature. When deciding which currencies to include in their portfolios, households must weigh many factors. We think the most important question is what aspects of CBDC as a payment method and a store of value are most important to them. Individuals' preferences across payment methods are heterogeneous and not fully explained by demographic characteristics like income and age, as shown by empirical studies of consumer payment choice such as Koulayev et al. (2016). Because CBDC will first and foremost increase the number of payment and savings options available to households, an understanding of consumer payment choice is essential for a
complete theoretical analysis of the macroeconomic and microeconomic effects of introducing a CBDC.

IDENTIFICATION OF RESEARCH GAPS

As was indicated above, one idea that underpins the growth of privately issued cryptocurrencies is the possibility that digital currency might play a significant role in expanding people's access to the global economy by facilitating easy and inexpensive international transactions. By allowing people to hold and transfer assets without the need for CB-issued fiat money, cryptocurrencies pose a threat to the conventional pillars of the financial system and diminish the function of central banks. Therefore, CBs would be more skeptical of cryptocurrencies since an unregulated portion of the monetary system would undermine their function as lenders of last resort. The People's Bank is contemplating imposing guidelines on the growth of such money.

However, if digital currency, like regular fiat money, can be created by a CB and is recognized as a stable legal tender, the issue would be resolved. Since CBDC is a CB-backed legal tender, it eliminates legal risk in large transactions and has more credibility than privately issued money. Furthermore, its monetary value is much less volatile than cryptocurrencies because the CB would ensure it is used for transactions instead of speculation, and the CB could employ nominal anchors that control the monetary value. If CB were to issue, manage, and regulate a CBDC, it might ensure its place in the financial system even if the country were to rapidly transition towards a cashless society.

SCOPE OF THE STUDY

The main scope of the study is how digital currency impact central bank and the users of the same. And this study is restricted to CBDC of India.

RESEARCH OBJECTIVES

- New money that can only be held in digital form, issued by central banks, is called Central Bank Digital Currency (CBDC).
- To facilitate digital transactions and transfers, the central bank may issue widely disseminated digital coins instead of paper currency.
- Increased availability of cheap digital payments may be facilitated via CBDC.
- In developing countries, where cash transactions are becoming less common as a percentage of GDP, this might make it simpler for the central bank to distribute money electronically.

RESEARCH DESIGN

The role of central banks in the economy cannot be overstated. As a whole, they have consistently delivered sound economic solutions that save time and money with little disruption. Currency and other means of payment are included in this category. Technology and the global economy have driven these leading organizations to reevaluate their core purposes and make necessary adjustments in recent years.

Central bank digital currency (CBDC) is described by the Reserve Bank of India (RBI) as digital currency issued by a central bank. It functions identically to fiat cash and may be traded for it at face value.

Beginning with the barter system, in which products were traded for 'money,' money as a notion has progressed through the ages to become metallic and paper currency, financial instruments, and now digital currency. No of the form, money has always had these three qualities:

- As such, it may be used to put away money for the future.
- In economic terms, it has the potential to function as a medium of exchange.
- In economic terms, it serves as a measure of value.
Money in this 'form' is currency, and it is money because it is issued, guaranteed, and accepted as legal tender by the central bank of a certain country.

TECHNIQUES FOR DATA ANALYSIS

The overall data was collected through 5 major white papers and these papers provided an array of information and a various perspective on the working of CBDC in different countries and in India, these papers also helped to understand the effects of implementing CBDC into the world, its challenges and its benefits for the world. This paper is an Exploratory study on the world's view on whether the world economy is in the right stage to implement CBDC into its economies.

DATA INTERPRETATION

1. Age

<table>
<thead>
<tr>
<th>Category</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 20 years</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>20-30 years</td>
<td>28</td>
<td>28%</td>
</tr>
<tr>
<td>30-45 years</td>
<td>38</td>
<td>38%</td>
</tr>
<tr>
<td>45 years and above</td>
<td>24</td>
<td>24%</td>
</tr>
</tbody>
</table>

Graph 3.3.1

INTERPRETATION

As can be seen in the accompanying table, 38% of respondents are between the ages of 30 and 45, while 45% are either younger than 45 or older than this age group.

2. Education Qualification

<table>
<thead>
<tr>
<th>Category</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>School education</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>UG</td>
<td>19</td>
<td>19%</td>
</tr>
<tr>
<td>PG</td>
<td>45</td>
<td>45%</td>
</tr>
<tr>
<td>Professional</td>
<td>16</td>
<td>16%</td>
</tr>
</tbody>
</table>
### Graph 3.3.2

<table>
<thead>
<tr>
<th></th>
<th>School</th>
<th>UG</th>
<th>PG</th>
<th>Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>35%</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>30%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- 50%: School
- 45%: UG
- 40%: PG
- 35%: Professional
- 30%: School
- 25%: UG
- 20%: PG
- 15%: Professional
- 10%: School
INTERPRETATION

45 people out of 100 surveyed hold advanced degrees; the others are either professionals (16%), college graduates (19%), or high school dropouts (2%).

3. Marital Status

<table>
<thead>
<tr>
<th>Category</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>70</td>
<td>70%</td>
</tr>
<tr>
<td>Unmarried</td>
<td>30</td>
<td>30%</td>
</tr>
</tbody>
</table>

Graph 3.3.3

INTERPRETATION

Respondents' marital status is shown in the following table. Out of every 100 people, 70 are married and 30 are single.

4. Occupation

<table>
<thead>
<tr>
<th>Categories</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>25</td>
<td>25%</td>
</tr>
<tr>
<td>Self Employed</td>
<td>15</td>
<td>15%</td>
</tr>
<tr>
<td>Salaried Person</td>
<td>35</td>
<td>35%</td>
</tr>
<tr>
<td>Other</td>
<td>25</td>
<td>25%</td>
</tr>
</tbody>
</table>
INTERPRETATION

Among a sample of 100 persons, 25% were students, 15% were self-employed, 35% were wage earners, and 25% fell into the "other" category.

5. When it Comes to India, What Kind of Effect do you Think Digital Money will have?

Table 3.3.6

<table>
<thead>
<tr>
<th>Category</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Reserve Bank of India's (RBI) new Digital Rupee will be included in the economy's monetary base.</td>
<td>38</td>
<td>38%</td>
</tr>
<tr>
<td>There will be a shift in the rate of cash circulation.</td>
<td>45</td>
<td>45%</td>
</tr>
<tr>
<td>The entire cost of transactions is projected to be lowered, resulting in efficiency</td>
<td>17</td>
<td>17%</td>
</tr>
</tbody>
</table>
INTERPRETATION

The following graph shows that the Reserve Bank of India's (RBI) new Digital Rupee will have 38% of its value incorporated in the monetary base, while the remaining 45% will be used for other purposes. The pace at which money circulates will change. 17% of total transaction costs are expected to decrease, improving productivity.

6. What Impact would a CBDC have on the Banking Industry?

Table 3.3.7

<table>
<thead>
<tr>
<th>Category</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compared to current cash-based use cases, CBDCs may provide improvements.</td>
<td>40</td>
<td>40%</td>
</tr>
<tr>
<td>Both improve efficiency and reduce cost of payment</td>
<td>50</td>
<td>50%</td>
</tr>
<tr>
<td>Lowering the cost of transactions and expanding access to the financial system.</td>
<td>10</td>
<td>10%</td>
</tr>
</tbody>
</table>

Graph 3.3.7

INTERPRETATION

The data in the table above suggests that CBDCs have the potential to improve upon existing cash-based use cases by increasing efficiency (40%) and reducing transaction costs (50%) and facilitating more access to the financial system.
7. **Explain the Impact of CBDC on India's Economy.**

**Table 3.3.9**

<table>
<thead>
<tr>
<th>Category</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through the efforts of the CBDC, all citizens now have access to all government services through their respective online portals.</td>
<td>45</td>
<td>45%</td>
</tr>
<tr>
<td>To ensure fair dealings between all parties and reduce instances of corruption</td>
<td>5</td>
<td>5%</td>
</tr>
<tr>
<td>Support in bringing government services to people all around the nation.</td>
<td>50</td>
<td>50%</td>
</tr>
</tbody>
</table>

**Graph 3.3.9**

**INTERPRETATION**

45% of Citizens now have access to all government services through their respective online portals thanks to the work of the CBDC; 5% of Citizens still do not. Half of Americans believe that expanding access to government services across the country is essential to fostering trust and reducing instances of corruption.

**RESEARCH OUTCOME AND FINDINGS**

Paper currency has seen a steady decline in popularity as the contemporary economy has become more digital. The advent of online payment systems has given consumers a new option for doing business with one another. Online payment methods, such as Alipay, have replaced paper currency in China. This is because it is far easier to scan a QR code with a mobile phone than to carry about a wad of cash. These online payment methods also pose a challenge to the central bank’s ability to govern the economy via the issuance of paper money. As a result, several national banks throughout the globe are contemplating following suit and creating their own kind of digital money. The purpose of this article is to analyze how the circulation of digital currency affects monetary policy and to provide suggestions for the implementation of CBDC. This study provides a thorough cost-benefit analysis of CBDC and discusses its efficacy.

**FINDINGS**

- As can be seen in the accompanying table, 38% of respondents are between the ages of 30 and 45, while 45% are either younger than 45 or older than this age group.
45 people out of 100 surveyed hold advanced degrees; the others are either professionals (16%), college graduates (19%), or high school dropouts (2%).

Respondents' marital status is shown in the following table. Out of every 100 people, 70 are married and 30 are single.

Among a sample of 100 persons, 25% were students, 15% were self-employed, 35% were wage earners, and 25% fell into the "other" category.

The following graph shows that the Reserve Bank of India's (RBI) new Digital Rupee will have 38% of its value incorporated in the monetary base, while the remaining 45% will be used for other purposes. The pace at which money circulates will change, 17% of Total transaction costs are expected to decrease, improving productivity.

The data in the table above suggests that CBDCs have the potential to improve upon the existing structure, depositors may readily withdraw their money, and hoard cash to become obsolete, a negative effect financial instrument, CBDC, if it were to bear interest like present fiat money and be kept without restriction. In order to participate in CBDC, households may transfer funds to a CBDC account held directly at CB. As a result, the CB may no longer have the same difficulties as they had while operating under the old fractional banking system, which provides them considerable leeway in setting the interest rate of CBDC. Being the only lender, the CB would not have to worry about a bank run if it established a minimum interest rate for CBDC.

An interest-bearing CBDC has the potential to be widely embraced as a risk-free store of wealth, and its interest rate may eventually become the primary tool used by the CB to implement monetary policy. As a result of the CB's capacity to manage the money supply via immediate open-market operations, the policy lag will be drastically minimized.

The zero-lower limit on the real interest rate is a principle that precludes most CBs from cutting interest rates too much. Under the existing structure, depositors may readily withdraw their money and hoard cash in order to avoid loss if the actual interest rate falls too much, particularly if it is negative. That interest rate lower limit would be a floor of any monetary policy trying to decrease the interest rate to encourage aggregate demand, even if the CB were able to solve the issue of the liquidity trap. A pure CBDC system does not have this lower limit. If paper currency were to become obsolete, a negative interest rate might be implemented because individuals would be less inclined to have large sums of cash on hand. This would increase the effectiveness of monetary policy in combating recession and restoring a more stable economic cycle. In a plan in which banknotes of high denomination value are first abandoned to free people from the dependency on conventional money in major transactions, such a future may arrive fast if the CB phased away present fiat money.

LIMITATIONS OF THE STUDY

- To include primary research of the Indian Populus on the implementation of CBDC, it will help prove a clarity if the country will accept it.
- An immersive comparative study with the whole world or a set of representative countries to analyze the world view on CBDC
- CBDC disproves this idea since it eliminates the need for the central bank to be the final lender, as is the case in a fractional banking system. There is a similar risk that the currency will cause a rush of capital across borders into state-backed cryptocurrencies, creating massive distortions in the foreign exchange market.

RECOMMENDATIONS

Investors in the economy would be impacted by the introduction of this new liquid and low-risk financial instrument, CBDC, if it were to bear interest like present fiat money and be kept without restriction. In order to participate in CBDC, households may transfer funds to a CBDC account held directly at CB. As a result, the CB may no longer have the same difficulties as they had while operating under the old fractional banking system, which provides them considerable leeway in setting the interest rate of CBDC. Being the only lender, the CB would not have to worry about a bank run if it established a minimum interest rate for CBDC.
- Second, there seems to be cause for alarm about the privacy implications of CBDC. CBDC, in contrast to Bitcoin, would leave a digital trail that could be tracked.

- People would desire greater anonymity while handling their money, but identifying features built into the currency would make it easy for governments to trace all transactions. Personal information may also be exposed if the transaction system is breached.

- Third, the central banks’ goal of economic stability would be undermined if CBDC are used to supplant traditional money, since this will cause widespread structural unemployment.

- Furthermore, CBDC can have the direct effect of disintermediation. This refers to the absence of banks or brokers from transactions between individual parties. This is risky since it threatens to flip the present financial system on its head. A further source of worry is the nations who suffer from a deficiency in technological infrastructure, regulatory capability, government engagement, or weak central bank independence.

CONCLUSIONS

To sum up, CBDC is a digital version of fiat money with official authorisation, meaning that central banks may carefully regulate its volatility and the general people can get access to a more trustworthy legal lender. Furthermore, the zero-lower constraint in the pure CBDC system is removed in the interest-bearing CBDC, so resolving the liquidity trap issue. To stimulate spending and investment, negative interest rates will bolster the effectiveness of monetary policy. The government would support an extension of CBDC beyond the present experimental one after examining the consequences of CBDC on the financial industry and the broader society, including the prevention of illicit activities and the rise of commercial transactions to raise tax collections. Since CBDC transactions are completely public, privacy is understandably a major worry. As a result, the next phase of CBDC study has to concentrate on solving the official database and technological issues related to CBDC issuance growth so that users’ personal information is safeguarded. The government has to keep a close eye on the economy and change its strategy appropriately. Despite these realities, there is still plenty of room for improvement to mitigate CBDC’s potential drawbacks given that the drug is still in the experimental phase. The central bank can address the issue of CBDC transfers by imposing limits on the amount that can be transferred between traditional banks and digital accounts, or by using interest rates to influence such transfers. International cooperation on border control policies is another possibility.

When it comes to keeping people’s private information safe, the government has more credibility.

The safety of government databases and computer networks is typically a top concern. This means that cyber-attacks are unlikely. Workers in the former financial services sector may need to undergo retraining as a result of the central bank’s sole responsibility for planning the eventual replacement of cash with CBDC.

SCOPE FOR FUTURE RESEARCH

It’s no secret that central banks throughout the world are investigating the potential benefits of digital currencies for economic development, monetary equality, technological advancement, and the streamlining of financial transactions. Since there is no need for a middleman, such as a bank, the transfer of funds may occur in real time and with little delay for the recipient.

- Income Tax Avoidance: Unreported or offshore banking cannot be used to hide the true nature of a person’s financial dealings from the central bank, making it almost difficult to avoid paying taxes.

- Third, if CBDC is implemented, the Central Bank will have an easier time keeping tabs on all of the cash in circulation.

- CBDC would be an acceptable replacement for real cash and cut down on the expense of creating currency.

- Fifth, seigniorage revenue, which is the profit made from the sale of paper currency over the amount needed to cover the costs of printing and distributing that currency.
The seigniorage revenue of governments would be unaffected if digital money were created in the case of the disappearance of physical cash.

Low Volatility: Because of its peg to gold, CBDC will not experience the same price swings as cryptocurrencies do.

It is possible to monitor and remove criminal activities such as money laundering and the financing of terrorism.

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