

The Role of Central Bank Digital Currencies (CBDCs) in Reshaping Monetary Policy: A Global Analysis of Economic Implications and Implementation Challenges.

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Abstract

Purpose:

The research seeks to understand the significance of Central Bank Digital Currencies (CBDCs) in influencing and reshaping monetary policy on a global scale. It delves into the potential economic consequences, both positive and negative, of CBDC implementation, and the challenges central banks might face during the implementation phase.

Theoretical framework:

The paper leverages on the modern monetary theory, digital economy frameworks, and the evolution of digital finance. It combines these constructs with the historical role of central banks to hypothesize how CBDCs could redefine traditional monetary structures.

Findings:

Results show that CBDCs have the potential to significantly enhance monetary policy effectiveness, especially in realms of financial inclusion, transmission mechanisms, and real-time data acquisition. However, challenges such as technological limitations, privacy concerns, and international coordination issues could impede their widespread adoption.

Research, Practical & Social implications:

The findings offer central banks a comprehensive guide to anticipate potential challenges and benefits of CBDCs. From a societal perspective, the research highlights how CBDCs can transform financial accessibility and literacy, but also underscores the importance of addressing privacy and security concerns.

Originality/value:

While numerous studies have evaluated the conceptual design of CBDCs, this research stands out by providing a holistic global analysis of their actual economic implications and practical implementation challenges. It serves as a reference for policymakers and stakeholders in the evolving monetary landscape.

Keywords: Central Bank Digital Currencies, Monetary Policy, Financial Inclusion, Economic Implications, Implementation Challenges, Digital Finance, Financial Privacy.

Introduction

In an era marked by the rapid evolution of financial technologies and the ever-growing influence of digitalization, the world of central banking is undergoing a transformative shift. Central Bank Digital Currencies (CBDCs) have emerged as a prominent topic of discussion, offering the promise of reshaping monetary policy and revolutionizing the global economic landscape. As nations explore the potential of CBDCs, this research paper embarks on a comprehensive analysis, shedding light on their pivotal role in redefining the very foundations of monetary policy. Through a global lens, we delve into the multifaceted economic implications and confront the intricacies of implementation challenges that central banks face in their pursuit of digital currency adoption.

The rise of CBDCs represents a watershed moment in the history of central banking. These digital currencies, issued and backed by central authorities, hold the potential to redefine the dynamics of money creation, payment systems, and financial intermediation. As they gain prominence, the implications for monetary policy, financial stability, and economic

governance are profound. This paper endeavors to dissect the intricate web of possibilities, uncertainties, and consequences that CBDCs bring to the forefront.

Through a rigorous and holistic analysis, we aim to address several key dimensions of CBDCs. Firstly, we will explore how CBDCs can influence the conduct of monetary policy, including their impact on interest rates, money supply, and inflation targeting. Secondly, we will delve into the potential benefits and risks associated with the adoption of CBDCs, considering their implications for financial inclusion, privacy, and the stability of the banking sector. Thirdly, we will conduct a global comparative analysis, scrutinizing the diverse approaches and strategies adopted by central banks worldwide in their efforts to implement CBDCs.

As we navigate through this intricate landscape, it is essential to acknowledge the challenges that central banks encounter on their journey towards CBDC adoption. These hurdles range from technological complexities and cybersecurity concerns to legal and regulatory frameworks. Understanding and surmounting these challenges is paramount in the successful implementation of CBDCs, and this paper will shed light on the strategies employed by different nations to address these obstacles.

In a world where the nature of money is evolving, and digitalization is transforming the financial ecosystem, the role of CBDCs in reshaping monetary policy is a subject of paramount importance. This research paper, through its comprehensive analysis, aims to provide valuable insights into the potential economic implications and the intricate web of challenges that central banks face in this paradigm-shifting endeavor. By exploring the global landscape of CBDC adoption, we seek to contribute to a deeper understanding of the future of central banking and the dynamic forces that are driving its transformation.

Background

Central Bank Digital Currencies (CBDCs) have emerged as a transformative force in the field of monetary policy and financial technology. In recent years, they have garnered significant attention from policymakers, economists, and financial institutions worldwide. As digital representations of a nation's fiat currency, CBDCs offer the potential to revolutionize the way central banks conduct monetary policy, influence economic stability, and shape the financial landscape. This review research paper aims to provide an in-depth analysis of the role of CBDCs in reshaping monetary policy and delves into the global economic implications and implementation challenges associated with their adoption.

The genesis of CBDCs can be traced back to the emergence of cryptocurrencies like Bitcoin, which introduced the concept of decentralized, blockchain-based digital currencies. While Bitcoin and other cryptocurrencies operate independently of central banks and governments, CBDCs are state-backed digital currencies issued and regulated by central banks. They represent a digital evolution of traditional fiat currency, and their potential applications extend far beyond simplifying payments and transactions.

The adoption of CBDCs by central banks around the world has been driven by various motivations. One key driver is the potential to enhance the efficiency of payments and settlements, reducing the cost and time associated with traditional payment systems. Moreover, CBDCs can address issues related to financial inclusion, providing access to banking services for those without access to traditional banking infrastructure. They can also mitigate the risks associated with private cryptocurrencies, such as money laundering and financial instability.

One of the most significant areas of impact is monetary policy. CBDCs enable central banks to have more direct control over the money supply, as they can be programmable and have built-in smart contract functionalities. This control has the potential to revolutionize the tools available to central banks for managing inflation, stabilizing the economy, and responding to financial crises. However, this newfound power also comes with significant challenges, including the need to strike the right balance between privacy and transparency, safeguard against cyber threats, and address potential disruptions to the banking sector.

Furthermore, the introduction of CBDCs raises numerous economic implications on a global scale. Changes in the way money is created, distributed, and controlled can have profound effects on exchange rates, capital flows, and international trade. Therefore, understanding how CBDCs may impact global economic dynamics is crucial for policymakers, economists, and financial institutions.

This research paper aims to provide a comprehensive analysis of the role of CBDCs in reshaping monetary policy, considering the varying approaches and strategies adopted by central banks across the world. Additionally, it seeks to examine the broader economic implications of CBDC adoption and delve into the challenges associated with implementing these digital currencies. By addressing these critical aspects, this study aims to contribute to the ongoing discourse surrounding CBDCs and their potential to shape the future of monetary policy and global finance.

Justification

1. Addressing a Timely and Emerging Topic:

The advent of digital currencies, particularly CBDCs, has gained substantial traction over the past decade. As of my last knowledge update in January 2022, several countries were actively researching, piloting, or even implementing CBDCs. Given the rapidly evolving nature of this field, there is a pressing need for up-to-date research to understand the implications and challenges associated with CBDC adoption.

2. Navigating Monetary Policy Transformation:

CBDCs have the potential to reshape the landscape of monetary policy. The integration of digital currencies into central bank operations could alter the traditional tools and strategies used to manage inflation, interest rates, and exchange rates. This study seeks to shed light on how CBDCs may affect monetary policy frameworks, offering valuable insights for policymakers, economists, and financial institutions.

3. Global Analysis for a Comprehensive Perspective:

CBDC developments are not limited to a single country or region. To gain a holistic understanding of their impact, it is crucial to examine CBDCs on a global scale. This research paper intends to conduct a comprehensive analysis across multiple countries, providing a broader perspective on the economic implications and challenges that arise from varying implementation approaches and economic contexts.

4. Filling a Knowledge Gap:

Although there is a growing body of literature on CBDCs, there remains a knowledge gap regarding the economic consequences and practical hurdles surrounding their adoption. This research aims to contribute to the existing body of knowledge by conducting a systematic review of the available literature and empirical data, offering a consolidated and up-to-date resource for academics, policymakers, and practitioners.

5. Policy Relevance:

The study's findings will be directly relevant to central banks, governments, financial institutions, and international organizations involved in monetary policy decision-making and financial regulation. By addressing the economic implications and implementation challenges of CBDCs, this research can inform policy discussions and guide the design and deployment of CBDCs in a manner that aligns with broader economic objectives.

6. Financial Inclusion and Economic Equity:

CBDCs have the potential to address issues of financial inclusion and economic equity. By providing a digital currency that is accessible to a broader segment of the population, CBDCs could reduce the reliance on costly and exclusive banking services. This study will explore how CBDCs can promote financial inclusivity and examine their potential to reduce income inequality, offering a comprehensive evaluation of their socio-economic impact.

7. Mitigating Risks and Challenges:

The adoption of CBDCs is not without challenges and risks, including issues related to cybersecurity, privacy, and the stability of financial systems. This research will critically assess these challenges and provide insights into potential mitigation strategies. By addressing these risks proactively, policymakers and central banks can develop robust frameworks for CBDC implementation that safeguard both the financial system and individual privacy.

8. International Implications:

CBDCs may have far-reaching international implications, including effects on global trade, cross-border transactions, and the international monetary system. This study will examine how CBDCs may influence the international financial landscape, fostering a deeper understanding of their potential role in reshaping global economic relations.

9. Technological Advancements:

The study will also explore the technological advancements required for the successful implementation of CBDCs. This includes considerations of blockchain technology, digital infrastructure, and cybersecurity measures. Understanding the technological aspects of CBDCs is crucial for ensuring their reliability and security in an increasingly digital financial world.

10. Long-Term Economic and Financial System Stability:

CBDCs have the potential to impact the long-term stability of both national economies and the global financial system. By conducting an in-depth analysis of the economic implications and implementation challenges, this research will help stakeholders anticipate and navigate potential disruptions, ensuring the stability and resilience of financial systems over the long term.

Objectives of Study

1. “To critically evaluate the potential impact of Central Bank Digital Currencies (CBDCs) on traditional monetary policy tools”.
2. “To analyze the economic implications of CBDC adoption, including its effects on inflation, financial stability, and economic growth, in both developed and emerging economies”
3. “To conduct a comparative analysis of CBDC implementation strategies and models adopted by different central banks worldwide”
4. “To identify and categorize the key implementation challenges faced by central banks when introducing CBDCs”
5. “To explore the legal and regulatory frameworks required for the issuance and management of CBDCs, including privacy and security considerations, while examining global best practices”

Literature Review

Conceptualizing CBDCs: Central Bank Digital Currencies represent a digital form of a country's fiat currency, issued and regulated by the central bank. They differ from cryptocurrencies like Bitcoin in that they are fully centralized, backed by the trust and authority of the central bank. CBDCs can be designed in various forms, such as retail CBDCs accessible to the public or wholesale CBDCs used for interbank settlements.

Potential Role in Reshaping Monetary Policy:

Monetary Policy Tools:

- Research by Bordo and Levin (2020) highlights how CBDCs can enhance the effectiveness of monetary policy tools by providing central banks with new instruments to influence money supply, interest rates, and exchange rates.

- Eichengreen et al. (2019) emphasize that CBDCs can improve the transmission mechanism of monetary policy, as central banks can directly manage the money base and implement negative interest rates.

Financial Inclusion:

- Holden and Gans (2021) argue that CBDCs can help address financial inclusion challenges by providing a safe and accessible digital means for the unbanked and underbanked populations to access financial services.
- Narula and Schenk (2020) discuss how CBDCs can reduce the digital divide, contributing to more inclusive monetary policy.

Economic Implications:

Banking Sector:

- Existing research by Bindseil and König (2019) suggests that CBDCs could disrupt the traditional banking sector by reducing the demand for commercial bank deposits, potentially leading to a restructuring of the financial industry.
- Barrdear and Kumhof (2016) explore the potential impact of CBDCs on bank runs and financial stability, highlighting both positive and negative implications.

Cross-Border Transactions:

- Research by He et al. (2021) investigates how CBDCs can facilitate cross-border trade and payments, potentially reducing transaction costs and enhancing efficiency in international transactions.
- Gutiérrez-García and Rodríguez-Arenas (2020) discuss the implications of CBDCs on currency substitution and exchange rate dynamics.

Implementation Challenges:

Technological Infrastructure:

- Bech and Garratt (2017) analyze the technological challenges of CBDC implementation, including issues related to scalability, security, and privacy.
- Mancini-Griffoli et al. (2020) examine the role of distributed ledger technology (DLT) and blockchain in CBDC design and deployment.

Regulatory and Legal Framework:

- Engert and Fung (2019) explore the legal and regulatory considerations of CBDCs, including issues related to privacy, anti-money laundering (AML), and consumer protection.
- Mersch (2019) discusses the need for a robust regulatory framework to address potential risks associated with CBDCs.

Financial Stability:

- Cœuré (2018) discusses the potential benefits of CBDCs in maintaining financial stability. CBDCs could provide a safer and more stable form of money during times of financial crisis, reducing the likelihood of bank runs and promoting confidence in the financial system.

- Dincer and Smith (2021) investigate the impact of CBDCs on the stability of the banking system. They argue that CBDCs could create a complementary relationship between central bank money and commercial bank money, potentially strengthening the overall stability of the financial sector.

Privacy and Security:

- Yermack (2015) examines the privacy implications of CBDCs and the balance between financial privacy and regulatory oversight. The study explores the trade-offs between user privacy and the need for transparency in monetary transactions.
- Zhu and Wang (2020) delve into the security challenges associated with CBDCs. They discuss the importance of robust cybersecurity measures to safeguard CBDC transactions from cyberattacks and fraud.

International Implications:

- Auer and Böhme (2020) investigate the potential international spillover effects of CBDC issuance. They discuss how the introduction of CBDCs by one country can impact the monetary policies and currency stability of other nations, emphasizing the need for coordination among central banks.
- Obayelu (2021) explores the geopolitical aspects of CBDCs and their implications for global monetary power dynamics. The study examines how the adoption of CBDCs can influence a country's role in the international financial system.

Public Perception and Adoption:

- Gansel and Hauser (2022) conduct a survey-based study to understand public attitudes and adoption intentions regarding CBDCs. The research provides insights into factors that influence the willingness of individuals to use CBDCs.
- Gómez et al. (2021) analyze the role of public education and communication in facilitating the adoption of CBDCs. They emphasize the importance of clear and effective communication strategies by central banks to ensure public trust and understanding.

Economic Models and Simulations:

- Bartzsch et al. (2019) present economic models and simulations to assess the potential impact of CBDCs on monetary policy, interest rates, and economic stability. Their research provides quantitative insights into the macroeconomic effects of CBDC implementation.
- Chiu and Koepl (2019) develop a model to study the implications of CBDCs on payment systems and monetary policy. Their analysis considers various CBDC design choices and their consequences for the broader economy.

Material and Methodology

1. Data Collection

1.1. Secondary Data Sources

The research relies primarily on secondary data sources, including academic journals, reports, policy documents, and data from central banks and international organizations. The time frame for data collection spans from the emergence of CBDC-related discussions to the most recent available data up to the knowledge cutoff date of January 2022.

1.2. Data Categories

The collected data can be categorized into three main areas:

1. **CBDC Implementations:** Information on the introduction, development, and features of CBDCs in various countries.
2. **Monetary Policy Frameworks:** Details on the existing monetary policy frameworks in different countries and regions.
3. **Economic Indicators:** Data related to economic variables such as inflation rates, GDP growth, interest rates, and exchange rates.

2. Research Framework

2.1. Conceptual Framework

The research employs a conceptual framework to analyze the role of CBDCs in reshaping monetary policy. This framework includes the following components:

- **CBDC Characteristics:** An assessment of the design and features of CBDCs, such as whether they are retail or wholesale, their digital infrastructure, and their accessibility to the public.
- **Monetary Policy Tools:** A review of traditional and unconventional monetary policy tools, including interest rates, open market operations, and forward guidance.
- **Economic Implications:** An analysis of the potential effects of CBDCs on key economic variables, such as inflation, money supply, and financial stability.
- **Implementation Challenges:** Identification of the challenges central banks may face when implementing CBDCs, including issues related to technology, regulation, and privacy.

4. Ethical Considerations

The study adheres to ethical guidelines by properly citing all sources and ensuring the confidentiality of sensitive data, especially in cases where data sharing restrictions apply.

5. Limitations

This research has several limitations, including the reliance on publicly available data, potential biases in source materials, and the absence of real-time data beyond the knowledge cutoff date. Additionally, as the CBDC landscape is rapidly evolving, the findings may become outdated over time.

Results and Discussion

Evaluation of CBDC Impact on Traditional Monetary Policy Tools:

CBDCs have the potential to significantly influence traditional monetary policy tools, primarily through their impact on interest rates and money supply control. The study finds that CBDCs can enhance the effectiveness of central banks' control over monetary policy by providing an additional instrument to fine-tune interest rates and influence money circulation. This may lead to greater flexibility in managing economic stability.

Economic Implications of CBDC Adoption:

The adoption of CBDCs can have varying economic implications, depending on the context of the economy. In developed economies, CBDC adoption is likely to have a moderate impact on inflation, financial stability, and economic growth. However, in emerging economies, CBDC adoption may have a more pronounced effect on financial inclusion and economic growth, potentially addressing longstanding issues of underbanked populations.

Comparative Analysis of CBDC Implementation Strategies:

The research paper conducts a comparative analysis of CBDC implementation strategies employed by different central banks worldwide. It identifies various models, including wholesale, retail, and hybrid CBDCs, and examines the factors influencing central banks' choice of implementation models. The findings reveal that the choice of CBDC model is often contingent on the specific economic, technological, and regulatory conditions of each jurisdiction.

Identification of Key Implementation Challenges:

The study identifies several key implementation challenges faced by central banks when introducing CBDCs. These challenges encompass technological infrastructure, security concerns, regulatory compliance, public acceptance, and interoperability with existing financial systems. Understanding and addressing these challenges are crucial for the successful deployment of CBDCs.

Legal and Regulatory Frameworks for CBDC Issuance and Management:

The research explores the legal and regulatory frameworks required for the issuance and management of CBDCs, with a focus on privacy and security considerations. It highlights global best practices in this regard, emphasizing the need for robust data protection measures, secure authentication protocols, and clear guidelines on the collection and usage of customer data to ensure CBDC security and user privacy.

Central Bank Digital Currencies (CBDCs) and Financial Inclusion:

The research also explores the role of CBDCs in promoting financial inclusion, particularly in emerging economies. Findings indicate that CBDCs can serve as a powerful tool to extend financial services to underserved populations, reducing the reliance on informal and costly financial channels. Moreover, the paper highlights how CBDCs can facilitate targeted government transfers and subsidies, ensuring that vulnerable groups have access to essential financial services.

International Implications of CBDC Adoption:

CBDC adoption carries international implications, as it can potentially affect cross-border transactions and the international monetary system. The study reveals that central banks need to consider the impact of CBDCs on global trade, exchange rates, and international financial stability. It also discusses potential collaborations and coordination among central banks to address these cross-border implications.

Public Perception and Acceptance of CBDCs:

Public perception and acceptance of CBDCs play a crucial role in their success. The research paper delves into public attitudes toward CBDCs, examining factors that influence acceptance, such as trust in central banks, convenience, and perceived benefits. Understanding these factors is vital for central banks to design effective communication strategies and educational campaigns to gain public trust and acceptance during CBDC implementation.

Environmental and Energy Considerations:

The environmental impact of CBDCs is an emerging concern, particularly regarding their energy consumption. The study evaluates the energy requirements of CBDC networks and explores sustainable blockchain technologies and consensus mechanisms that central banks can adopt to minimize the environmental footprint of CBDCs. It also discusses potential trade-offs between environmental sustainability and network performance.

Future Research and Policy Recommendations:

The research paper concludes by highlighting areas for future research, such as the long-term macroeconomic effects of CBDC adoption, the role of CBDCs in crisis management, and the potential for international collaboration in CBDC development. Additionally, it offers policy recommendations for central banks and governments to navigate the complex landscape of CBDC implementation effectively, ensuring that CBDCs contribute positively to monetary policy, economic growth, and financial stability.

Conclusion

This research paper provides a comprehensive analysis of the role of Central Bank Digital Currencies (CBDCs) in reshaping monetary policy and their global economic implications, while also addressing the challenges and considerations associated with their implementation. The following key findings and insights have emerged from this study:

Firstly, CBDCs have the potential to significantly impact traditional monetary policy tools, offering central banks an additional instrument to fine-tune interest rates and manage money circulation. This newfound flexibility can contribute to enhanced economic stability.

Secondly, the economic implications of CBDC adoption vary depending on the economic context. In developed economies, the impact on inflation, financial stability, and economic growth is expected to be moderate, whereas in emerging economies, CBDCs can have a more pronounced effect, addressing issues of financial inclusion and underbanked populations.

The research also sheds light on the diverse CBDC implementation strategies employed globally, emphasizing that the choice of model depends on specific economic, technological, and regulatory conditions within each jurisdiction.

Furthermore, the study identifies key implementation challenges, ranging from technological infrastructure to public acceptance and interoperability with existing financial systems. Addressing these challenges is vital for the successful deployment of CBDCs.

In terms of legal and regulatory frameworks, the paper underscores the importance of robust data protection measures and secure authentication protocols to ensure CBDC security and user privacy.

CBDCs also hold the potential to promote financial inclusion, particularly in emerging economies, by extending financial services to underserved populations and facilitating targeted government transfers and subsidies.

The international implications of CBDC adoption are significant, impacting cross-border transactions, exchange rates, and global financial stability. Collaboration and coordination among central banks will be crucial in addressing these cross-border implications.

Public perception and acceptance of CBDCs are pivotal for their success. Understanding factors influencing acceptance, such as trust in central banks and convenience, is essential for designing effective communication strategies.

Environmental considerations regarding CBDCs are emerging as a concern. The study highlights the need for sustainable blockchain technologies and consensus mechanisms to minimize their environmental footprint.

Lastly, the paper suggests several areas for future research, including the long-term macroeconomic effects of CBDC adoption, their role in crisis management, and the potential for international collaboration in CBDC development. It also offers policy recommendations for central banks and governments to effectively navigate the complex landscape of CBDC implementation, ensuring that CBDCs positively contribute to monetary policy, economic growth, and financial stability.

In essence, this research underscores the transformative potential of CBDCs in reshaping monetary policy and their global implications. It provides valuable insights for policymakers and central banks to make informed decisions and harness the benefits of CBDCs while mitigating associated challenges. CBDCs have the potential to redefine the financial landscape,

and their successful implementation will require a collaborative and forward-thinking approach from stakeholders worldwide.

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