

Analysis the Effect of Issuing CBDC on Monetary Policy Effectiveness in USA and Egypt

Gaber M M Abdel Gawad (*)

(*) Professor of Economics, Faculty of commerce, Capital University (Helwan University Previously), Egypt.

Abstract

There are many countries issued central bank digital currencies CBDCs, and the rest of the world studying and investigating how to issue CBDC to avoid negative effect and enhance the positive effect of issuing its.

Monetary policy effectiveness means the ability of central banks to achieve its objectives (stability of prices and increase GDP growth rate) by using its tools (interest rate, and all tools that effect on money supply) effectively.

The CBDC is one of the components of money supply, so CBDC effects on monetary policy effectiveness, but from previous studies for this relationship, we founded that CBDC erode the monetary policy effectiveness and enhance financial inclusion. And this result different from Egypt to USA, USA is a leader and pioneer in all fields forever, but Egypt is emerging economy, both country studying and investigating how they can issue CBDC, so the result will depends on how every country will issues CBDC.

Keywords: CBDC, monetary policy effectiveness, potential issue of CBDC in Egypt and in USA.

DOI: 10.7176/JESD/17-3-02

Publication date: April 30th 2026

Introduction

USA and Egypt do not issue Central Bank Digital Currency CBDC yet, USA is the leader and pioneer in all fields forever, and Egypt is one of the emerging economies in the Middle East and North Africa (MENA), but both countries studying how to issue CBDC with respect the differences between both countries in digital economy and all aspects of economic fields and policies. Central Bank Digital Currency (CBDC) is an electronic form of banknotes, but different from virtual currency or cryptocurrency which are not issued by the state.

Digital currency uses for tow main component centralized CBDC, and decentralized cryptocurrencies like Bitcoin and Ethereum. We assume that digital currency means that centralize CBDCs only, like Sand Dollar for Bahamas {The Bahamian dollar (BS)}, the eNaira by the central bank of Nigeria, Jamaica's CBDC (JAM-DEX)¹, and the Eastern Caribbean Dollar (XCD).

Monetary policy tools and effectiveness are different in both countries also, so we will analysis the potential effect of issuing CBDC on effectiveness of monetary policy on growth, stability of economy (price stability of interest rate, exchange rate, inflation rate) in USA and Egypt.

The main hypothesis is that issuing CBDC will increase the degree of monetary policy effectiveness in both countries and the potential benefits include enhanced financial inclusion and a more efficient digital payment system.

Effectiveness of monetary policy depends on the ability of monetary policy instruments (interest rate, require reserve ratio, and exchange rate) to achieve its objectives or Kaldor magic square (economic growth, full

¹ Abdel Gawad, Gaber M M (2025), "Macro-Economic Analysis of Some Countries (Which Issued Digital Currencies), with USA and UK to Transfer them to Digital Currencies in Digitalization Era", *Journal of Economics and Sustainable Development*, (IISTE), Vol 16, No 5, PP 54-66.
<https://www.iiste.org/Journals/index.php/JEDS/article/view/63331>

employment, prices stability, and balance of payments), and its impact on macroeconomic variables in USA and Egypt.

Literature Review

BIS (2021), “Central bank digital currencies: motives, economic implications and the research frontier”, which shows in just a few years, central banks have rapidly ramped up their research and development effort on central bank digital currencies (CBDCs). A growing body of economic research informs these activities, often focusing on the “reserves for all” aspect of CBDCs for retail use. However, CBDCs should be considered in the full context of the digital economy and the centrality of data, which raises concerns around competition, payment system integrity and privacy. This paper gives a guided tour of the growing literature on CBDCs on the microeconomic considerations related to operational architectures, technologies and privacy, and the macroeconomic implications for the financial system, financial stability and monetary policy. A set of questions, particularly on the cross-border dimensions of CBDCs, remains unresolved, and calls for further work to expand the research frontier².

IMF (2016), “The Effectiveness of Monetary Policy in Small Open Economies: An Empirical Investigation”, IMF investigate the relative effectiveness of indirect and direct monetary policy tools in transmitting monetary impulses in Barbados, Jamaica and Trinidad and Tobago. A Taylor-type short-term interest rate was used as the indirect policy instrument and the required reserve ratio represented the direct policy tool. To conduct this analysis, the study estimated a restricted Vector Autoregressive model with Exogenous Variables (VARX), which incorporated the various sectors of the economy. The model also accounted for the imperfections in the financial sector in those countries in particular, excess bank liquidity and credit market imperfections. Overall, the results show that there is a weak transmission of changes in the policy interest rate because of high financial system liquidity. An analysis of the impulse response functions reveals that although an increase in the short-term interest rate has an instantaneous effect on commercial banks’ loan rates in Barbados and Trinidad and Tobago, this effect does not translate into a significant fall in private sector credit. Also, higher domestic interest rates lead to an appreciation of the real exchange rate and an increase in government expenditure in both countries. By contrast, in Jamaica, a higher policy rate leads to a real exchange rate depreciation, and a marginal significant increase in government expenditure after 5 months. The findings also show that in all three countries, the shock has a muted effect on inflation, which indicates that changes in the short-term interest rate are not sufficient to achieve price stability. Following the shock, output contracts immediately in Jamaica, but it takes 10 months for a fall in output to be realized in Trinidad and Tobago³.

European Central Bank (ECB) (2023) discuss the potential implications of a retail CBDC for the implementation of monetary policy. One of the main objectives of monetary policy implementation is to steer short-term market interest rates to the level that is considered appropriate for the monetary policy being pursued. For most central banks, this is achieved by, among other things, controlling the amount of reserves that the banking sector holds with the central bank. Given that a retail CBDC could have an impact on the stock of reserves, it is an important factor to be considered in relation to monetary policy implementation.

ECB summarized the impact of CBDC on monetary policy as Introducing a retail CBDC might change the amounts customers hold on deposit with the commercial banking sector. It is often assumed, or claimed, that a retail CBDC would reduce commercial bank deposits given that customers might convert some of their deposits into CBDC. And If a CBDC were to result in a reduction in bank deposits and the central bank did not lengthen its balance sheet, then the reserves the banking sector holds with the central bank might decline.

If monetary policy is implemented in a floor system, the introduction of a CBDC (i) may require additional central bank asset purchases or additional central bank credit offered at sufficiently favourable conditions and (ii)

² Auer, Raphael (et al.) (2021), “*Central bank digital currencies: motives, economic implications and the research frontier*”, BIS Working Papers, No 976, P 1.

³ Primus, Keyra (2016), “*The Effectiveness of Monetary Policy in Small Open Economies: An Empirical Investigation*”, IMF Working Paper, WP/16/189, P 21.

may increase the minimum amount of reserves required for a smooth monetary policy implementation. If monetary policy is implemented in a corridor system, the central bank could consider different strategies to respond to the introduction of a CBDC, such as more frequent monetary policy operations (including fine-tuning operations), a narrower central bank interest rate corridor or higher minimum reserve requirements⁴.

Chenyi Xue (2025), “The Potential Impact of Digital Currencies on Inflation in Developing Countries”, Summarized the relation between digital currencies and inflation in developing countries as follow. Developing countries typically experience frequent inflation due to weak budgetary systems, fiscal deficits, and additional surprises. In recent years, digital currencies— including cryptocurrencies and central bank digital currencies (CBDCs) —have emerged as potential tools for addressing these challenges. This report investigates whether digital currencies substantially reduce inflation or increase monetary policy success in a growing economy. It discovered that digital currencies offer novel programmes for value transfer. However, they are not intrinsically anti-inflationary, based on economic theory, poetry, and case reports from Nigeria, Venezuela, Jamaica, and the Bahamas. Cryptocurrencies provide a hedge in deflationary settings but lack key control and stability. CBDCs have yet to significantly impact inflation outcomes despite their promise for financial inclusion and data collection. Ultimately, digital currencies may be a part of a more comprehensive system of good financial governance. This report argues for a careful yet strategic approach where modern technology complements, rather than replaces, standard fiscal and monetary policy tools.

He Advocates believe digital currencies can encourage financial inclusion, enhance accountability, reduce reliance on dangerous national currencies, and improve monetary policy effectiveness. And CBDCs are online representations of a nation's central bank's fiat currency. They promise to increase monetary transmission, help genuine-time monitoring of financial activity, and extend the reach of monetary policy to vulnerable populations. According to scientific work from organizations like the IMF and BIS, CBDCs may improve central bankers' ability to regulate interest rates and liquidity flows if properly designed⁵.

Seyed Mohammadreza D. (2021), “Central Bank Digital Currency and Monetary Policy”, this paper shows many central banks are contemplating whether to issue a central bank digital currency (CBDC). A CBDC has certain potential benefits, including the possibility that it can bear interest. However, using a CBDC is costly for agents. I study the optimal monetary policy when only cash, only a CBDC, or both cash and a CBDC are available to agents. If the cost of using a CBDC is not too high, more efficient allocations can be implemented by using a CBDC than using cash, and the first best can be achieved. Having both cash and a CBDC available may result in lower welfare than in the cases where only cash or only a CBDC is available. The welfare gains of introducing a CBDC are estimated under various scenarios for the United States and Canada. For example, if the cost of using a CBDC relative to cash is around 0.25% of the transaction value, introducing a CBDC can lead to an increase of 0.12%-0.21% consumption for the United States and 0.04%-0.07% for Canada⁶

Findings

CBDC and interest rate

Several PDFs explore how Central Bank Digital Currencies (CBDCs) affect interest rates, with key themes including how interest rates on CBDCs influence consumer demand for them, how CBDCs can be used as a tool to steer monetary policy and affect the financial system, and the impact of CBDC design choices on monetary

⁴ Caccia, Enea (2023), “*Central bank digital currency and monetary policy implementation*”, European Central Bank (ECB), Occasional Paper Series, No 345, PP 3-4.

⁵ Xue, Chenyi (2025), “The Potential Impact of Digital Currencies on Inflation in Developing Countries”, *Journal of Advances in Economics Management and Political Sciences*, 187(1), PP 39-44. See https://www.researchgate.net/publication/392535465_The_Potential_Impact_of_Digital_Currencies_on_Inflation_in_Developing_Countries

⁶ Davoodalhosseini, S M (2021), “Central Bank Digital Currency and Monetary Policy”, see: <https://www.bankofengland.co.uk/-/media/boe/files/events/2021/july/chief-economists-workshop/session-1-paper-mohammad-davoodalhosseini.pdf>

policy pass-through. Tiered remuneration on CBDCs is a key strategy to control the volume of CBDC in circulation and its impact on the banking system, and that the interaction between CBDC remuneration and bank deposit rates is a significant factor for financial stability⁷

BIS (2022) showed that Banks of different sizes respond differently to interest on reserves (IOR) policy. For low IOR rates, large banks are non-responsive to IOR rate changes, leading to weak pass-through of IOR rate changes to deposit rates. In these circumstances, a central bank digital currency (CBDC) may be used to provide competitive pressure to drive up deposit rates and improve monetary policy transmission. We explore the implications of two design features: interest rate and convenience value. Increasing the CBDC interest rate past a point where it becomes a binding floor, increases deposit rates but leads to greater inequality of market shares in both deposit and lending markets and can reduce the responsiveness of deposit rates to changes in the IOR rate. In contrast, increasing convenience, from sufficiently high levels, increases deposit rates, causes market shares to converge and can increase the responsiveness of deposit rates to changes in the IOR rate⁸.

BIS concluded that Payment convenience is a crucial aspect of CBDC design that may be more desirable than interest rate policy. A highly convenient CBDC produces sufficient competitive pressure in deposit markets to raise deposit rates for any given level of IOR and increases the responsiveness of deposit rates to IOR rate changes. Convenience also has favourable effects on market composition by leveling the playing field. Interest rate policy is less desirable in the sense that it may weaken the responsiveness of deposit rates to IOR rate changes and it increases the inequality of market shares⁹.

CBDC and reserve rate

A Central Bank Digital Currency (CBDC) significantly impacts bank reserves by potentially reducing them as people shift funds from commercial bank deposits to CBDCs, which could shrink banks' balance sheets and limit their lending capacity. To compensate for reduced reserves and maintain stability, central banks might need to increase their own balance sheets or offer different incentives, as a shift to CBDCs can alter the composition of central bank liabilities and influence short-term interest rates. The specific effects of CBDC on reserves also depend on design choices, such as the interest rate on CBDCs and the overall level of public adoption, requiring central banks to adapt their monetary policy frameworks.

How CBDCs Affect Bank Reserves

- **Reduced Reserves from Deposits:** When individuals or firms hold CBDC instead of commercial bank deposits, the total deposit base of banks decreases. This reduction in deposits directly lowers the need for banks to hold reserves for meeting reserve requirements or precautionary needs.
- **Impact on Bank Balance Sheets:** With fewer deposits, banks' balance sheets may shrink, requiring them to find alternative ways to fund their operations, such as increasing their reliance on central bank credit facilities or wholesale funding.
- **Shifting Central Bank Liabilities:** As CBDC usage grows, a central bank's liabilities change from primarily banknotes and commercial bank reserves to a significant portion of CBDC. This shift can alter the overall liquidity in the banking system.

Central Bank Responses and Policy Considerations

⁷https://www.google.com/search?q=CBDC+and+interest+rates+pdf&dq=CBDC+and+interest+rates+pdf&gs_lcrp=EgZjaHJy bWUyBggAEEUYOTIHCAEQIRigAdIBCTY3MTIyBqN6gCALACAA&sourceid=chrome&ie=UTF-8 , It was seen on Sunday, September 21, 2025

Garratt, Rodney (et. al.) (2022), "The Case for Convenience: How CBDC Design Choices Impact Monetary Policy Pass-Through", *BIS Working Papers*, No 1046, P 1. See <https://www.bis.org/publ/work1046.pdf>

⁹ Ibid, P 29.

- **Balance Sheet Adjustments:** To counter potential upward pressure on wholesale funding rates caused by declining bank reserves, central banks might need to expand their own balance sheets to provide more liquidity to the banking system.
- **Adapting Monetary Operations:** Central banks can adjust their monetary policy tools, such as conducting more fine-tuning operations in the money market, to manage liquidity and keep interest rates close to their targets.
- **Design Choices:** The design of a CBDC, including setting its interest rate and limits on holdings, can influence its adoption and, consequently, its impact on reserves. For instance, a higher CBDC interest rate can draw more funds away from commercial bank deposits.

Consequences for the Financial System

- **Interest Rate Volatility:** Volatility in public demand for CBDC could affect a central bank's ability to forecast liquidity and maintain stability in market rates.
- **Changes in the Monetary Policy Framework:** The introduction of a CBDC can necessitate a shift from traditional monetary policy frameworks (like the floor or corridor systems) to new models to effectively manage liquidity and interest rates¹⁰.

Implications of CBDC for Monetary Operations

Monetary policy refers to the actions taken by a central bank or monetary authority to manage the supply of money in an economy to achieve macroeconomic objectives, such as price stability defined as low and stable inflation and sustainable economic growth. The monetary policy objectives or the frameworks for conducting monetary policy do not change when countries issue a CBDC. But, as a new payment instrument, a CBDC can induce changes to the retail, wholesale and cross-border payments that have important spillover effects on monetary policy implementation and transmission¹¹.

CBDC is a central bank liability, similar to reserves or cash (also referred to as CiC). As such, the degree to which CBDC substitutes for other forms of central bank money could affect monetary operations. The economic concept of substitution refers to exchanging a good or service with another in response to changes in relative price, income, and other factors. This note explores the substitution of different forms of money—namely CBDC, cash, reserves, and bank deposits. Individuals or entities may choose to hold and transact one form of money over the other based on various factors such as convenience, returns, costs, safety, and liquidity preferences.

Three scenarios are relevant to monetary operations. First, CBDC can, to some degree, substitute for cash to the extent that retail users wish to switch from physical to digital central bank money. Second, CBDC can substitute for some of the commercial bank deposits held by households, firms, or NBFIs. In turn, this would affect the amount of reserves held in the banking system. Third, CBDC can substitute for central banks reserves directly if commercial banks settle interbank payments in CBDC instead of reserves held in traditional real-time gross settlement systems. The first two scenarios are often referred to as “retail CBDC,” while the third scenario is referred to as “wholesale CBDC”¹².

Retail CBDCs: Retail CBDC projects have made comparatively greater advances relative to w-CBDCs. As of December 2022, central banks from three countries (The Bahamas, Nigeria, and Jamaica) and the 8 member countries of the Eastern Caribbean Currency Union (ECCU) had already issued retail CBDCs. 4 Several other

¹⁰https://www.google.com/search?q=CBDC+and+the+reserve+rate&dq=CBDC+and+the+reserve+rate&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIHCAEQIRigATIHCAlQIRiPafIBCjQ4OTA5ajBqMTWoAgiwAgHxBTSZlut-IYBZ&sourceid=chrome&ie=UTF-8 . It was seen on Tuesday, Sep. 23, 2025.

¹¹Lukonga, Inutu (2023), “Monetary Policy Implications of Central Bank Digital Currencies: Perspectives on Jurisdictions with Conventional and Islamic Banking Systems”, *IMF Working Paper, WP/23/60*, P 10

¹² <https://www.elibrary.imf.org/view/journals/063/2024/007/article-A001-en.xml> . It was seen on Tuesday, Sep. 23, 2025

countries (China, Ghana, India, Kazakhstan, Korea, Russia, Sweden, Thailand) had advanced to pilot stages and more than 90 countries were doing active research. Wholesale CBDCs: W-CBDCs are gaining ground but, while the scene is constantly evolving, no country has reached production stage yet¹³.

CBDC and GDP

European Central Bank 2022 publish working paper series (No 2689) and summarized it as follow, we provide evidence on the estimated effects of digital euro news on bank valuations and lending and find that they depend on deposit reliance and design features aimed at calibrating the quantity of CBDC. Then, we develop a quantitative DSGE model that replicates such evidence and incorporates key selected mechanisms through which CBDC issuance could affect bank intermediation and the economy. Under empirically-relevant assumptions (i.e., central bank collateral requirements and imperfect substitutability across CBDC, cash and deposits), the issuance of CBDC yields non-trivial trade-offs and effects through an expansion of the central bank balance sheet and profits. The issuance of CBDC exerts a smoothing effect on lending and real GDP by stabilizing deposit holdings. Such "stabilization effect" improves the well-known liquidity services/disintermediation trade-off induced by CBDC and permits to rank different types of CBDC rules according to individual and social preferences. Welfare maximizing CBDC policy rules are effective in mitigating the risk of bank disintermediation and induce significant welfare gains¹⁴

The analysis concludes the following. First, as the empirical evidence suggests, adequately calibrating the amount of CBDC in circulation is important to mitigate the impact on the banking sector. Such impact depends on banks' reliance on deposit funding and the substitutability between CBDC and deposits. Second, the issuance of CBDC exerts a fiscal expansion effect and a bank disintermediation effect through an expansion of the central bank balance sheet and profits. The sign and magnitude of the net impact on bank lending and real GDP depends on the relative size of these two effects. Third, welfare-maximizing CBDC rules are effective in mitigating the risk of bank disintermediation and induce significant welfare gains. They induce a stabilization effect which improves the liquidity services/disintermediation trade-off faced by the economy under the introduction of a CBDC and permits to rank CBDC rules in terms of attainable welfare gains¹⁵.

BIS working Papers No (1086) (2023) concluded "CBDC policies in open economies" as follow, We study the consequences for business cycles and welfare of introducing an interest-bearing retail CBDC, competing with bank deposits as medium of exchange, into an estimated 2-country DSGE environment. According to our estimates, financial shocks account for around half of the variance of aggregate demand and inflation, and for the bulk of the variance of financial variables. CBDC issuance of 30% of GDP increases output and welfare by around 6% and 2%, respectively. An aggressive Taylor rule for the interest rate on reserves achieves welfare gains of 0.57% of steady state consumption, an optimized CBDC interest rate rule that responds to a credit gap achieves additional welfare gains of 0.44%, and further gains of 0.57% if accompanied by automatic fiscal stabilizers. A CBDC quantity rule, a response to an inflation gap, CBDC as generalized retail access to reserves, and especially a cash-like zero-interest CBDC, yield significantly smaller gains. CBDC policies can substantially reduce the volatilities of domestic and cross-border banking flows and of the exchange rate. Optimal policy requires a steady state quantity of CBDC of around 40% of annual GDP¹⁶

CBDC and monetary policy Implementation and Transmission

IMF (2023) showed how CBDCs Impact Monetary Policy Implementation and Transmission: A retail CBDC is simply a new form of money for households to pay for goods and services in their daily lives and a w-CBDC is also simply a new configuration of central bank money used in settlement. A CBDC can, however, act as an anchor for the wider monetary system, ensuring that the central bank continues to provide a means of payment

¹³ Lukonga, Inutu (2023), Op Cit, P 9.

¹⁴ Burlon, L (et al.) (2022), "The optimal quantity of CBDC in a bank-based economy", *ECB Working Paper Series, No 2689* / July 2022, P 1.

¹⁵ Ibid, P 2.

¹⁶ Kumhof, Michael (et al.) (2023), "CBDC policies in open economies", *BIS working Papers No (1086)*, P 1.

that promotes trust and confidence in money and payments. A CBDC can also change the cost function of issuing central bank money and impact the seigniorage income which has implications for central bank independence to conduct monetary policy. More fundamental, CBDCs can induce changes to retail, wholesale and cross border payments that have spillover effects on monetary policy implementation and transmission. Although the central bank is the sole issuer of CBDCs, it does not have control on how the public responds to the issuance of a CBDC and, therefore, does not have full control of the liability composition of its balance sheet. Commercial banks also do not have full control of the public's preferences between deposits and CBDCs as a means of payment.

Retail CBDCs

Retail CBDCs can trigger a complex web of mutually reinforcing interactions that have a cumulative negative effect on monetary policy implementation and transmission (Figure 7). As a new payment instrument, the introduction of a CBDC can result in some households and businesses exchanging some of their cash holdings and deposits into CBDCs. If large, the changes in the public's holdings of cash and deposits can cause changes in money velocity, bank disintermediation and volatility of commercial bank reserves. These outcomes can erode the effectiveness of money targeting regimes, weaken the lending and interest rate channels, and impair central banks' capacity to forecast commercial bank reserves on which OMO are based.

Exchanging Cash for CBDCs:

Exchanging cash for CBDCs does not impact monetary policy through the balance sheet. Instead, it affects monetary policy by either causing a structural increase in money velocity, by increasing the volatility of money velocity or changing the revenues from seigniorage. These outcomes can erode the effectiveness of money targeting regimes, impact implementation of IT regimes or affect the independence of the central bank in conducting monetary policy. Physical cash and CBDCs are just two kinds of central bank money and substituting one for the other alters the asset composition of households' balance sheets and the liability composition of the central bank's balance sheet without changing the size of the balance sheets. The balance sheet of commercial banks registers no changes in composition or size since commercial banks may only have an operational role in transferring funds from cash to CBDC.

Exchanging cash for CBDCs can, however, bring about structural changes to or instability in money velocity. Instability in money velocity affects the relationship between money, inflation, and GDP and erodes the effectiveness of money targeting regimes. Money targeting regimes are predicated on a stable relationship between the intermediate target (money supply) and policy objectives (inflation).

Exchanging Bank Deposits for CBDCs:

Funding CBDCs by drawing down deposits affects monetary policy through its impact on deposit disintermediation and related increase in the volatility of commercial bank reserves at the central bank. Disintermediation weakens the credit and interest rate channels in the monetary policy transmission process and volatility in reserves erodes the central banks' capacity to forecast reserves and conduct effective OMO.

Substituting bank deposits for CBDCs could also cause volatility in commercial bank reserves that complicate liquidity management capabilities of both the commercial banks and the central bank. If deposit transfers into CBDCs are large, frequent, and unpredictable, commercial bank reserves at the central bank (autonomous factors) could become highly volatile and can affect monetary policy through several mutual reinforcing channels.

Wholesale CBDCs:

W-CBDCs are similar to reserves and do not affect monetary policy implementation or transmission through balance sheet effects. Rather, w-CBDCs affect monetary policy by enhancing payment system efficiencies and inducing changes in the market structure. When a central bank issues w-CBDCs, financial intermediaries can "pay" for their w-CBDCs in the RTGS system with a transfer from their reserve balances. The liability composition of the central bank balance sheet, therefore, changes with the increase in w-CBDCs offset by a

decline in commercial banks' reserves. Financial intermediaries' balance sheets register equivalent changes in the asset composition. Once issued, wCBDC can be transferred between financial intermediaries within the DLT platform without affecting the central banks' balance sheet. Intraday w-CBDC (issued during the business day and redeemed each night) would not impact the size of the central bank balance sheet. Since a w-CBDC is aimed at interbank settlement and other financial transactions between financial institutions, it does not lead to deposit disintermediation or digital runs.

The potential for w-CBDCs to be embedded with logic, or programmability presents opportunities for innovation and new functionality. Among other benefits, a w-CBDC can extend current operating hours more easily, insofar as the use of smart contracts/programmability fosters more autonomous operations with a minimum level of human intervention as well as enable the continuous reconciliation of the ledger¹⁷.

Potential impact of CBDC on monetary policy effectiveness in USA:

Here's a detailed look at how a U.S. Central Bank Digital Currency (CBDC) *could* affect the effectiveness of monetary policy. Some impacts are positive, others are risks, often depending heavily on *how* the CBDC is designed and used.

Key Concepts / Channels to Think About

Before diving into impacts, it helps to understand a few relevant channels of monetary policy and how CBDC might influence them:

- **Monetary policy tools:** interest rates, reserve requirements, open market operations (OMO), discount window, etc.
- **Transmission mechanisms:** how changes in policy rates or other tools affect lending, spending, prices (via bank lending channel, interest rate channel, expectations, etc.).
- **Financial intermediation:** role of banks in holding deposits and transforming them into loans.
- **Money demand and liquidity preferences:** how much people hold in cash, digital assets, bank deposits, etc.
- **Bank reserves & deposit base:** crucial for central bank's ability to control interest rates and money supply.

Potential Positive Impacts of a CBDC on Policy Effectiveness

If designed well, CBDCs can strengthen or enhance monetary policy in several ways:

1. **More direct control over the monetary base**
If individuals can hold CBDC directly with the central bank (or via wallets), the Fed could more directly influence the supply of "central bank money." This could reduce reliance on intermediaries in some payment flows.
2. **Better transmission of policy rates**
By offering a CBDC that bears interest (or negative interest), the Fed might have greater levers to influence how private banks price deposits and loans. It might tighten or loosen financial conditions more precisely, especially during times when private banks are slow to adjust.
3. **Faster payments / liquidity adjustment**
CBDCs might enable more real-time settlement and reduce frictions in payments and liquidity management. This could make responses to shocks more immediate, helping the Fed's actions ripple through the economy more efficiently. (E.g. reductions in delays in the payments system.)

¹⁷ Lukonga, Inutu (2023), Op Cit, PP 10-17.

4. **More robust tools under stress / lower bound**

In scenarios where interest rates approach zero or negative territory (zero lower bound), a CBDC might offer alternative choices or policy designs (e.g. charging negative interest) that are harder with cash in circulation. This could give the Fed more flexibility during deep recessions or deflationary pressures.

5. **Financial inclusion and broader base**

By giving unbanked or underbanked populations access to digital central bank money, a CBDC could help amplify monetary policy effects by ensuring that all sectors of society are reached by the channels (spending, deposit shifts, etc.).

Risks / Challenges That Could Weaken Policy Effectiveness

However, there are also significant risks and potential downsides — many of which hinge on design choices and adoption:

1. **Deposit disintermediation**

If people move large amounts of deposits from commercial banks into CBDC (because it's safer, more attractive, or more convenient), this reduces the deposit base of banks. Banks rely on deposits to make loans. A drop in deposits could reduce bank lending, which weakens the lending channel of monetary transmission.

2. **Volatility of reserves / instability in interbank markets**

With large flows in and out of commercial banks and CBDC, bank reserves may become more volatile. The Fed might find it harder to forecast reserves, making open market operations and reserve-management more difficult. It could also increase volatility in short-term rates.

3. **Weaker interest rate pass-through**

If banks lose deposits, or if deposit rates must adjust to compete with CBDC, banks might respond in ways that reduce the pass-through of policy rate changes to lending or deposit rates. In short, the intended effect on borrowing/spending may be diluted.

4. **Shift in monetary regime / operational framework**

The existing operational framework is built around commercial banking, reserves, and payment systems. A widespread CBDC could shift that, requiring new tools or adjustments (e.g. standing facilities). If not managed carefully, this shift could introduce inefficiencies or gaps.

5. **Risk under financial stress / bank runs**

In times of crisis, if a CBDC is perceived as safer, there could be rapid flight from banks to CBDC, amplifying liquidity stress in the banking system. This could force the central bank to act as lender-of-last-resort more aggressively, complicating policy responses.

6. **Design trade-offs (interest, caps, anonymity, cross-border use, etc.)**

Many effects depend on design: whether CBDC pays interest, whether there are holding limits or caps, how anonymous or traceable it is, etc. Poor design could make negative effects more likely. E.g. unremunerated vs remunerated CBDC, or uncapped CBDC holdings, may lead to more deposit draining.

7. **Cross-border and external pressures**

If U.S. CBDC is used broadly outside the country (or foreign CBDCs penetrate the U.S.), there could be currency substitution issues, capital flow volatility, and challenges in controlling liquidity. This could especially matter given the U.S. dollar's international role.

Implications Specific to the U.S. Context

Given U.S.-specific factors — a large, deep financial system; existing high level of digital payments; the dollar's role globally — some of these effects might be mitigated, others amplified.

- The U.S. banking system has a large deposit base and high private sector sophistication, so moderate adoption might not disturb banks too severely.
- The Fed already has many tools (discount window, repo / reverse repo facilities, etc.) which could be adapted or expanded to manage liquidity shifts.
- The dollar’s global reserve status means any U.S. CBDC that becomes internationally usable would have outsized influence (both good and risky) — capital flows, foreign demand, etc.
- Regulatory and legal frameworks in the U.S. are complex; introducing a CBDC would require addressing privacy, consumer protection, surveillance concerns, etc., which in turn affect how people use it (which affects the impacts).

Design Features That Affect Policy Outcomes

To preserve or enhance monetary policy effectiveness with a CBDC, certain design features are especially important:

Design Feature	Why It Matters for Monetary Policy
Interest on (remunerated vs unremunerated)	CBDC If it’s interest-bearing, it competes more directly with bank deposits, influencing vs deposit/loan spreads and potentially strengthening transmission. But also increases risks of disintermediation.
Caps or holding limits	Limits on how much one can hold may reduce the risk of mass shifts away from bank deposits.
Fees or negative rates	Some designs consider fees or negative remuneration to discourage holding excessive amounts, especially when the policy rate is negative or low.
Tiered remuneration	Different rates or privileges for different levels of holdings might help balance usability vs risk.
Interoperability cross-border restrictions	/ Controls on foreign use or restrictions on crossing borders may help limit currency substitution or capital flow risks.
Privacy / anonymity	More privacy may encourage wider adoption; less may discourage it. But more traceability could help prevent illicit use or manage macroprudential risks.

Net Effect: Trade-Offs and Uncertainty

In many analyses (including U.S. Fed studies), the net effect is somewhat ambiguous: a CBDC could *enhance* monetary policy effectiveness under certain conditions (high adoption, good design, stable financial system) but could *weaken* it if disintermediation is large, reserves become volatile, or banks are overly squeezed.

Often the effect is expected to be **small in normal times**, but **more material under financial stress**, when **interest rates are near their lower bound**, or when adoption is very high¹⁸.

The potential impact of a CBDC (e-Pound) on monetary-policy effectiveness in Egypt — concise briefing

Below I summarize how a Central Bank Digital Currency (CBDC) in Egypt could affect the Central Bank of Egypt’s (CBE) ability to pursue monetary policy, the main channels of impact, likely benefits and risks given Egypt’s specific context, and practical design / policy recommendations to preserve or strengthen policy effectiveness.

¹⁸ <https://chatgpt.com/c/68d4ab5d-559c-8330-8a8d-9c3296dffcad> . It was seen on Thursday, Sep. 25, 2025.

Quick context (what's already happening)

- The CBE is actively studying a digital “e-Pound” and has signalled plans toward a CBDC (targeted rollout timelines cited as around 2030 in public plans). The CBE has completed early study phases and moved toward a proof-of-concept stage.
- Financial inclusion in Egypt has been rising fast: CBE reports about **70.7%** of adults with accounts by end-2023 and **~74.8%** by end-2024 — meaning a much larger share of the population is already reachable via formal digital financial channels than a few years ago.
- Egypt’s nominal monetary aggregates and deposit base are sizeable and have been growing (M2 in the trillions of EGP); Egypt also faces macro stresses (high inflation in recent periods, FX pressures and an IMF program in 2024–25) that matter for policy choices.

How a CDC could *help* monetary policy effectiveness in Egypt

1. **Direct transmission of policy rates to the public**
If the e-Pound is interest-bearing, the CBE could more directly influence money-market rates and household saving decisions (shortening the chain between policy rate decisions and household/firm behavior). This can strengthen the interest-rate transmission channel — especially valuable where bank deposit markets are segmented.
2. **Faster, lower-friction payments and liquidity management**
A CBDC could speed settlement, reduce payment frictions, and allow the CBE to implement time-sensitive liquidity operations (e.g., direct transfers, fast liquidity injections) that make policy shocks propagate faster. That reduces implementation lags in a high-inflation / rapidly changing environment.
3. **Better reach for fiscal–monetary coordination and targeted stimulus**
With wide wallet coverage, the CBE (or the government via the CBE) could deliver transfers, subsidies, or emergency liquidity precisely — improving the effectiveness of policy mixes during crises and ensuring stimulus reaches non-banked households. Egypt’s rising financial inclusion increases this potential.
4. **Additional tools near the lower bound**
In deep recessions or where conventional rates are constrained, designs allowing controlled negative remuneration or tiered rates on CBDC holdings could provide the CBE additional policy space. (Design matters hugely; see risks below.)

How a CBDC could *weaken* monetary policy effectiveness in Egypt (main risks)

1. **Deposit disintermediation and lending channel impairment**
If households and firms shift large amounts from commercial bank deposits into CBDC (perceived as safer/CB-backed), banks’ deposit funding could shrink. That can reduce banks’ lending capacity or raise borrowing costs, weakening the monetary transmission through credit. This risk is larger in a system where banks rely heavily on retail deposits.
2. **Volatility in reserve management and short-term rates**
Large, rapid flows between bank deposits and CBDC would make reserve forecasting harder and could increase volatility in interbank and money market rates. The CBE would need new liquidity-management tools and standing facilities to smooth these flows.
3. **Amplified bank-run risk in stress periods**
In episodes of panic, the CBE-backed e-Pound could act as an easy safe haven, accelerating outflows from banks and amplifying systemic stress—forcing the central bank into aggressive emergency interventions that complicate policy credibility. This is particularly relevant in economies with recent FX and inflation shocks.
4. **Interaction with dollarization / FX pressures**
Egypt has significant foreign-currency activity. A CBDC that is usable cross-border or that makes it

easier to substitute foreign currency holdings could complicate monetary control and FX management. Protecting the monetary anchor requires controls on cross-border usage or clear interoperability rules.

5. **Design trade-offs that affect effectiveness**

Key design parameters (interest on CBDC, holding caps, tiered remuneration, KYC/privacy rules, cross-border limits) create trade-offs. For example, remunerating CBDC improves monetary policy leverage but raises disintermediation risk. Unremunerated CBDC reduces that risk but limits the tool's power.

Egypt-specific institutional and structural considerations

- **Rising but incomplete financial inclusion** ($\approx 75\%$ by end-2024): the e-Pound could extend reach further, but design must take account of remaining excluded groups and the informal economy.
- **Large monetary aggregates and recent macro instability** (inflation and FX adjustments): the CBE's capacity to manage liquidity is already tested; introducing CBDC requires upgrading liquidity facilities, forecasting, and risk-management frameworks.
- **International cooperation and pilot activity**: CBE is cooperating internationally (e.g., MoU with People's Bank of China) and engaging with cross-border experiments — this opens useful technical options but raises cross-border policy complexity.

Practical design choices to *preserve or strengthen* monetary-policy effectiveness

1. **Tiered remuneration / holding caps**
 - Pay interest only above/below thresholds or use declining rates for very large holdings. Caps on retail holdings reduce disintermediation risk while allowing policy leverage for typical users.
2. **Two-tier operational model (CBE + intermediaries)**
 - Use a hybrid model where wallets are provided via regulated banks and non-bank PSPs; keep banks central to credit intermediation while using CBDC for settlement and outreach.
3. **Strong liquidity-management toolkit**
 - Expand standing facilities, term deposits, repo operations and fine-tune reserve remuneration so the CBE can mop up large inflows/outflows without destabilizing short-term rates.
4. **Phased rollout and conservative pilot use-cases**
 - Start with limited domestic payment and government transfer use cases, test stress scenarios, run caps and tiering in pilots before broad release.
5. **Controls on cross-border use**
 - Limit or manage foreign access to the e-Pound initially to avoid currency substitution and additional FX volatility; experiment with dedicated cross-border corridors for remittances under strict rules.
6. **Integrate with financial-inclusion and e-KYC efforts**
 - Link CBDC wallets to existing e-KYC and national ID programs to bring more people into the formal system safely and to make monetary policy transmission more inclusive.
7. **Macroprudential backstops and deposit protection**
 - Strengthen deposit insurance, emergency liquidity facilities, and clear communication about limits and protections to reduce run incentives.

Likely net outcome for Egypt (summary judgement)

- **If** the CBE adopts a cautious, hybrid design (tiered remuneration, holding caps, bank intermediaries, phased rollout) and upgrades liquidity and macroprudential tools, a CBDC could **improve** policy transmission (faster payments, better reach for transfers, extra levers near the lower bound) and support financial inclusion goals already in motion.

- **If** design is overly generous (uncapped, highly remunerated, open cross-border) and the rollout is rapid without strengthening liquidity tools, the CBDC could **weaken** monetary policy via deposit disintermediation, reserve volatility, and amplified stress episodes — risks that are material given Egypt’s recent macro challenges¹⁹.

Conclusions

We assume that issuing CBDC in both countries USA and Egypt will increase the degree of effectiveness of monetary policy, but the study of this relationship found that obverse of this hypothesis, where potential impact of CBDC on monetary policy effectiveness is negative, and different from country to another, it depend on how every country issue and control the CBDC, in both countries it will leads to increase financially inclusions.

For USA, USA is a leader and pioneer in all fields forever, In many analyses (including U.S. Fed studies), the net effect is somewhat ambiguous: a CBDC could *enhance* monetary policy effectiveness under certain conditions (high adoption, good design, stable financial system) but could *weaken* it if disintermediation is large, reserves become volatile, or banks are overly squeezed.

Often the effect is expected to be **small in normal times**, but **more material under financial stress**, when **interest rates are near their lower bound**, or when adoption is very high.

For Egypt, there are two scenarios: If the CBE adopts a cautious, hybrid design (tiered remuneration, holding caps, bank intermediaries, phased rollout) and upgrades liquidity and macro-prudential tools, a CBDC could improve policy transmission (faster payments, better reach for transfers, extra levers near the lower bound) and support financial inclusion goals already in motion.

The second scenario: If design is overly generous (uncapped, highly remunerated, open cross-border) and the rollout is rapid without strengthening liquidity tools, the CBDC could weaken monetary policy via deposit disintermediation, reserve volatility, and amplified stress episodes — risks that are material given Egypt’s recent macro challenges

Future Studies

- 1- How maximize the potential benefits from issuing CBDCs, and minimize expects negative effects of issuing its in USA and Egypt.
- 2- The potential impact of issuing CBDC in USA, UK, Egypt on international monetary system, and balances of payments in those countries.

References

- Abdel Gawad, Gaber M M (2025), “*Macro-Economic Analysis of Some Countries (Which Issued Digital Currencies), with USA and UK to Transfer them to Digital Currencies in Digitalization Era*”, *Journal of Economics and Sustainable Development*, (IISTE), Vol 16, No 5. <https://www.iiste.org/Journals/index.php/JEDS/article/view/63331>
- Auer, Raphael (et al.) (2021), “*Central bank digital currencies: motives, economic implications and the research frontier*”, BIS Working Papers, No 976.
- Burlon, L (et al.) (2022), “*The optimal quantity of CBDC in a bank-based economy*”, *ECB Working Paper Series, No 2689* / July 2022.
- Caccia, Enea (2023), “*Central bank digital currency and monetary policy implementation*”, European Central Bank (ECB), Occasional Paper Series, No 345.
- Davoodalhosseini, S M (2021), “*Central Bank Digital Currency and Monetary Policy*”, see: <https://www.bankofengland.co.uk/-/media/boe/files/events/2021/july/chief-economists-workshop/session-1-paper-mohammad-davoodalhosseini.pdf>

¹⁹ <https://chatgpt.com/c/68d4ab5d-559c-8330-8a8d-9c3296dffcad> . It was seen on Thur, Sep. 25, 2025.

- Garratt, Rodney (et. al.,) (2022), “The Case for Convenience: How CBDC Design Choices Impact Monetary Policy Pass-Through”, *BIS Working Papers*, No 1046. See <https://www.bis.org/publ/work1046.pdf>
<https://chatgpt.com/c/68d4ab5d-559c-8330-8a8d-9c3296dffcad> . It was seen on Thursday, Sep. 25, 2025.
<https://chatgpt.com/c/68d4ab5d-559c-8330-8a8d-9c3296dffcad> . It was seen on Thursday, Sep. 25, 2025.
<https://www.elibrary.imf.org/view/journals/063/2024/007/article-A001-en.xml> . It was seen on Tues, Sep. 23, 2025
https://www.google.com/search?q=CBDC+and+interest+rates+pdf&oq=CBDC+and+interest+rates+pdf&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIHCAEQIRigAdIBCTY3MTIyajBqN6gCALACAA&sourceid=chrome&ie=UTF-8 , It was seen on Sunday, September 21,2025
https://www.google.com/search?q=CBDC+and+the+reserve+rate&oq=CBDC+and+the+reserve+rate&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIHCAEQIRiPATiBCjQ4OTA5ajBqMTWoAgiwAgHx&sourceid=chrome&ie=UTF-8 . It was seen on Tuesday, Sep. 23, 2025.
- Kumhof, Michael (et al.,) (2023), “CBDC policies in open economies”, *BIS working Papers No (1086)*.
- Lukonga, Inutu (2023), “Monetary Policy Implications of Central Bank Digital Currencies: Perspectives on Jurisdictions with Conventional and Islamic Banking Systems”, *IMF Working Paper, WP/23/60*.
- Primus, Keyra (2016), “*The Effectiveness of Monetary Policy in Small Open Economies: An Empirical Investigation*”, *IMF Working Paper, WP/16/189*.
- Xue, Chenyi (2025), “The Potential Impact of Digital Currencies on Inflation in Developing Countries”, *Journal of Advances in Economics Management and Political Sciences*, 187(1). See https://www.researchgate.net/publication/392535465_The_Potential_Impact_of_Digital_Currencies_on_Inflation_in_Developing_Countries

Biography

Name of Author: Gaber Mohamed M. Abd-El Gawad

PhD in Economics, Faculty of Commerce, Helwan University, Egypt,

Visiting research fellow at Greenwich University in 2008-2009, London, UK

Associate Professor at Salman Bin Abdel Aziz University, KSA, from 2010 to 2014.

Professor of Economics- Capital University: (Helwan university previously), Egypt from 2014 until now