

## Central Bank Digital Currencies (CBDCs): An Evaluation from Islamic Law and Islamic Economics Perspectives

*Merkez Bankası Dijital Para Birimleri (MBDP): İslam Hukuku ve İslam Ekonomisi Perspektifinden Bir Değerlendirme*

### Abstract

Central Bank Digital Currencies (CBDCs) garnered significant attention from economists, policymakers, and financial institutions worldwide. CBDCs, as digital currencies issued and regulated by central banks, are currently under exploration by 134 countries, with 11 having fully launched them. The development of CBDCs has been accelerated by technological advancements and the global Covid-19 pandemic. Within the Organization of Islamic Countries (OIC), CBDC exploration varies in speed and interest among stakeholders. While most CBDC initiatives are still in the pilot phase, there is no universally agreed upon standardized format. This paper evaluates Central Bank Digital Currencies (CBDCs) from both Islamic law and economics perspectives. It examines the status of CBDCs as money under Islamic law and explores key aspects from an Islamic economic standpoint, including monetary sovereignty, money market regulation, and fiscal policies. The study employs a qualitative analysis approach, combining a literature review with descriptive methods. The study reveals that CBDCs are generally compatible with Islamic principles of money and offer potential benefits for Islamic economies, including enhanced financial inclusion, improved monetary policy control, and opportunities for new Islamic financial institutions. Although CBDCs hold great potential, their successful implementation requires careful consideration of regulatory and technological challenges while adhering to Islamic principles. Integrating CBDCs into an Islamic economic framework offers an opportunity for sound economic development that aligns with Islamic values. CBDC designs aligning with full-reserve banking principles and monetary sovereignty, while mitigating risks and maximizing benefits is proposed. Further research focusing on CBDC pilot projects and Islamic economic model designs is recommended to gain a deeper understanding of their implications.

**JEL classification:** E42, G18, E50

**Keywords:** Islamic economics, Islamic law, Islamic Finance, Central Bank Digital Currency (CBDC), Monetary sovereignty.

### Öz

Merkez Bankası Dijital Para Birimleri (MBDP), dünya genelinde ekonomistler, politika yapımcılar ve finansal kurumlar tarafından büyük ilgi görmektedir. MBDP'ler, merkez bankaları tarafından ihraç edilen ve düzenlenen dijital paralar olup, şu anda 134 ülke tarafından araştırılmakta ve 11 ülke tarafından tamamen uygulanmıştır. MBDP'lerin gelişimi, teknolojik ilerlemeler ve küresel Covid-19 pandemisi ile hız kazanmıştır. İslam İşbirliği Teşkilatı (İİT) bünyesindeki MBDP araştırmaları ise paydaşlar arasında hız ve ilgi açısından farklılık göstermektedir. Çoğu MBDP girişimi hâlâ pilot aşamasında olup, genel kabul görmüş standart bir format henüz bulunmamaktadır. Bu makale, Merkez Bankası Dijital Para Birimleri'ni (MBDP'ler) hem İslam hukuku hem de ekonomi perspektifinden değerlendirmektedir. MBDP'lerin İslam hukukuna göre para statüsünü incelerken, İslam ekonomisi açısından parasal egemenlik, para piyasası düzenlemeleri ve mali politikalar gibi önemli unsurları ele almaktadır. Çalışma, literatür taraması ve betimleyici yöntemlerle nitel analiz yaklaşımını benimsemektedir. Araştırma, MBDP'lerin genel olarak İslam'ın para ilkeleriyle uyumlu olduğunu ve İslam ekonomileri için parasal kapsayıcılığı artırma, parasal politika kontrolünü iyileştirme ve yeni İslami finansal kurumlar oluşturma gibi potansiyel faydalar sunduğunu ortaya koymaktadır. MBDP'ler büyük bir potansiyele sahip olsa da, başarılı bir şekilde uygulanmaları için düzenleyici ve teknolojik zorlukların dikkatlice ele alınması ve İslami ilkelere bağlı kalınması gerekmektedir. MBDP'lerin İslami ekonomik çerçeveye entegrasyonu, İslami değerlerle uyumlu sağlam bir ekonomik kalkınma fırsatı sunmaktadır. Tam rezerv bankacılığı ilkeleri ve parasal egemenlik ile uyumlu MBDP tasarımlarının, riskleri azaltırken faydaları en üst düzeye çıkarılması önerilmektedir. MBDP pilot projeleri ve İslami ekonomik model tasarımlarına odaklanan daha fazla araştırma yapılması, bu yeniliklerin sonuçlarının daha iyi anlaşılmasına katkı sağlayacaktır.

**JEL classification:** E42, G18, E50

**Anahtar Kelimeler:** İslam ekonomisi, İslam hukuku, İslami Finans, Merkez Bankası Dijital Para Birimi (MBDP), Parasal egemenlik.

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## **Introduction**

Central Bank Digital Currency (CBDC) has grown in popularity among economists, policymakers, and financial institutions in recent years. The concept of CBDC refers to a digital currency issued and managed by a central bank that functions as money (Kiff et al. 2020). The creation of CBDCs by central banks worldwide has accelerated because of technological advancements such as the emergence of cryptocurrencies and stablecoins and the global Covid-19 pandemic. A total of 134 countries, or 98% of the world's GDP, are exploring CBDC, of which 3 fully launched CBDC. The number of countries in the advanced stages of exploration (development, pilot, or launch) has reached a new high. CBDC development is in an advanced stage in 19 of the G20 nations, 9 of which are currently in pilot stages. Wholesale CBDC developments have doubled since the breakout of the Russia-Ukraine War and the G7 sanctions that followed. Currently, there are 13 international wholesale CBDC projects (Atlantic Council 2023).

Organization of Islamic Countries (OIC) members participate in these efforts as well, but the stakeholders' interest and speed in the CBDC exploration stage differ. Although some nations are still developing, others are currently in the pilot-application stage. Although most CBDC initiatives around the world are in the pilot phase, there is currently no universally agreed standardized or fixed format. In this context, the best approach appears to offer preliminary assessments and broad evaluations based on the current situation. To achieve this goal, this article aims to evaluate the issue of CBDC from the perspectives of both Islamic law and economics by examining the CBDCs' status as money in Islamic law, the jurisprudential basis of public authority decisions, and the standing of CBDC models with interest payments or inflation differentials. Additionally, we explore various key aspects of the Islamic economic perspective, such as transitioning to full-reserve banking, safeguarding monetary sovereignty, effective money market monitoring, optimizing monetary and fiscal policies, considering a common currency in the Islamic world, and facilitating non-bank institutional development.

This paper provides a literature review and employs a descriptive method within qualitative analysis to evaluate the status and implications of CBDCs from Islamic law perspective and explores key aspects from the Islamic economics perspective, including monetary sovereignty, money market monitoring, and fiscal policies. This study identifies a research gap in the fiqh and economic dimensions of CBDCs and critically assesses their design options. It examines the legal status of CBDCs, decisions by public authorities, and the alignment of these design options with Islamic economic principles.

### **1. Literature Review**

In the rapidly evolving landscape of digital currencies, CBDCs have gained significant attention in various domains, such as technical, economic, and feasibility aspects. Numerous studies have explored their potential impact on monetary policy and liquidity. However, a crucial perspective that has been relatively overlooked is the examination of CBDCs from Islamic law and Islamic economics standpoints. This literature review aims

to bridge this gap by delving into the fiqh and Islamic economics aspects of CBDCs and to shed light on their potential implications within the context of Islamic finance.

An analysis of the existing literature on CBDCs reveals a significant scarcity of research specifically addressing the fiqh and Islamic economics dimensions of these digital currencies. Many studies grouped under 'digital currency' primarily concentrate on the Islamic assessment of cryptocurrencies, completely bypassing the topic of CBDCs. Additionally, some studies that address CBDCs tend to heavily emphasize technical aspects while neglecting substantive content or repetitively reiterating general information. This approach has led to insufficient treatment of the subject matter.

One relevant study conducted by Hamza and Khoutem (2019) titled 'Central Bank Digital Currency and Financial Stability in a Dual Banking System' examines the implications of CBDC issuance in the context of a dual banking system. Research suggests that Islamic banks operating in such a system could potentially mitigate the CBDC's disintermediation effects while ensuring financial stability. This study focuses on the impact of CBDC design on financial stability and Islamic finance principles, offering valuable insights into its potential role in payment systems and monetary policies in a dual banking environment. However, it falls short of giving adequate attention to the fiqh aspect of the subject or considering the perspective of Islamic economics.

Another notable article by Hazik Mohamed (2020) titled 'Implementing a Central Bank Issued Digital Currency with Economic Implications Considerations' proposes a non-interest-bearing CBDC for interbank settlement and wholesale payment systems. The objective is to enhance monetary policy transmission, while minimizing disruptions to the economy. This study suggests that CBDCs offer the potential to create a more stable and prosperous economic system, particularly in the context of Islamic finance, where interest rate mechanisms are absent. However, as in the previous studies, this study lacks substantial coverage of CBDCs in relation to Islamic economics or Islamic finance.

Al-Abdelmuneam and Warrad (2022) contribute to the literature with their Arabic article titled 'The Formal Digital Currencies (An Islamic Economics Perspective)'. This study explores the legal and characteristic aspects of digital currencies with a specific focus on their alignment with Islamic law. It delves into the objectives behind issuing formal digital currencies (i.e., CBDCs), categorizes different types, and analyzes the reasons contributing to the emergence of legal digital currencies. The research emphasizes the advantages, characteristics, and sections of CBDCs, ultimately concluding that they are consistent with Islamic principles, serving as money with essential functions in the economy.

Two studies attempt to explore CBDC from a maqāsid perspective. In their 2021 article titled "The Urgency of Central Bank Digital Currency (CBDC) Implementation; Maqāshīd Sharī'ah Perspective," Firdiansyah and Samsuri (2021) stress CBDC's urgency and risks associated with cryptocurrencies. They conclude that CBDC adoption would outweigh the benefits. Similarly, in his 2022 article "Maqāsidic Framework for Central Bank Digital Currency (CBDC)," Mohd Noor bin Omar proposes guidelines for the implementation of CBDCs. This study also highlights the potential risks of CBDCs and the importance of

adhering to Islamic principles. However, both studies offer limited contributions beyond basic information on *maqāsid al-sharīah*, suggesting the need for further exploration.

Prayudya and Al-Ayubi (2023) present a study titled "Islamic Central Bank Digital Currency (CBDC) Design," focusing on proposing a CBDC design that adheres to Islamic principles. The research also conducts a SWOT analysis to evaluate its strengths, weaknesses, opportunities, and threats. The analysis reveals strengths in digital financial inclusion and resilience but weaknesses in the complexity and legal framework. Opportunities in Islamic finance and cashless trends are highlighted, but threats, such as cybercrime and low financial literacy, need to be addressed. This study provides recommendations, including simplifying the system, establishing an Islamic legal framework, and prioritizing cybersecurity. However, further research is necessary to explore CBDC use cases and refine Islamic CBDC designs.

Abderrazak Belabes offers valuable insights into the implications of CBDCs in Islamic banking through two short essays. In "Challenges for the Saudi Central Bank in the Shariah-based Digitalization of Money" (2022), the significant challenges posed to the Saudi Central Bank by the digitalization of money are addressed. The rise of distributed ledger technologies and new financial instruments necessitates robust regulatory frameworks to ensure Shariah compliance and mitigate risks, particularly those concerning monetary sovereignty. In "Central Bank Digital Currencies (CBDCs) in Islamic Banking: A Multidimensional Perspective" (2023), Belabes emphasizes the need for a comprehensive understanding beyond traditional *fiqh* and Islamic finance perspectives. The intricate interplay between technology, regulation, and Shariah principles concerning CBDCs is discussed, raising awareness of the potential threats to individual liberties. Both essays underscore the importance of comprehensive research and regulatory measures to successfully implement CBDCs in Islamic banking, while safeguarding Shariah principles and monetary stability.

Lastly, Shamshiyev (2023) contributes to the literature with his Russian article titled "Islamic Worldview on Money and a Study of Digital Currencies from Islamic Law Perspective." The paper provides a useful overview of Islamic monetary theory and attempts to apply these principles to the novel concept of CBDCs. While the paper serves as a good starting point for discussion, it highlights the need for more rigorous and extensive research in this area. The study argues that the Islamic theory of property ownership conflicts with the restrictions and limitations central banks might impose on the use of CBDCs and proposes three potential solutions to address this issue. However, it does not provide a detailed analysis and does not describe the technical characteristics of cryptocurrencies and digital currencies.

The literature review indicates that existing studies predominantly focus on technical aspects or provide general overviews, without offering detailed analysis of the substantive content related to Islamic economic principles. There is a notable lack of comprehensive analysis on the integration of CBDCs within an Islamic economic framework, particularly

regarding their design, implementation, and potential impacts on monetary sovereignty, financial inclusion, and economic stability from an Islamic perspective.

## 2. Exploring CBDCs: Types, Advantages and Risks

### 2.1. What is CBDC? Types of CBDC

A well-defined term for CBDC does not yet exist, as it remains an emerging form of central bank money. There are many types of CBDCs that vary according to their design. However, CBDC can be defined as a digital form of money, issued by and a liability for the central bank, which can be available to the general public (e.g. Retail CBDC) or can be accessible only by limited parties, such as banks and payment intermediaries (e.g. wholesale CBDC). CBDC is denominated in the national unit of account, which is the circulating medium of exchange (AMF 2022; BIS 2018).

Other than central bank-created or government-created money, there are forms of privately created money available to the general public, such as cryptocurrency, commodity money, and bank deposits. The only form of central bank money that the general public can access is cash, however, it can be converted into the digital form by simply depositing it to a bank, which then would make it the bank’s liability (Bech and Garratt 2017). However, commercial banks and some other financial institutions can already access the digital form of central bank money by having reserves or settlement account balances at the central bank (BIS 2018). The introduction of a retail CBDC would make this opportunity available to the public.

Table-1 shows the existing forms of money classified according to the four properties of money (Bech and Garratt 2017): issuer, form, accessibility, and transfer mechanism. Gray shaded cells show the four kinds of central bank-issued electronic money, of which only settlement or reserve accounts exist in practice. Deposited currency accounts form was proposed by Tobin (1987)<sup>1</sup> and regarded as one of the primary full-reserve banking models.

**Table 1.** A Taxonomy of Money

Forms/Properties	Issuer (central bank or other)	Form (electronic or physical)	Accessibility (universal or limited)	Transfer mechanism (centralized or decentralized)
Cash	Central bank	Physical	Universal	Peer-to-peer
Settlement / reserve accounts	Central bank	Electronic	Limited	Centralized
Bank deposits, mobile money	Other	Electronic	Universal	Centralized
Commodity money	Other	Physical	Universal	Peer-to-peer
Deposited currency accounts	Central bank	Electronic	Universal	Centralized
CBDC (wholesale)	Central bank	Electronic	Limited	Peer-to-peer

<sup>1</sup> Tobin (1987) proposed this idea to enhance the payment system and reduce reliance on deposit insurance. (Auer et al., 2021, p. 4).

<b>CBDC (retail)</b>	Central bank	Electronic	Universal	Peer-to-peer
<b>Cryptocurrency (wholesale)</b>	Other	Electronic	Limited	Peer-to-peer
<b>Cryptocurrency</b>	Other	Electronic	Universal	Peer-to-peer
<b>Virtual currency</b>	Other	Electronic	Limited	Centralized
<b>Local currency</b>	Other	Physical	Limited	Peer-to-peer

Source: Bech & Garratt, 2017 and Authors

CBDCs can be designed for limited purposes, such as large payments between banks or other big institutions. CBDCs would be the safest financial assets without any credit or liquidity risk<sup>2</sup>, therefore, they need not be backed by some sort of assets nor a deposit insurance scheme (Federal Reserve Board 2022:13). The main issue regarding CBDC design options that needs to be considered first is the operational role of the central bank and private parties. For this matter, (Auer, Cornelli, and Frost (2020:18) classified various proposals for CBDC design into four CBDC architectures which vary according to the structure of legal claims and the record-keeping: direct CBDC, hybrid CBDC, intermediated CBDC, and indirect or synthetic CBDC. However, Soderberg (2022) classifies CBDC operating models into three architectures by omitting hybrid CBDC, such as unilateral (direct) CBDC, intermediated CBDC, and synthetic CBDC. The characteristics of the four CBDC architectures are presented in Table-2. The central bank operates the payment system in a direct CBDC design by maintaining the ledger of all transactions and executing retail payments. Conversely, in an indirect or synthetic CBDC design, intermediaries operate all retail payments and need to back their liabilities to retail clients with claims on the central bank.

Table 2. Four Distinct CBDC Architectures

	<b>Direct CBDC</b>	<b>Hybrid CBDC</b>	<b>Intermediated CBDC</b>	<b>Indirect or Synthetic CBDC</b>
<b>Ledger type</b>	Retail	Retail	Wholesale	Retail
<b>Record keeper</b>	Central bank	Central bank	Central bank	Intermediaries
<b>Payment type</b>	Retail	Retail	Retail	Retail
<b>Executer of payments</b>	Central bank	Intermediaries	Intermediaries	Intermediaries

Source: Auer et al., 2020 and Authors

Direct CBDC would require the central bank to give every citizen an account, payment cards, and other availabilities, such as internet and online banking, to enable citizens to make all payments (Dyson and Hodgson 2016:15). On the other hand, indirect CBDC would require banks and other payment intermediaries, which are called Digital Cash Account (DCA) providers by Dyson & Hodgson (2016), to provide a special type of account for CBDC holders along with other facilities related to retail payment services. Since DCA

<sup>2</sup> Credit risk is the inability of a bank to pay a large amount of money to other members in the payment system. Liquidity risk is a bank’s shortage of funds to settle a required payment at a particular time.

providers cannot lend out customers' CBDC, there would not be any credit or liquidity risks (Dyson and Hodgson 2016:18).

## 2.2. Retail CBDC vs Wholesale CBDC

Recall from Table 1 that there are two existing forms of central bank money; cash, which is universally accessible, and central bank settlement or reserve accounts, which are electronic and only available to banks. The converted forms of these central bank money forms are called retail (or general-purpose) CBDC and wholesale CBDC, respectively. Wholesale CBDCs would be utilized to settle financial market transactions; however, cross-border payments would need to be interoperable among different wholesale CBDCs. This would be challenging since wholesale CBDC would be operating on either different national distributed ledger technology (DLT) or technologies other than DLT (BCG 2022:5).

The main policy controversies associated with retail CBDCs include competitive efficiency and identity theft. While designing the structure of retail CBDC, policymakers need to maintain a balance between the benefits of information-sharing and the costs of fraud and loss of privacy (Kahn and Roberds 2009:5). However, the anonymity of cash, which could be potentially provided by retail CBDCs, would be the main benefit of retail CBDC by allowing peer-to-peer transfers (Bech and Garratt 2017:67).

For wholesale CBDC, there are two access options for beneficiaries: direct access by having a wholesale CBDC account at the central bank, or indirect access via financial institutions that have wholesale CBDC accounts at the central bank. Wholesale CBDCs can coexist with other forms of money, such as bank deposits, and their payment systems can operate alongside existing payment systems. To be integrated into international trade and payments infrastructure, the CBDC system would need to be connected to international payment and money transfer systems. (BCG 2022:10).

## 2.3. Main Drivers of CBDC Development

Ali et al. (2014) counts three key factors driving the adoption of digital currencies: ideology, financial return, and the pursuit of lower transaction fees. For instance, the motivation behind the design of Bitcoin appears to be ideological, centered on the desire to avoid centralized control. Bitcoin is regarded as an asset class for financial investment and offers lower transaction fees for payments. (Ali, Barrdear, Clews, & Southgate, 2014, s. 267). Similarly, Auer et al. (2021) suggest that some global trends have driven CBDC development. The first was the emergence of Bitcoin and other cryptocurrencies; the second was the development of privately issued stablecoins; and the third was the entry of big tech into payments. In addition, the Covid-19 pandemic has boosted the adoption of digital currencies (Auer et al., 2021, s. 7).

Stablecoins are a recent form of cryptocurrency backed by underlying assets, which could be sovereign currencies or commodities. These underlying assets are pooled into a reserve to fund redemptions. Stablecoins pegged to the U.S. dollar facilitate trading of other digital assets (Federal Reserve Board, 2022, s. 11). Similar to other

cryptocurrencies, stablecoins can operate continually with instant transactions and they are easily accessible. They have risks associated with reserves, such as limited information and transparency regarding reserves and reserve management. Stablecoins and CBDCs can coexist in the future, with the probability that they compete with or complement each other (BCG, 2022, s. 7).

A comprehensive list of the main drivers for introducing CBDCs is provided by AMF (2022) under four headlines: financial stability and supervision, monetary policy, economic development, and operational and environmental issues. Financial stability and supervision include better financial stability with more effective monetary tools, improving traceability of transactions, and helping with anti-money laundering/combating the financing of terrorism issues. Monetary policy includes reducing dollarization, the inclusion of the informal sector, preserving central banks' monetary sovereignty, and providing a larger seigniorage income. Drivers related to economic development are enhancing financial inclusion, reinforcing trust in the local currency, and improving remittances for migrant workers. Finally, enhancing payment efficiency, increasing payment safety, and environmental considerations are operational and environmental drivers (AMF, 2022). A survey of central banks shows that central banks are undertaking extensive work on CBDCs with diverse motivations. While emerging economies' central banks aim to reduce reliance on cash, advanced economies' central banks aim to increase safety and robustness in the payment system or to make the payment system more efficient (Boar, Holden, & Wadsworth, 2020). Besides, another study on CBDC projects shows that the main policy goals that central banks want to reach are financial inclusion, access to payments, making payments more efficient, ensuring the resilience of payments, reducing illicit use of money, monetary sovereignty, and competition in the payments sector (Soderberg, 2022). Auer et al (2021, s. 10) emphasize that the main motives for issuing CBDCs are to enhance inclusion and efficiency and ensure competition, data privacy, and the integrity of the payment system.

#### **2.4. Design Choices of CBDCs**

The design choices of CBDC projects can be summarized as follows: access, risk management (including financial stability), legal status (including anonymity), interoperability (including cross-border payments), prudential treatment, and settlements (including ledger technology and smart contracts (BCG, 2022; Bison Trails, 2021; Soderberg, 2022)).

How consumers can access the CBDC is the first technical design choice. Existing forms of money can be either token-based or account-based, depending on the form of verification required. For instance, cash is token-based and relies on the payee's ability to verify the validity of the payment object. However, central bank reserves or settlement accounts are account-based money based on the identity verification of the account holder. Thus, CBDCs can be either token- or account-based (BIS, 2018, s. 4).

Account-based CBDCs require identity verification; however, because a token is an instrument that can be exchanged directly on a peer-to-peer basis without validation by a



third party, token-based CBDCs require verification of the validity of the subject used to pay. Cash is a token in physical form, and token-based CBDC is a digital token that is fungible, divisible, and transferable (Brunnermeier & Landau, 2022, s. 13). Account-based CBDCs can make access difficult for the unbanked and individuals who like to use cash; therefore, token-based CBDC become preferable for these parties as it is a value-based payment alternative. Both alternatives may require some design for now-your-customer (KYC), anti-money-laundering (AML), and counter-terrorist financing (CTF) to avoid the risks of illicit activity and counterfeiting. Smart contracts can be a helpful component for this matter (Auer vd., 2020, s. 18; Bison Trails, 2021, s. 12).

We can compare some design features of three general variants of CBDCs – general-purpose account-based CBDC, general-purpose token-based CBDC, and wholesale token-based CBDC – with existing forms of money – cash and central bank settlement/reserve accounts. Cash and token-based CBDCs can have the same features, such as 24/7 availability, anonymity, and peer-to-peer transfer, however, token-based CBDCs can have some extra features, such as being interest-bearing and having limits or caps. Account-based CBDCs can also be interest-bearing, just like central bank settlement/reserve accounts, but they can have more features, such as 24/7 availability, and having limits or caps (BIS, 2018, s. 6). The role of the central bank will depend on the choice of CBDC whether to be account-based or token-based. Token-based CBDC will give the holders a direct claim on the central bank without having a direct relationship with it. Account-based CBDC, however, will enable people to become depositors at the central bank (Brunnermeier & Landau, 2022, s. 32).

For token-based CBDC, there should be legal clarity and consistency whether it would be treated as money or as property. Therefore, the identity of the creator, limitations on the supply, ownership, transfer amount, and legal requirements which will be applied to the holder must be clarified (BCG, 2022, s. 11). Regarding the management of cash issuance, it could be reactive or proactive. If the public would be allowed to hold both bank deposits and CBDC, the central bank can follow the demand for CBDC and create CBDC reactively. If the central bank wants to use the issuance of CBDC as a monetary policy tool to influence the economy, it could proactively issue CBDC (Dyson & Hodgson, 2016, s. 22).

Another design choice regards the infrastructure, which can be based on DLT or a centralized database (Auer vd., 2020, s. 18). The ledger infrastructure enables digital tokens to be registered in the digital world and provides a base for the governance of digital activities. However, the performance of DLT as a payment system can be questionable (Brunnermeier & Landau, 2022, s. 13). In the permissioned form of DLT, a network of known and vetted validators jointly augment a ledger. Permissionless DLT, as used in Bitcoin, Ethereum, and other cryptocurrencies, is often criticized for its inefficiency, environmental impact, and high economic costs. Consequently, permissioned DLT, where a network of preselected entities performs the updates, is seen as more favorable for central banks. (Auer vd., 2021, s. 13).

There would be a validation function in a CBDC environment for validating the transactions in the DLT network, which could include checking the user's identity, the authenticity of money, and the availability of funds. The ledger is the database that will be updated when CBDC is transferred between CBDC holders. CBDC holders would pay or receive CBDC through the user interface, such as applications on mobile phones (Soderberg, 2022, s. 10). CBDCs can be used for cross-border payments for cross-border interbank settlement or migrant remittances. This would require cooperation between different economies, more likely internationally integrated economies, by considering the retail and wholesale interlinkages and the accessibility for residents and non-residents in the CBDC's design process (Auer vd., 2020, s. 19).

## **2.5. The Main Benefits and Advantages of CBDCs**

CBDCs would bring some benefits and advantages to individuals, governments, central banks, and financial intermediaries. For individuals, monetary transactions would occur without intermediation, such as commercial banks, at lower costs and in real-time (Bacchetta & Perazzi, 2021, s. 18). Unlike cash, which is the only central bank money that is available to individuals, CBDCs would be free from credit risk and liquidity risk, which could provide a safe base for current and future needs and demands for payment services (Federal Reserve Board, 2022, s. 14).

CBDCs can help the government control capital movements more effectively, enable them to spot behavioral patterns, and identify users for a stronger fight against money laundering or tax evasion. Governments can use CBDC also for better managing and monitoring social benefit transfers (Bacchetta & Perazzi, 2021, s. 9). CBDC also has the potential to improve cross-border payments by creating additional opportunities for cross-jurisdictional collaboration and interoperability. CBDC can lower transaction costs and contribute to financial inclusion (Federal Reserve Board, 2022).

Another benefit of issuing CBDC would be that the central banks can pursue a conventional monetary policy with negative interest rates, which means that banks would be charged to hold reserves at the central bank. Another ability for central banks can be the use of new instruments for monetary policy. Helicopter money would be an example of this, and it would be more advantageous than quantitative easing and relying on more bank lending to stimulate the economy. Beyond these, if depositors switch from holding bank deposits to holding CBDC, this will enable the central bank to recapture a portion of seignorage (Dyson & Hodgson, 2016).

## **2.6. Risks Associated with CBDCs**

Digital forms of central bank money have been available to banks for a long time in the wholesale payment system. The introduction of CBDC that is accessible by anyone poses substantial challenges to competition, privacy, and integrity and brings up concerns on how it will affect the architecture of the monetary system (Auer vd., 2021, s. 2). The main risks associated with CBDCs include data privacy and its protection, theft, and cyber-attacks, financial crimes, financial stability, and financial exclusion. The latter could be a barrier to the adaptability of retail CBDCs amongst individuals depending on the country's

situation regarding internet access coverage and financial and technological literacy levels. These risks hinder the development of CBDC projects since developing these projects is technically complex and challenging, and as a result, they take a long time and become more costly (AMF, 2022).

CBDC should maintain a balance between protecting the data and preventing financial crimes. While safeguarding consumer privacy rights, there should be enough transparency to prevent criminal activity. Cybersecurity is a challenging issue for CBDC, however, CBDC also has the potential to enhance the operational resilience of the payment system (Federal Reserve Board, 2022). There is no doubt that CBDCs would be targeted by cyberattacks, and any error in their security could lead to catastrophic consequences, as a hacked CBDC would be one of the worst conceivable outcomes. (Bison Trails, 2021).

There would be an option for CBDCs to be interest-bearing. An interest-bearing CBDC would force banks to adjust the remuneration on their deposits, otherwise the aggregate number of deposits in the banking system will fall. Banks will reflect increasing funding expenses to credit costs or reduce credit availability, which would be risky for the economic activity because of falling aggregate lending and investment (Auer vd., 2021, s. 15; Federal Reserve Board, 2022, s. 17). Lower lending by banks means less money creation from this source, which can be compensated by another source, the central bank, by creating CBDC proactively (Dyson & Hodgson, 2016, s. 13). On the other hand, a non-interest-bearing CBDC would give preferential treatment to the existing banks if the central bank continues to pay interest on the banks' reserves (Dyson & Hodgson, 2016, s. 30).

CBDC would be less risky than bank deposits and attract risk-averse depositors in times of stress in the financial system. This could increase the probability of a systemic bank run; however, the central bank could mitigate this risk by implementing measures such as not paying interest on CBDCs and imposing limits on CBDC holdings and transactions (Auer et al., 2021, p. 17; Federal Reserve Board, 2022, p. 17). Additionally, by building CBDCs on the infrastructure of existing distributed payment systems, credit and liquidity risks can be reduced by eliminating intermediaries, and operational risks can be minimized due to the decentralized nature of the system. (Ali vd., 2014, s. 271). On the contrary, centralized CBDC networks require more compute and storage capacity for long-term maintenance, which would be very costly for central banks (Bison Trails, 2021, s. 40).

Expectedly, a digital dollar would be more attractive for CBDC users, especially where there is a lack of public trust for a stable national currency. This appears to be a digital dollarization risk for central banks. This risk can be mitigated by designing an account-based CBDC that is based on identification. In this way, the issuing central bank and the receiving central bank would need to agree to cross-border payment of the CBDC. This could also mitigate the risks of currency substitution (Auer vd., 2021, s. 9).

## **2.7. Data and User Privacy**

Safekeeping data and user privacy is a significant problem concerning CBDCs. There is an increasingly generated data trail of information on payment transactions as payments are

digitized. This data trail can be easily transferred and used for several purposes. However, if anonymity were to be chosen in CBDC design, this would bring other problems for system integrity and conflict with such policy objectives as money laundering, financing of terrorism, and tax evasion (Auer vd., 2021, s. 13; Brunnermeier & Landau, 2022). DLT can help maintain the balance between transparency and privacy by providing security for government issuers while ensuring privacy for citizens. (Bison Trails, 2021, s. 42).

It is important to address public concerns that the government might use CBDCs as tools for state surveillance and control. Fears of being tracked by the state or blocked from accessing CBDC payments could hinder the adoption of these currencies. To alleviate these concerns, institutional safeguards must be implemented to ensure accountability for authorities and protect citizens' privacy. (Auer vd., 2021, s. 14).

## **2.7. CBDCs' Potential Effects on Financial Stability and Monetary Policy**

CBDCs would have macroeconomic effects once introduced, such as on aggregate lending and investment, financial stability, and monetary policy. CBDC can be very helpful for the central banks while conducting monetary policy by supplying information to the central bank regarding the economy. The central bank can use this information and exploit CBDC's programmable nature to make the financial system less fragile (Auer vd., 2021, s. 19). Brunnermeier & Landau (2022) argues that changing the form of public money would result in no discernible macroeconomic impact and should be a priori neutral and indifferent for monetary policy.

CBDC can facilitate a flight away from commercial banks towards the central bank. This can be a significant cause for financial stability risk, which is a similar case where depositors tend to suddenly shift their deposits towards financial institutions perceived to be safer or into government securities during systemic financial stress (BIS, 2018, s. 16). On the contrary, Dyson & Hodgson (2016) claim that CBDC would be a risk-free alternative to bank deposits and increase financial stability. CBDC would be a genuinely risk-free asset by being under the guarantee of the central bank and would not need to be under any deposit insurance scheme. Using CBDC would reduce credit and liquidity risk within the payment system, which would also increase financial stability (Dyson & Hodgson, 2016, s. 10).

With the introduction of CBDC, payment systems would be accessible by non-banks; therefore, commercial banks would have to compete with them for payment-related income streams. Commercial banks would also lose income because of the flow of deposits into CBDC, which can be prevented by raising interest rates or seeking funding to replace such outflows. Consequently, the business models of commercial banks would have to adapt to the CBDC world (BIS, 2018, s. 15).

Cross-border payments and interoperability of CBDCs has implications on financial stability and monetary policy. Cross-border dimension of CBDCs have some challenges like being costly, slow, and having low traceability and transparency. CBDC designs generally concerned by domestic issues and cross-border dimension is not considered seriously (Auer vd., 2021, s. 21).

### 3. Shariah and Islamic Economics Perspectives on CBDCs

In the previous part of this study, we discussed various design options for CBDCs and observed that they have a significant impact on the economic effects of CBDCs, affecting their potential outcomes. The ideal approach would be to assess each CBDC design option individually, taking into account the decisions made by various central banks, before formulating appropriate strategies. However, currently, most CBDC initiatives around the world are in the pilot phase, and there is currently no standardized or fixed format agreed upon universally. In this context, the best approach seems to be offering preliminary assessments and broad evaluations based on the current state of affairs, taking into account all possible options, to provide an overview of the concept for future developments.

To achieve our goal, this article aims to evaluate the issue of CBDC from both the perspectives of Islamic law and Islamic economics. We will examine CBDCs' status as money in Islamic law, the jurisprudential basis of public authority decisions, and the standing of CBDC models with interest payments or inflation differentials. Additionally, we will explore various key aspects of the Islamic economic perspective, such as transitioning to full reserve banking, safeguarding monetary sovereignty, effective money market monitoring, optimizing monetary and fiscal policies, considering a common currency in the Islamic world, and facilitating non-bank institution development.

#### 3.1. Assessment Of CBDC in Terms of Being Money

The concept of money and its control in an Islamic economy is a subject of ongoing debate among scholars, encompassing discussions on the compatibility of conventional monetary systems with Islamic principles, the permissibility of interest, the role of fiat currencies, and the regulation of money. Given the complex and evolving nature of the topic, further research and dialogue are needed to deepen our understanding and explore avenues for aligning Islamic economic principles with contemporary monetary systems.

In classical fiqh works, money is classified into two categories: those considered money by their intrinsic nature (*khilqatan*), namely gold and silver, and those that attain the status of money through societal adoption (*istilahan*). The second category encompasses all goods that people accept and utilize as a medium of exchange, which qualifies them as money. (Ali Haydar Efendi 1314:421; İbn Abidin n.d.:60; Miras 1978:72).

Contemporary Islamic jurists widely agree that paper money (fiat money) issued by nation-states is recognized as money within the framework of fiqh regulations. This recognition is due to its acceptance as legal tender by law and its widespread adoption by the public, serving all functions of money. International fatwa councils have also validated this perspective. Both the Islamic Fiqh Academy affiliated with the Muslim World League (MWL), in Resolution No. 6 during its 5th term meeting in 1982, and the International Islamic Fiqh Academy affiliated with the Organization of Islamic Cooperation, in Resolution No. 21 (3/9) in 1986, have asserted that paper money (fiat money) fully qualifies as money and is subject to the same provisions as gold and silver concerning matters such as *ribā*, *zakāt*, *salam* (a type of deferred commodity sale), and other issues.

While the aforementioned fatwas pertain to paper money, CBDCs like bank money or deposit money, which exist merely as accounting records, have the potential to function as money. Although The International Islamic Fiqh Academy has not yet issued a ruling on this matter, it is reasonable to assume that CBDCs would also be subject to the same provisions as fiat money, provided they gain practical recognition as currency by the public (al-Abdelmuneam and Warrad 2022:4829–30).

In 2022, the International Union of Muslim Scholars (IUMS), led by Ali al-Qaradaghi, issued the only available fatwa concerning CBDCs. According to this fatwa, Bitcoin and other cryptocurrencies do not meet the criteria to be considered currencies or money according to Islamic jurisprudence. As a result, engaging in transactions involving these cryptocurrencies is deemed impermissible. However, the fatwa makes an exception for 'official digital currencies' that are issued or adopted by states or central banks. For such currencies to be considered permissible, they must be formally issued by a state or central bank and adhere to appropriate regulatory frameworks to ensure both legitimacy and security (IUMS 2022). It's worth noting that this fatwa solely compares cryptocurrency and CBDCs from the issuer's perspective without delving into other dimensions of CBDCs. Therefore, its intention is not to address the broader implications of CBDCs beyond their issuance.

Harris Irfan, a renowned author and expert in Islamic finance, criticized the fatwa for endorsing CBDCs, which he considers the worst form of ultra-surveillance, ribā (usury), and oppression. He strongly believes that the same fatwa, which declares Bitcoin as haram, is misinformed and harmful, and he calls for a rebuttal of it (Irfan 2022).

### **3.2. The Role of Maqāsid and Maslahah in Islamic Governance**

Islamic law's rules aim to promote people's well-being, guided by the objectives of the Shariah, known as 'maqāsid al-sharīah'. These objectives encompass safeguarding religion, life, progeny, intellect, and property, fostering social order, and upholding justice within Muslim societies. As each century presents unique challenges, the Qur'an and sunnah have inherent limitations in directly addressing all aspects of life, including governance issues. To address these gaps, the process of ijtihad, involving independent legal reasoning while considering maqāsid al-sharīah, becomes essential. (Boynukalın 2003:425).

When no direct ruling from the Qur'an or the sunnah is available, Islamic jurists rely on the 'istislāh' method and the concept of maslahat to address governance issues. One crucial maxim resulting from this approach is found in Article 58 of the Mecelle, which states that "The exercise of control over subjects is contingent upon maslaha (i.e., the public welfare)." As a result, maslaha has become an important principle for Islamic rulers to justify their authority, and for scholars to prevent the abuse of power (Dönmez 2003:91).

The determination of the type of money to be used in Islamic society is one of the issues lacking specific regulations from the Qur'an and Sunnah, leading to its consideration as a matter of administrative discretion. The issue of CBDCs also falls under this category,

except for any aspects that are clearly forbidden in Islam. CBDCs offer numerous design options that typically do not affect their status as money from an Islamic legal perspective. Decisions regarding these options should be guided by the principle of social benefit (maslahat), which involves evaluating the positive and negative aspects of each choice. Considerations like whether CBDCs will be wholesale or retail, the roles of central banks and private parties (direct, indirect, synthetic, and hybrid options), the parties responsible for record-keeping and payment settlement (intermediaries and central banks), as well as whether CBDCs are token-based or account-based, and whether they utilize DLT or a centralized database, do not directly impact the Islamic ruling.

Nevertheless, ascertaining the ultimate objective of the law in the economics sphere and identifying the specific maslahah (public interest) to achieve this objective is a complex task. Muslim rulers, economists, and decision-makers face the responsibility of making well-informed arrangements and decisions, taking into account the interests of Islamic society across all spheres, including monetary and economic concerns. This holistic consideration is imperative for effective governance and ensuring the prosperity of the Muslim community. Accordingly, when addressing the issue of CBDCs, the perspective of Islamic economics becomes of central importance. The Islamic economics dimension of the issue will be discussed later.

### **3.3. Interest-Bearing CBDC vs. Inflation-Compensated CBDC**

While interest-bearing CBDCs may be considered as an option, they are unacceptable and forbidden from the perspective of Islamic jurisprudence as they are considered as ribā (usury) and harām (forbidden). While central banking and bank money creation mechanisms in the Muslim world already involve interest-based transactions, introducing interest-based CBDCs would impede their efficiency and effectiveness. This practice could lead individuals with religious sensitivities to avoid this type of money, potentially resulting in their alienation from the financial system (Hamza and Ben Jedidia 2020:252; Prayudya and Al-Ayubi 2023:147; Shamshiyev 2023:95).

An alternative approach to traditional interest payments on CBDCs is the concept of an 'inflation-compensated CBDC.' This approach aims to counteract the impact of inflation on the value of the digital currency. While the idea of the government compensating for inflation differentials in CBDCs may be considered in the future, it is presently premature. However, it is worth noting that the issue of government payment for inflation differentials merits consideration from the Islamic perspective, particularly because inflation is often influenced by the government itself, especially in the case of national currencies. As a result, exploring solutions from the perspective of Islamic economics regarding currency value depreciation becomes important. Detailed discussions on this subject are recommended for the future, as this article does not delve into the specifics of this topic.

### **3.4. Islamic Economics Perspectives on CBDCs**

Muslim countries play a vital role in the global economy. However, it is crucial to acknowledge that these economies, along with their associated institutions and legal frameworks, predominantly operate on secular principles, often neglecting the

incorporation of Islamic values. Consequently, certain haram practices, notably interest and gharar persist within these economic regulations (Ayub and Khan 2021:334–35). We find ourselves lacking the capacity to bring about immediate changes in this regard. Thus, a more appropriate approach to address new issues not covered in the religious texts is to concentrate on the benefits and harms to the Islamic world, as well as the potential opportunities for the further integration of Islamic principles into the economies of Muslim countries.

From this framework, we can express our general view on the subject as follows: Most of the advantages of CBDCs mentioned earlier in this article appear to align with the principles of Islamic economics and maqāsid al-sharīah, provided they are implemented correctly.

The proper use of CBDCs in Islamic countries can have two positive effects. One is to make their economic/financial systems more stable and viable. The other is the potential opportunity to organize their economic systems according to Islamic principles in the long run, although this step may take many years.

The positive use of CBDC could increase financial access, expand financial inclusion, and enhance transparency in the financial system. Additionally, CBDC could provide central banks with additional policy tools in areas such as monetary policy and financial stability. All these aspects can be viewed positively from the perspective of Islamic economics, as they promote economic and general welfare within the Muslim society. The CBDC environment also holds the potential to facilitate new projects and experiments in areas like Islamic economics, finance, and banking. However, CBDC also carries potential risks for Muslim countries, such as the reduction of banks' roles (could potentially impede financial inclusion), data privacy concerns, and cyber security issues. These aspects related to CBDC require thorough and careful consideration.

In the subsequent sections of this article, we will delve into the specifics of the advantages and disadvantages of CBDCs from an Islamic perspective, conducting assessments and predictions regarding their potential implications for the goal of establishing an Islamic economy and their benefits for society at large.

### **3.4.1. Empowering Central Banks Through CBDCs**

The introduction of CBDCs in Muslim-majority countries could facilitate a shift from fractional reserve banking to full reserve banking, consolidating the state's authority over currency within the banking sector while safeguarding central banks' monetary sovereignty and enhancing seigniorage income. This transformation primarily occurs through the elimination of bank-created money, ensuring the central bank solely controls the money supply. Moreover, CBDCs could empower central banks with greater control over monetary policy, eliminating the need for interest-bearing loans from conventional banks and potentially reducing their ability to create bank money and deposits (Mohamed 2020a:169; Tekdogan and Sarac 2020). However, this development demands a long-term plan and thoughtful consideration to maximize benefits and minimize risks.



### 3.4.2. Monetary Sovereignty, Financial Inclusion and Monitoring Activities

The emergence of foreign CBDCs and stablecoins tied to foreign currencies poses a threat to the monetary sovereignty of Muslim countries. Without native CBDCs, Muslim-majority countries may face the possibility of surrendering their monetary dominance to stable cryptocurrencies and CBDCs issued by reserve currency countries. From the standpoint of Islamic economics, it is deemed necessary to introduce CBDCs in order to safeguard monetary sovereignty for Muslim-majority countries and prevent them from relying on internationally established stable cryptocurrency companies (Belabes 2022:17; Firdiansyah and Samsuri 2021).

Furthermore, certain benefits of CBDC, including promoting economic development through enhanced financial inclusion, improving payment security and efficiency, and supporting environmental preservation by eliminating the need for paper money printing, also align with the principles of Islamic economics (Prayudya and Al-Ayubi 2023:149).

As mentioned earlier in this article, CBDCs present advantageous aspects for the government's monetary policy, enabling effective control over both domestic and international capital movements through their implementation. Their programmable features also offer versatility in serving fiscal policy purposes, including direct stimulus payments, targeted welfare programs, and tax refunds. From an Islamic economics perspective, CBDCs offer an opportunity to explore alternative methods in central banks' monetary policy, which currently heavily relies on interest-based transactions. The technical capabilities of CBDCs can enable swift and effective experimentation with approaches like helicopter money, potentially proving more effective than relying solely on low-interest-based monetary expansion and increased bank credit for economic stimulation. As a result, in the medium- to long-term, CBDCs could facilitate and enable public authorities to develop central banking activities that are more aligned with the principles of fiqh (Mohamed 2020b:72).

Monitoring financial transactions through CBDCs offers governments an effective means to combat money laundering, tax evasion, and terror financing, while also facilitating a better understanding of consumer behavior patterns for societal benefit. Implementing CBDCs empowers governments to efficiently manage and regulate social benefit transfers, enabling the implementation of appropriate policies while respecting personal data and privacy. When applied correctly, all of this complies with Islamic principles and the viewpoint of Islamic economics.

Furthermore, CBDCs have the potential to facilitate various aspects of an Islamic economy in the long-run. Their monitorable and programmable nature opens up opportunities for valuable projects within Islamic economics. For instance, CBDCs can greatly impact zakat collection and distribution. The use of digital currencies enables authorities to track wealth accumulation accurately, leading to more precise zakat calculations and distribution. Similarly, CBDCs can play a significant role in the institutionalization of al-qard al-hasan within an Islamic economy.

### **3.4.3. The Cross-Border Potential for Islamic Countries**

Currently, CBDC designs are generally focused on domestic issues, and the cross-border dimension is not considered seriously. However, despite this marginal consideration of cross-border payments and interoperability of CBDCs in the design process, a carefully chosen, well-suited CBDC model has the potential to streamline the establishment of a universally accepted common currency among Islamic countries. By leveraging modern technology and robust financial systems, an appropriate CBDC model could catalyze economic integration, financial stability, trade, and investment among these nations. This would facilitate cross-border transactions and monetary policy coordination, fostering unity and cooperation, and paving the way for a more empowered and integrated Islamic region.

### **3.4.4. Opportunities for New Non-Bank Financial Institutions**

CBDCs have the potential to intensify competition in payment-related revenue streams for commercial banks, by allowing non-bank institutions to gain access to payment systems. While this development poses challenges for current Islamic banking, it also creates opportunities. CBDCs could act as a catalyst for Islamic finance to surpass traditional banking boundaries, facilitating the establishment of new non-bank financial institutions. Consequently, this may contribute to the advancement of alternative institutions based on risk-sharing, thereby stimulating real economic growth.

### **3.4.5. Islamic Perspectives on Privacy in CBDCs**

Ensuring data protection and user privacy is of utmost importance and a subject of intense debate in the realm of CBDCs. This concern is equally valid from an Islamic perspective. While emphasizing anonymity in CBDC design may clash with state policy goals such as countering money laundering, terrorism financing, and tax evasion, it is crucial to strike a balance between transparency and privacy. Furthermore, a well-balanced model is necessary for effectively monitoring social benefit transfers. Therefore, a comprehensive examination of user privacy in the context of Islamic values is crucial. This delicate matter requires meticulous consideration and further research.

## **Conclusion**

In conclusion, the rise of digital money, particularly CBDCs and stablecoins indicates a turning point in the monetary system. CBDC holds the potential to become the dominant form of money due to its legal tender status, safety as base money, and programmability. If implemented carefully, CBDCs can provide significant benefits for financial regulation, inclusion, and stability.

However, the implementation of CBDCs presents several challenges, and it is crucial to consider regulatory and technological issues while mitigating potential risks. Despite these challenges, CBDCs offer an opportunity for Islamic countries to develop a sound economic, monetary, and financial system in alignment with Islamic principles.

At first glance, there does not seem to be a problem with CBDCs from a fiqh perspective in terms of whether they are considered money or not. However, it is imperative to ensure

their design and implementation comply with Islamic principles rather than serving the interests of capitalism. The successful integration of CBDCs into an Islamic economic framework requires careful consideration of ethical and moral principles to uphold the values and principles of Islamic finance and economics.

CBDCs possess the potential to enhance economic stability in Islamic countries and, over the long-term, facilitate alignment with Islamic values within economic institutions. However, the successful transition necessitates a well-planned and gradual approach.

As the design possibilities for CBDCs are vast, this paper has provided general insights and observations. It is recommended that further research should focus on analyzing specific CBDC pilot projects and their respective choices to gain a deeper understanding of their implications. Additionally, conducting studies that propose model designs aligned with Islamic economic principles could offer valuable guidance for future CBDC implementations.

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