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Chapter 3

The Views of Regulators Around the World: A Systematic Review of Central Bank's Official Publications on CBDC

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ABSTRACT

In discussing the future of money and financial systems, central bank digital currencies (CBDCs) are now dominating the discourse; hence, understanding the perspectives of regulators, particularly central banks, and monetary authorities, is paramount in comprehending the global landscape of CBDC adoption and regulation. This chapter presents a systematic literature review of official publications published by central banks worldwide by synthesizing regulators' perspectives on CBDCs across different jurisdictions. This chapter synthesizes vital themes, trends, and insights about CBDCs by comprehensively analyzing central banks' publications. The authors find that official publications on CBDC by central banks are still at an early stage, highlighting the need for further research on perspectives by central banks about CBDC. Although many central banks indicated that they are undertaking CBDC research, their research output and public data are challenging to find.

INTRODUCTION

Although there are several emerging Central Bank Digital Currency (CBDC) literature reviews, there is a paucity of data on official research output by central banks. This chapter offers insights into Central Bank's perspective on CBDCs around the world by reviewing official publications to aid researchers, policymakers and practitioners' understanding of CBDC's evolution. Currently, CBDC is in vogue with central banks at various stages of digital currency issuance. The first CBDC was created in 1993 when

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the Central Bank of Finland launched the AVANT smart card, which served as an electronic form of cash issued by a central bank and was later disconnected in the 2000s (Stanley, 2022). According to BIS (2024), there are 214 central banks and monetary authorities worldwide, and most entities are considering CBDC. As of March 2024, seven central banks and monetary authorities have cancelled CBDC, 105 countries are undertaking CBDC research, 26 are at the proof-of-concept stage of their CBDC rollout, 20 countries are undergoing CBDC pilots, and four countries have launched CBDC (Mikhalev et al., 2022).

Examples of CBDC literature reviews include:

- cross-border CBDC, its interoperability through the lens of a multivocal literature review (Themistocleous et al., 2023);
- a literature review of the macroeconomic implications of CBDC (Kim et al., 2022);
- a systematic literature review of CBDC using a text mining approach, a review of CBDC literature around the world (Ozili, 2022);
- a survey of retail CBDC research (Kiff et al., 2020);
- literature review comparing CBDC and physical currency (Ahmed et al., 2022);
- literature review of design and legal aspects of CBDC (Handayani, 2022);
- literature review on the implication of retail, motivation and rationale for the deployment of CBDC (Tronnier et al., 2020);
- CBDC effects on the bank system (Iwańczuk-Kaliska, 2023) and
- a literature review of CBDC in the Malaysian literature review on the CBDC context (Sham et al., 2021).

However, there is a gap in the CBDC literature based on official publications by central banks. Therefore, this chapter is expected to explore central banks' motivations, benefits, and challenges in issuing CBDCs from their perspectives as the issuing authorities. The main research questions for this chapter centre around the main CBDCs' key issues, new developments, themes, and emerging research areas from the perspectives of central banks and monetary authorities. This chapter continues with a literature review, a description of its methodology, a presentation of results, a discussion, recommendations, and a conclusion.

LITERATURE REVIEW

There has been a growing interest in Central Bank Digital Currencies (CBDCs) in recent years, as Central Banks worldwide are exploring the potential of digital currencies as an integral part of their financial ecosystem. The literature review is organised into two parts. First, it provides an overview of the current state of CBDCs, including their motivations, design considerations, implementation challenges, and potential impacts. Second, it chronicles salient issues covered by a growing literature review of CBDC's state of play.

In the literature, the motivations for considering and deploying CBDCs vary. Some motivations include the need for central banks to ensure monetary sovereignty in the face of digital payment innovations, including the evolution of cryptocurrencies (Barrdear & Kumhof, 2017; Clark & Mihailov, 2019; Coats, 2022). Also, the introduction of CBDCs is expected to address declining cash use Brodo & Levin,

(2017) and enhance financial inclusion through the provision of access to digital payment services for underserved populations (Ozili, 2023; Stellar Development Foundation, 2023)

In terms of CBDC design considerations, several CBDC design frameworks are being considered, including token-based systems to account-based systems Lee et al., (2020) and the need to incorporate privacy-enhancing design features while balancing regulatory requirements (Chiu & Koepl, 2017). Despite the potential benefits of CBDCs, their deployment is challenging, and their implementation faces several challenges. These challenges include concerns regarding financial stability and monetary policy transmission Kumhof & Noone, (2018), the impact on commercial banks and payment intermediaries Son et al., (2023), technological scalability and security Rybski, (2023), and legal and regulatory issues related to cross-border transactions (Auer, Cornelli, et al., 2021). Also, adopting CBDCs could have far-reaching implications for the financial system, monetary policy, and economic stability. Authors Barrdear & Kumhof, (2017) noted its potential impacts, including changes in the demand for central bank money. Further, CBDCs holds the potential to serve as a tool for implementing unconventional monetary policies (Tasca & Liu, 2016).

Central Bank Digital Currencies (CBDCs) research has experienced exponential growth since 2018, with significant increases recorded between 2021 and 2022 (Padilla, 2022; Sah et al., 2023). A growing body of literature is exploring the potential impacts of central bank digital currencies (CBDCs) on the economy, with a focus on their implications for the digital economy, data privacy, and the financial system (Ahnert et al., 2023; Auer & Böhme, 2021; Chapman et al., 2023; Ozili, 2022). Authors, Carapella & Flemming (2020), explores the CBDC's effect on commercial banks, monetary policy, and financial stability. In terms of gaps in the existing literature, Ahmadova (2020) identifies areas of CBDC policy implications and end-user preferences as critical issues under investigation regarding CBDC deployment. In their systematic review of CBDC literature using text mining approach, (Hoang et al., 2023) found that seven primary themes dominating the literature including (1) Central bank, (2) CBDC and other digital currency, (3) CBDC and money markets, (4) CBDC and monetary policy, (5) CBDC design and technologies, (6) CBDC and payment system, and (7) CBDC and financial stability and regulatory. The authors concluded that, depending on how CBDC is designed, and deployed, it can have positive and negative impacts on the financial system and the economy.

According to Ahnert et al. (2023), though the academic literature broadly echoes policymakers' concerns about bank disintermediation and financial stability risks, some papers also provide conditions under which such risks may not occur while pointing several knowledge gaps in the CBDC literature that merit further work, such as data privacy. Author (Ozili, 2022) suggested areas for future research, including the need to find the optimal CBDC design and empirical evidence on the effect of CBDC on the cost of credit and financial stability.

Beniak (2019) argues that a central bank can adopt diverse design options in deploying CBDC; however, based on a particular version adopted by the central bank can have implications on central bank interest rate setting and monetary policy implementation. Also, the effects of CBDC adoption on macroeconomic and financial stability are at the heart of design options consideration. Current evidence points to the purported generic benefits of CBDCs; however, expected monetary and fiscal policy benefits are mostly theoretical without the backing of real-world data. That said, selecting design options could amplify some risks associated with adopting CBDC. Therefore, further research and debate could broaden to a multidisciplinary perspective instead of a narrow focus on economic policy implications (Genc & Takagi, 2024). Most available literature focuses on fundamental aspects of CBDCs, such as technological innovations, potential pros and cons, impacts on monetary policy, and legal requirements,

with a limited complementary perspective. Bilgen & Dutto (2023) discuss a more comprehensive assessment of the state of CBDC design research, and they identify 3 level CBDC Design framework: design considerations, options and types which encapsulate complex dynamics of CBDC design. Cunha et al. (2021) reviewed both 100 publications, including official positions from central banks, and the authors noted that central banks are experimenting with various CBDCs anchored on technical and economic design choices, CBDC variants such as wholesale, retail, the account-based, and token-based are under consideration. Kiff et al. (2020) suggested a structured framework on CBDC adoption decision making indicators.

Aueret al. (2021) noted growing CBDC literature on microeconomic considerations, operational architectures, technologies, privacy and its impact on the financial system stability, and monetary policy. They argued that the Central Bank's digital currencies should be considered in the digital economy's entire context and the data's centrality. Despite the perceived benefits of CBDCs, such enabling financial inclusion and improved monetary policy, caution is advised due to their design limitations (Ozili, 2022).

The review of CBDC literature focuses on areas such as CBDC's potential impacts on traditional banking: payments, lending, and liquidity. Therefore, there needs to be more research on CBDCs through the lens of industrial organisation, examining issues such as platform competition and business models and new developments such as stablecoin and decentralised finance in the crypto space (Chapman et al., 2023). In the review of CBDC literature, topics such as theoretical models, economic policies, post-modern mindset, cybercrime, ecology, regulatory framework, financial stability, and cashless payment systems dominate such reviews (Padilla, 2022). CBDCs literature highlights the need for further research to address unresolved questions, such as the cross-border dimensions of CBDCs, their impact on private banks, and the optimal design that balances competing objectives. The literature also underscores the importance of understanding end-user preferences for digital payment methods and potential negative effects on bank's disintermediation and financial stability (Ahnert, 2022). In conclusion, these studies reinforce the increasing prominence of CBDCs while highlighting key reasons to increase further research, especially from the perspectives of Central Banks.

METHODOLOGY

The main research questions for this chapter centred on the critical issues of CBDC. It also focuses on new developments, themes, and emerging research areas from the perspectives of Central Banks and Monetary authorities. This chapter aims to explore the level of relevant CBDC research outputs by Central Banks through the analysis of official publications over time using keywords analysis. The systematic literature review methodology used studies by Nave (2021), Synnot (2020), Hannigan (2006), and Pu (2023) all share common elements. Based on bibliometric and content analysis techniques, these studies employed a systematic approach to identify, select, and analyse relevant literature. Nave (2021) and Pu (2023) both used data from specific databases, while Synnot (2020) and Hannigan (2006) conducted searches across multiple resources. The studies also identified vital themes or clusters of research, such as in the case of Nave (2021) and Pu (2023), evaluated the processes and outcomes of the review, as demonstrated by Synnot (2020). These studies collectively highlight the importance of a systematic approach in conducting literature reviews, which is essential for ensuring the reliability and validity of the findings.

Research Design

This study inferred a rigorous systematic literature review methodology from Godin et al. (2015), Paez (2017), and Cunha et al. (2021) to investigate the perspectives of regulators worldwide on Central Bank Digital Currency (CBDC). The research design utilises content analysis to analyse the central bank's official publications on CBDC. A comprehensive literature search plan was developed to ensure the inclusion of relevant sources. The plan consisted of four distinct search strategies: grey literature databases, customised Google search engines and targeted official Central Bank websites.

Data Collection

The search strategy targeted official publications from central banks worldwide. Abstracts, executive summaries, or tables of contents were screened for relevance, followed by a full-text screening of selected publications. Data extraction focused on crucial information, including organisation, publication year, authors, intended audience, goals/objectives, sources of evidence/resources cited. The data for this chapter was collected manually from March to April 2024; manual data collection was adopted since there is no central repository of central banks' official publications. The operational definition for these publications was that they must be explicitly issued by the central bank, authored by a central bank staff, and published on a central bank website. We adopted a broad outlook in our search; therefore, we chronicled various types of publications, including Primers, Public Perception Reports, Public Engagement Reports, Financial Institutions Engagement Reports, Feature Articles, Explainers, Working Papers, Minutes, Discussion Papers, Terms of Reference, Official Blogs, Public Updates, Occasional Papers, Analytic Note, Working Group Reports, Staff Memo, White Papers, Evaluation Reports, Research Reports, Conference Papers, Bulletins, Statements, Speeches, Directives, Frequently Asked Questions (FAQ), Technical Papers among others. Though the Bank for International Settlements (BIS) and the International Monetary Fund (IMF) had a lot of CBDC publications, they were excluded from this review since this chapter focuses on the nation-state and supra-national organisations.

The data collection process started with a list of 179 Central bank and monetary authority websites recorded at <https://www.bis.org/cbanks.htm?m=59> managed by the Bank for International Settlement (BIS). Two research associates visited each of these websites to search for official publications on CBDC using a combination of keywords: Central Bank Digital Currencies, CBDC and Digital Currencies. Inclusion and exclusion criteria were established to ensure that only relevant data was included in the systematic review (Swift & Wampold, 2018). In this direction, English language content and non-English language were excluded. This analysis only considered official publications located or linked directly to central banks or government websites. The research associates also visited <https://cbdctracker.org> to find relevant publications based on the Central Bank and monetary authority websites listed on this site.

Data Analysis

Data extraction and coding were conducted using a systematic approach. Two coders were involved in the coding process, with an arbitrator resolving discrepancies. The data from this research were analysed using MAXQDA 2022, a qualitative data analysis tool. Inter-coder reliability was ensured through agreement on the coding scheme, exchange of coded text for comparison, and reconciliation of discrepancies by a neutral research team member. This chapter study utilised content analysis to complement other

data analysis due to its flexibility and suitability for systematic literature review. The analysis focused on identifying themes, patterns, and trends in the central bank's official publications regarding CBDC.

Quality Assurance

Quality assurance measures such as systematic search strategies, transparent data extraction procedures, and inter-coder reliability checks to ensure the rigour and credibility of the study. Additionally, the research team adhered to established protocols and best practices for conducting systematic literature reviews. This chapter employed a comprehensive methodology that integrated multiple search strategies, systematic data extraction procedures, and rigorous data analysis techniques.

RESULTS AND DISCUSSION

In this section, we will discuss the findings and implications of our study, which aimed to address the research gap identified in Ozili's (2022) work. Our study compared the attributes of Central Bank Digital Currencies (CBDCs) across 48 countries and six continents and incorporated grey literature into the conventional literature review. By doing so, we aimed to differentiate our study from the existing literature and provide a comprehensive analysis of CBDCs on a global scale.

Including grey literature in our study was a deliberate choice, as it allowed us to capture a broader range of information and perspectives on CBDCs. While conventional literature reviews are valuable in synthesizing published research, they may inadvertently exclude valuable insights from non-traditional sources. By incorporating grey literature, such as reports, working papers, and policy documents, we could access information that may not have yet been available through traditional academic channels. This approach enhanced the comprehensiveness of our study and contributed to a more nuanced understanding of CBDCs.

This study aimed to conduct a systematic literature review of the Central Bank's official publications on Central Bank Digital Currency (CBDC) and gain insights into regulators' views worldwide. Our study is similar to earlier studies of Ozili, (2023) and Carapella & Flemming, (2020). The analysis focused on the regional distribution of these publications and the number of countries involved. The data search phase revealed 232 official central banks and monetary authorities' publications from 48 countries, and one Economic and Monetary Union (EMU), the European Central Bank. This study was delimited to official publications in English and organised along the lines of 6 continents, namely Africa, Australia, Asia, North America, South America, and Europe. Table 1 shows the list of countries covered during data collection.

continued on following page

Table 1. Continued

Table 1. List of countries and continent

	Asia			Africa			Europe	
1	Hong Kong	10	1	Ghana	1	1	Luxembourg	5
2	India	3	2	Kenya	2	2	Austria	2
3	Indonesia	3	3	Nigeria	6	3	Belgium	2
4	Israel	8	4	South Africa	4	4	Croatia	3
5	Japan	3	5	Tanzania	1	5	Czech	2
6	Kuwait	1		Total	14	6	Denmark	4
7	Philippines	3				7	Estonia	4
8	Saudi Arabia	2		North America			European Central Bank	16
9	Thailand	5	1	Bahamas	5	8	Finland	2
10	Turkey	2	2	Canada	36	9	Ireland	1
11	UAE	1	3	Jamaica	3	10	Latvia	1
12	Korea	3	4	USA	14	11	Lithuania	2
13	Singapore	7	5	Mexico	2	12	Norway	8
	Total	51			60	13	Poland	1
Australia				South America		14	Russia	7
1	Australia	12	1	Brazil	6	15	Spain	4
2	New Zealand	8		Total	6	16	UK	18
	Total	20					Total	82

Source: research data 2024

The data in Table 2 shows a regional breakdown of the results of the geographic distribution of the central bank's CBDC publications based on continents. Europe came top with the most publications, 82 from 16 countries, while South America had the most minor publications, six from one country, Brazil. It is important to note that the number of publications does not necessarily reflect the significance or depth of the discussions on CBDC in each region. However, it does offer insights into the level of engagement and interest among central banks in different parts of the world.

Table 2. Geographical distribution of Central Bank's official publications on CBDCs

Regional Total	No of publications	No of countries
Australia	20	2
Europe	82	16
North America	60	5
Asia	50	13
Australia	20	2
Africa	14	5
South America	6	1
	232	42

Source: research data 2024

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Europe substantially engaged with CBDC, with 82 publications from 16 countries. This suggests a widespread interest and active participation of European central banks in exploring CBDC's potential. The European Union's push towards digitalization and the ongoing discussions on the digital euro contributed to this high level of engagement. Additionally, the presence of multiple national currencies within Europe may have prompted individual countries to study CBDC as a potential tool for monetary policy and financial stability.

North America, comprising the United States, Canada, Jamaica, Bahamas, and Mexico, had 60 publications from three countries. While the number of publications is relatively lower compared to Asia and Europe, it is essential to consider the influence and prominence of the US Federal Reserve in the global financial system. The Federal Reserve's cautious approach towards CBDC may have influenced the level of engagement among North American central banks. Nonetheless, several publications indicate an ongoing interest and consideration of CBDC in the region.

Asia emerged as the emerging continent with the highest number of publications, accounting for 50 out of 234. These statistics indicate a strong focus and interest in CBDC among central banks in this region. With 13 countries contributing to these publications, CBDC is evidently a topic of significant importance and discussion in Asia. These results may be attributed to the rapid technological advancements and digitalization of Asian economies and major global financial centres in countries like China, Japan, and Singapore.

Africa, South America, and Australia exhibited lower engagement levels with CBDC than the other regions. Africa had 14 publications from five countries, indicating a moderate interest in CBDC. This indicator may be attributed to the varying degrees of economic development and financial inclusion across the continent. Despite having a higher number of countries involved (nine), South America had only nine publications. This result suggests a relatively lower level of engagement among central banks in the region. Australia, with two countries contributing 20 publications, demonstrated a moderate interest in CBDC. The results indicate a global interest and engagement among central banks in exploring CBDC's potential. While Europe, North America, and Asia stand out as regions with the highest number of publications, it is essential to consider the varying factors influencing the level of engagement in each region. The results of this study provide a foundation for further analysis and understanding of the views and perspectives of regulators worldwide on CBDC.

Regarding the coverage period, this research data covered publications from 2014 to 2024, with most papers clustered around 2021 to 2024; see Table 3 for publications and dates. According to the results, the first publication in this research dataset was authored by the Bank of England, entitled “The Economics of digital currencies.” Table 3 gives a bird's-eye view of central bank perspectives on digital currency at the initial stages. However, the dataset is small; it points to central banks considering the broader topic of digital currency, which over time narrowed down to questioning the value of CBDC and an analysis of its disadvantages and advantages.

Table 3. Papers from initial years 2014 to 2017

No.	Title	Year	Author	Source
1	The economics of digital currencies	2014	Bank of England	https://www.bankofengland.co.uk/-/media/boe/files/digital-currencies/the-economics-of-digital-currencies#:~:text=From%20the%20perspective%20of%20economic,to%20person%20and%20over%20time
2.	Central bank digital currency the end of monetary policy as we know it?	2015	Bank of England	https://bankunderground.co.uk/2016/07/25/central-bank-digital-currency-the-end-of-monetary-policy-as-we-know-it/
3.	The macroeconomics of central bank issued digital currencies	2016	Bank of England	https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2016/the-macroeconomics-of-central-bank-issued-digital-currencies.pdf
4.	Digital Currencies: Threat and opportunities for monetary policy	2017	National Bank of Belgium	https://www.nbb.be/doc/ts/publications/economicreview/2017/ecorevi2017_h5.pdf
5.	In search of gold: Exploring central bank issued digital currency	2018	Reserve Bank of New Zealand	https://www.bis.org/review/r180716c.pdf
6.	A Digital Currency Useful for Central Banks?	2018	Czech National Bank	https://www.cnb.cz/en/public/media-service/speeches-conferences-seminars/presentations-and-speeches/A-Digital-Currency-Useful-for-Central-Banks
7.	Central Bank digital currencies	2018	Norges Bank	https://www.norges-bank.no/contentassets/166efadb3d73419c8c50f9471be26402/nbpapers-1-2018-centralbankdigitalcurrencies.pdf?v=18052018121950
8.	The pros and cons of issuing a central bank digital currency	2018	Reserve Bank of New Zealand	https://www.rbnz.govt.nz/-/media/4ee8fb7526804ed2924ad2d4c108fe3a.ashx

Source: research data 2024

The results of the section below present the findings of the study on the views of regulators around the world regarding Central Bank Digital Currencies (CBDCs) based on a systematic literature review of Central Bank's official publications. The analysis focuses on the countries with the highest publications on CBDCs: Canada, the UK, the USA, Australia, and Hong Kong. The following subsections provide detailed insights into the publications from each of these countries and their implications for the study (Bindseil, 2019). Regarding country distribution of CBDC publications, Table 4 shows the top five countries with a total of 90 publications, representing 39.66% of the total number of publications 232 collected as part of this research. The Central Bank of Canada led with the highest count of 36 publications, 15.5% of the total publications collated for this research. It is interesting to note that, based on the results of this research, none of the top 5 countries are yet to issue CBDC. The four countries currently implementing CBDCs Mikhalev et al., (2022) had the following numbers of publications:

JAM-DEX, Bank of Jamaica (3 publications), ZiG, Reserve Bank of Zimbabwe (0), Sand Dollar, Central Bank of Bahamas (5 publications) and e-Naira, Central Bank of Nigeria (6 publications).

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Table 4. Top four countries with the highest publications

No.	Countries	Number of publications
1	Canada	36
2	UK	18
3	USA	14
4	Australia	12
5	Hong Kong	10
		90

Source: research data 2024

Canada

Canada emerged as the country with the highest number of publications on CBDCs, with 36 official publications. These publications reflect the significant interest and active engagement of the Bank of Canada in the CBDC discussion. The findings suggest that the Bank of Canada views CBDCs as a potential tool to enhance the Canadian payment system's efficiency, security, and inclusiveness (Davoodalhosseini, 2022), however, there are no plans to implement CBDCs soon.

UK

The United Kingdom ranked second in the number of publications on CBDCs, with 18 official publications. The Bank of England's publications indicate a keen interest in exploring the potential benefits and risks of CBDCs. The findings suggest that the Bank of England views CBDCs as strengthening the resilience and effectiveness of the UK's monetary and financial systems (Davoodalhosseini, 2022). The publications also emphasize the importance of public consultation and collaboration with other stakeholders in shaping the design and implementation of a potential CBDC.

USA

The United States secured the third position regarding the number of publications on CBDCs, with 14 official publications. The publications from the Federal Reserve System indicate a cautious approach towards CBDCs, emphasizing conducting thorough research and analysis before any potential implementation. The findings suggest that the Federal Reserve recognizes the potential benefits of CBDCs, such as improving payment systems and financial inclusion (Davoodalhosseini, 2022), but also highlights concerns related to privacy, cybersecurity, and monetary policy implications. This result is consistent with the study of Elsayed & Nasir, (2022) The publications call for further exploration and collaboration with international partners to understand the implications of CBDC adoption.

Australia

Australia ranked fourth in terms of the number of publications on CBDCs, with 12 official publications. The publications from the Reserve Bank of Australia highlight a growing interest in CBDCs and their potential implications for the Australian financial system (Agur, Ari & Dell'Araccia, 2022). The

findings suggest that the Reserve Bank of Australia recognizes the need to closely monitor developments in CBDCs and actively engage in research and experimentation. The publications also stress the importance of maintaining public trust and confidence in any potential CBDC implementation while addressing security, privacy, and financial stability concerns.

Hong Kong

Hong Kong secured the fifth position in terms of the number of publications on CBDCs, with ten official publications. The Hong Kong Monetary Authority (HKMA) publications indicate a proactive approach towards CBDCs, emphasizing exploring the potential benefits and risks. The early study emphasised disintermediation and facilitation risks. The findings suggest that the HKMA recognizes the potential of CBDCs to enhance the efficiency, security, and competitiveness of the Hong Kong financial system. The publications also highlight the importance of collaboration with other central banks and regulatory bodies in shaping the future of CBDCs.

The analysis of the publications from the countries with the highest publications on CBDCs reveals a global interest in exploring the potential of CBDCs. The findings suggest that central banks and regulators recognize the need for further research, experimentation, and collaboration to address the various challenges and implications associated with CBDC implementation. The insights gained from these publications provide a solid foundation for the systematic literature review on the views of regulators around the world regarding CBDCs, contributing to a comprehensive understanding of the current landscape and prospects of CBDCs.

Emerging Issues

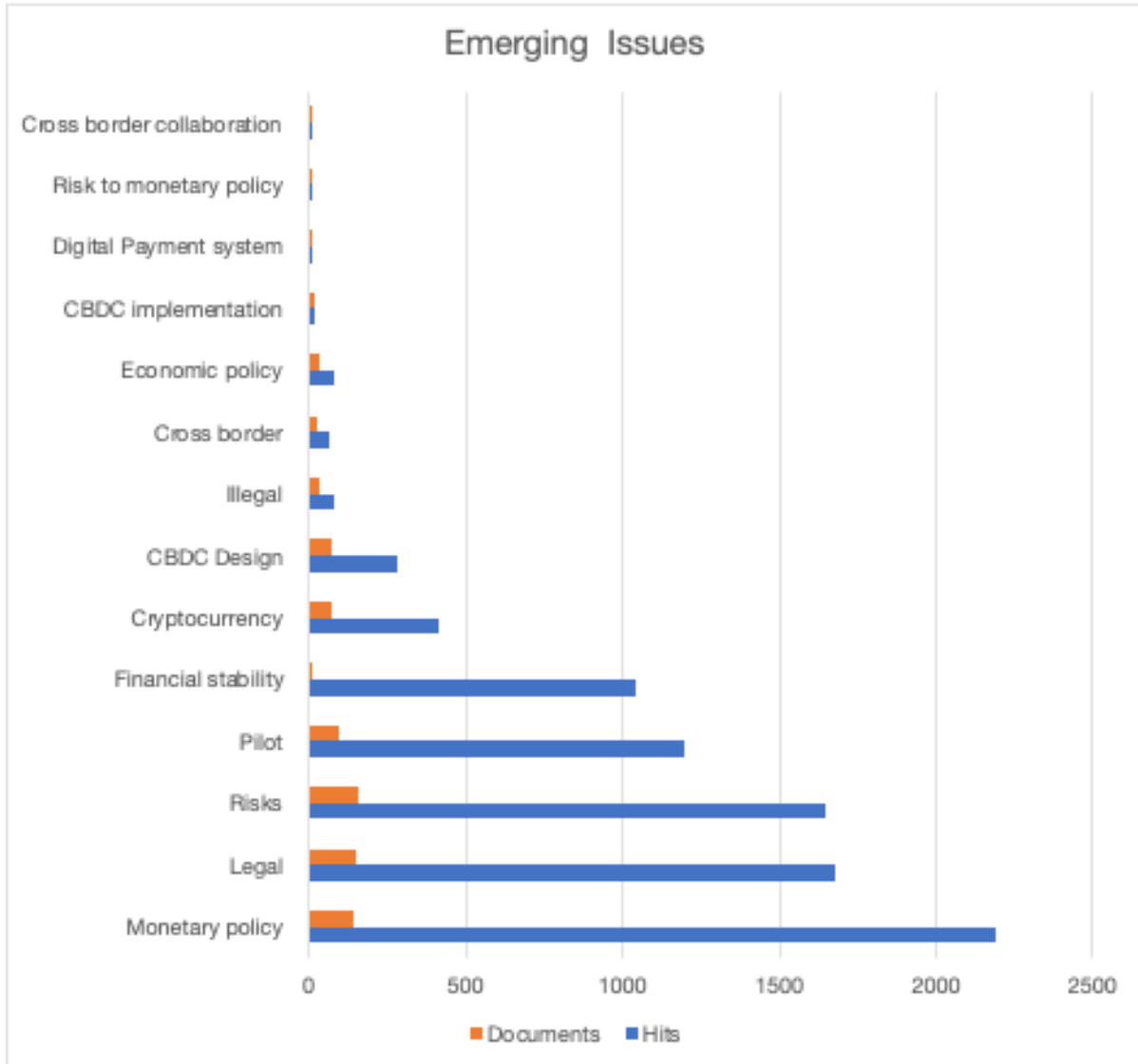
Regarding overall word frequency, the results revealed “bank”, “CBDC”, “Payment”, “Digital” and “Central” as the most frequently occurring words in the publications covered; Table 5 and Figure 1 show word frequency distribution.

Table 5. Word frequency distribution

Word	Word length	Frequency	%	Rank	Documents	Documents %
Bank	4	39705	3.47	1	229	98.71
CBDC	4	23542	2.06	2	201	86.64
Payment	7	16636	1.45	3	225	96.98
Digital	7	15325	1.34	4	221	95.26
Central	7	14886	1.30	5	225	96.98
System	6	9772	0.85	6	216	93.10
Currency	8	8951	0.78	7	219	94.40
Deposit	7	8155	0.71	8	172	74.14
Financial	9	7549	0.66	9	217	93.53
Money	5	7471	0.65	10	204	87.93

Source: research data 2024

Figure 2. Emerging issues



(Research Data, 2024)

The keyword “Monetary policy” yielded most results, with 2187 hits, indicating a substantial volume of research and discussion on Central Bank Digital Currencies (CBDCs) ' potential impact on monetary policy. This result suggests that CBDCs have the potential to exert a considerable influence on the formulation and execution of monetary policy in line with (Hoang et al., 2023). In contrast, “Pilot” received a high number of hits, with 1198, suggesting a significant interest and emphasis on pilot projects related to CBDCs. This direction indicates that pilot projects are perceived as a crucial step in comprehending the practical implications and challenges inherent in implementing CBDCs. One of the visible challenges is technology shock especially in the developing continents (Minesso, Mehl, & Stracca, (2022).

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Additionally, “Financial stability” generated a notable number of hits, totalling 1039. This result suggests considerable research and discussion regarding the potential impact of CBDCs on financial stability (Ahnert, 2022). Consequently, ensuring financial stability emerges as a key concern when designing and implementing CBDCs. Consequently, preserving stability is a crucial consideration in the design and implementation of CBDCs. Furthermore, the term “Legal” received many hits, reaching 1677, suggesting extensive research and discussion on the legal aspects of CBDCs. This statistic implies a recognition of the significance of ensuring CBDCs adhere to existing legal frameworks and regulations.

Conversely, the term “Risks” also garnered a substantial number of hits, with 1645, indicating significant research and discussion on the potential risks associated with CBDCs. This result suggests acknowledging the necessity to identify and mitigate risks that may arise from implementing CBDCs. The term “Cryptocurrency” received 416 hits, reflecting a notable interest and attention directed towards this subject of CBDCs. This statistic emphasizes and indicates a growing awareness of the potential impact of CBDCs on the cryptocurrency landscape. Conversely, “Risk to monetary policy” had the lowest number of hits, with merely one, implying a limited amount of research or discussion on this aspect and the need for more attention to understanding the potential risks CBDCs may pose to monetary policy.

The term “Digital Payment system” obtained a relatively low number of hits, with 11 suggesting that the central focus of research and discussion on CBDCs is not primarily centred around developing digital payment systems. This digital payment system shows that CBDCs might have implications for digital payment systems but are not the primary area of concern or interest.

Similarly, “Cross-border collaboration” received a deficient number of hits, with only one suggesting a dearth of research or discussion on the potential for cross-border collaboration in the context of CBDCs. Consequently, more attention should be given to exploring the possibilities and challenges of cross-border collaboration in implementing CBDCs. On the other hand, the term “Cross border” garnered a moderate number of hits, with 67, indicating a moderate level of interest and discussion on the potential cross-border implications of CBDCs. This result suggests an awareness of the need to consider the cross-border dimensions of CBDC implementation.

The term “CBDC pilot” obtained a relatively low number of hits, with 97 suggesting some research and discussion on the specific topic of CBDC pilot projects. This pilot indicates that while pilot projects are acknowledged as necessary, other research and discussions focus on CBDCs. Similarly, “CBDC implementation” received a moderate number of hits, totalling 22, indicating a level of research and discussion on the practical aspects of CBDC implementation. This indicator recognizes the need to understand the challenges and considerations in implementing CBDCs.

“CBDC and economic policy” had no hits, reflecting limited research or discussion on the potential impact of CBDCs on economic policy. The result suggests the necessity for more attention to understanding the potential implications of CBDCs for economic policy. In contrast, “Economic policy” received a moderate number of hits, with 82, indicating some research and discussion on the potential impact of CBDCs on economic policy. The economic policy emergence suggests that CBDCs have the potential to influence decisions and considerations related to economic policy. The term “CBDC Design” received a moderate number of hits, totalling 283, indicating a certain level of research and discussion on the design aspects of CBDCs. This result suggests recognizing the importance of designing CBDCs in a way that addresses various considerations and requirements.

Conversely, “CBDC and financial stability” received no hits, indicating limited research or discussion on CBDCs and financial stability. The CBDC and financial stability highlight the necessity for more attention to understanding the potential implications of CBDCs for financial stability. Furthermore, the

term “Illegal” garnered a moderate number of hits, with 83 suggesting some research and discussion on the potential deployment of CBDCs for illegal activities. The illegal aspect of CBDCs suggests recognizing the need to address and mitigate the risks associated with illegal activities within the context of CBDCs.

We offer two key recommendations: Central banks should create a well-structured digital repository of their CBDC research efforts, enabling scholars and practitioners to access required data for further research. The creation of a CBDC digital repository can fuel more information and knowledge sharing among central banks in a more organized manner.

LIMITATIONS AND FUTURE RESEARCH AREAS

CBDC is now established as a prevalent issue for most central banks; although our review offered a top-level insight into the perspectives of central banks on CBDCs, there is the need to under broader studies which attempt countries or continental comparison of central banks perspectives. Such future research can enrich our understanding and offer an in-depth analysis of central banks as a central actor in the evolution of CBDCs while contributing to the body of knowledge in this area. While this chapter documented Central Banks perspectives on CBDC, there is scope to explore the following key questions:

1. How do central banks organise CBDC research?
2. What are the main differences or similarities between CBDC research and other research activities by central banks?
3. How are central banks publishing and disseminating CBDC research findings?
4. How does CBDC research output influence the decision-making process of central banks regarding the adoption of CBDC?
5. What is the level of research collaboration by Central banks and academia on CBDCs?
6. What is the role of cryptocurrency as a factor in central banks' CBDC research?

This chapter contributes to the CBDC literature through valuable insights and practical considerations; however, it has some limitations. The lack of a central digital repository of central bank digital publications means the data search was done manually, which may lead to missing some pertinent publications. Second, the study focussed on central bank publications published in English, thereby not capturing content published in other languages. Third, this study did not offer an in-depth comparison of various central banks' perspectives on CBDCs.

CONCLUSION

Our chapter contributed to understanding central banks' and monetary authorities' perspectives on CBDC discussions. The practical implications of this chapter are the provision of valuable insights that can inform public policy developments and facilitate global collaboration and cross-border interoperability. This chapter also provided insights from central banks and monetary authorities' critical view of the evolution of CBDC worldwide.

In conclusion, this book chapter comprehensively reviews central banks' perspectives on Central Bank Digital Currencies (CBDCs) through an analysis of official publications from various jurisdictions. The discourse surrounding CBDCs is increasingly significant in discussions about the future of money and financial systems. Our review highlights key themes, trends, and insights regarding CBDCs,

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including motivations for exploration, potential benefits and risks, design considerations, technological implications, regulatory challenges, and policy frameworks. One of the main findings is that while many central banks are engaged in CBDC research, their output and public data on the subject often need to be improved and more challenging to access. This study underscores the need for further research to understand central banks' perspectives on CBDCs fully.

The review identifies several prevalent themes in central banks' publications: monetary policy implications, legal considerations, risks, pilot programs, financial stability concerns, cryptocurrency aspects, CBDC design and implementation, cross-border considerations, economic policy implications, and digital payment system impacts. These themes contribute to a deeper understanding of regulators' perspectives on CBDCs and their implications for the global financial landscape. Overall, this chapter offers valuable insights into the evolving discourse surrounding CBDCs and underscores the importance of continued research and collaboration among central banks and monetary authorities to effectively address the opportunities and challenges CBDCs pose.

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KEY TERMS AND DEFINITIONS

CBDC (Central Bank Digital Currency): It is the digital form of a country's fiat currency, which has the full legal backing of the central bank and is utilized by the public in the same way as banknotes and coins, but in a digital form. CBDC is designed to promote financial inclusion, competition, and resilience in the domestic payments market, increase payment efficiency, and lower transaction costs.

CBDC Design and Implementation: Technical specifications and design features of CBDC, including issues related to digital wallets, transaction processing, interoperability with existing payment systems, technological infrastructure, regulatory frameworks, security measures, and user experience.

CBDC Risks: Potential risks and challenges associated with CBDC implementation, including cybersecurity threats, financial stability risks, privacy concerns, operational risks, systemic risks, and the impact on bank deposits and credit intermediation.

Central Bank Digital Currencies (CBDCs) and Financial Stability: This refers to the potential impact of CBDCs on a country's financial system's overall stability.

Central Bank: The primary regulatory authority responsible for monetary policy and currency issuance within a country with a full legal mandate.

Cross-Border Considerations: CBDC issuance has implications for cross-border payments, international trade, and global financial integration, including challenges related to currency exchange, regulatory coordination, and financial inclusion.

Cryptocurrency: Refers to digital or virtual currencies that use cryptography for security and operate independently of a central authority, such as a government or a bank. Bitcoin, Ethereum, and Ripple are among the most well-known cryptocurrencies. Unlike cryptocurrencies, CBDC is centralized and regulated by the government or central bank, offering more control and oversight.

Economic Policy Implications: CBDC's potential impact on broader economic variables, such as GDP growth, employment, and income distribution, and its role in supporting national development objectives.

Financial Innovation: The development and implementation of new financial products, services, and technologies, such as CBDC, to address emerging challenges and opportunities in the financial industry, considering the growing use of digitalisation in every spectrum of society.

Financial Stability: The ability of the financial system to withstand shocks, maintain confidence, and continue to function without disruption. CBDCs can influence financial stability through various channels, including banking stability, payment systems, market liquidity, credit allocation and systemic risk.

Legal Considerations: Legal frameworks and regulatory requirements governing the issuance, circulation, and use of CBDC, including issues related to jurisdiction, consumer protection, financial stability, Know Your Customer (KYC), anti-money laundering (AML) and combating the financing of terrorism (CFT), data privacy and international cooperation.

Monetary Policy Implications: Central Bank Digital Currencies (CBDCs) potential effects on the actions and decisions of central banks in managing the economy through monetary policy. Such implications could include negative interest rates, quantitative easing, reserve requirements, liquidity provision and emergency lending. CBDCs may require central banks to reevaluate their monetary policy frameworks, strategies, and tools to maintain price stability and financial stability and promote economic growth.

Official Publications: Documents published by central banks, including reports, research papers, and policy statements, provide insights into their perspectives on CBDC.

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Payment Systems and Infrastructure: Describes the impact of CBDC on existing payment systems and infrastructure, including real-time gross settlement (RTGS) systems, payment rails, cross-border payments, and the role of intermediaries.

Regulators: Legal entities responsible for overseeing and regulating financial activities, especially central banks in the context of Central Bank Digital Currency (CBDC).

Role of CBDCs in Promoting Financial Inclusion: Central Bank Digital Currencies (CBDCs) have the potential to play a significant role in promoting financial inclusion by addressing various barriers that underserved populations face in accessing traditional financial services.