Improving Cooperation among Central Banks in terms of Digital Currencies: Challenges and Prospects for OIC Member Countries



Standing Committee for Economic and Commercial Cooperation of the Organization of Islamic Cooperation (COMCEC)

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20th Meeting of the COMCEC Financial Cooperation Group (October 9-10, 2023, Ankara)

"Improving Cooperation among Central Banks in terms of Digital Currencies: Challenges and Prospects for OIC Member Countries" (2nd Session - Final Draft of Research Report and Policy Recommendations)

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Part I- Introduction

- Monetary system evolves into its fourth transformation period
 - sovereign coin in decline and unregulated paper money on the rise (between late 17th century and 1840s)
 - emergence of the central bank regulated monetary system (from 1840s until early 20th century)
 - rise of the bank money against the central bank notes and reserves (throughout 20th century)
 - *rise of digital currencies (DCs) and CBDCs* (aftermath of the 2008 financial crisis-catalyzed by the 2019 Coronavirus pandemic)





Central Bank ['sen-trəl 'baŋk]

A financial institution given privileged control over the production and distribution of money and credit for a nation or a group of nations.

Background

- A taxonomy of money based on i) the technical form of money and ii) the issuer
 - first-tier: central Bank Money including the central bank digital currencies (CBDCs)
 - second-tier: liquid bank money as well as deactivated bank money (based on central bank money)
 - third-tier: money market fund shares (MMFs), e-money, stablecoins and other currencies
- *MMFs, e-monies* and *stablecoins* transformed the two-tier monetary system into a three-tier system



Background

- Cryptocurrencies and stablecoins led central banks' authority being questioned
- Wide range of discussions among technocrats, policy makers, regulators and market players
- Financial technologies such as blockchain triggered a new race for digital innovation in finance and other industries



Stablecoin

['stā-bəl-'koin]

A cryptocurrency which has a value that is pegged, or tied, to that of another currency, commodity or financial instrument.



Blockchain

['bläk-,chān]

A digital database or ledger that is distributed among the nodes of a peer-to-peer network.

Background

- CBDCs as alternative to the decentralized finance and its instruments
- CBDCs among the Organization of Islamic Countries (OIC) members
 potential benefits and challenges
- CBDC experiences of the selected OIC countries
 - technological breakthrough and potential driving force of financial innovation
 - cross-border compatibility
 - interoperability questions
 - regulatory and legal issues



Aim and Scope of the Study

- Main objective
 - digital currencies
 - current initiatives on the CBDCs
 - roles of institutions in the CBDCs
 - challenges and prospects of the CBDCs
- Scope and relevance
 - in-depth analysis of challenges and prospects
 - policy conclusions from the lessons learnt in case studies
 - policy recommendations for cooperation in CBDC development

Where Central Banks Have Issued Digital Currencies

Central bank digital currencies launched, under development or considered around the world



Caribbean nations/territories with offical digital currency: Bahamas, Jamaica, Anguilla, Dominica, Grenada, St. Vincent, St. Lucia, Montserrat, St. Kitts, Antigua and Barbuda Source: Atlantic Council

Significance of the Study

- Reveals key factors in success and performance of CBDC development
- Concise, systematic, and viable policy recommendations (to the OIC)
- Beneficial to policy-makers and regulators (both OIC and non-OIC)
- Draws conclusions and strategies for cross-border operations
- Lays down the foundations of international collaboration



Central Bank Digital Currencies

Research Methodology

• Five defined phases of design thinking – *discovery, interpretation, ideation, experimentation,* and *evolution*



Research Methodology

- Main tools of research:
 - literature review:
 - literature on the CBDCs
 - analyze information from related documentation
 - survey and interview(s):
 - online structured survey and expert interviews
 - collect data from the stakeholders
 - case studies (field work and/or desk research):
 - structural, regulatory, and technical opportunities/challenges that foster/hinder
 - currency digitalization and cooperation among central banks at the local and OIC level
 - data analysis:
 - a detailed descriptive analysis of the survey results



Overview

Introduction

• An overview of the chapters in the report

Outline of aim, scope, significance and methodology
Summary of the sources on which policy recommendations rest

Digitalization of Currencies

- •Historical evolution of digital currencies
- Importance of digitalization and core principles
- Cryptocurrencies vs. CBDCs

Global, Regional and Local Trends

- •Best digital currency initiatives by central banks
- •Leading global institutions in CBDC development
- •CBDC development among the OIC members
- •Shari'ah perspective on the CBDCs

Case Studies

- •Background Information
- •Monetary and Payment Systems
- •Needs, Challenges and Trends
- •Lessons Learnt
- •Country-specific recommendations
- •Implications for the OIC Members
- Case # 1 Indonesia
- Case # 2 Nigeria
- Case # 3 Qatar
- •Case # 4 Pakistan
- Case # 5 Singapore

Conclusion and Policy Recommendations

- Literature Review
- Desk research on case studies
- •Survey and online/face to face Interviews
- •Data analysis derived from the survey
- •Clear Objectives and Use Cases
- •Legal and Regulatory Framework
- Technology and Infrastructure
- •Design and Development Process w/ testing and piloting
- •Monetary Policy Integration and Financial Inclusion
- •Education and Public Awareness w/ strong official rollouts
- Continuous Monitoring and Feedback mechanism from the stakeholders
- Cross-border integration and international collaboration



Part II – Digitalization of Currencies

- First attempts to create digital money and online payment systems in the 1990s
- A decentralized digital currency (Bitcoin) with blockchain technology in 2009
- Despite regulatory and security challenges, digital currencies gain popularity and recognition
- Digital currencies evolved and expanded with # of cryptocurrencies and CBDCs



Digital Currency

[ˈdi-jə-təl ˈkər-ən(t)-sē]

Currencies that are only accessible with computers or mobile phones.

The Nature of Digital Currencies

- Roles of DCs in financial and monetary system
 - alternative to traditional fiat currencies
 - decentralized and digital
 - facilitate cross-border transactions
 - faster and efficient transfer of funds in cross-border transactions
 - improve financial accessibility
 - Access to financial services to individuals and businesse
 - increase financial privacy
 - increased privacy for users
 - transactions without revealing personal information
 - enable decentralized applications
 - backbone of decentralized applications and platforms
 - new forms of online interactions and transactions



The Nature of Digital Currencies



- roles of DCs
 - medium of exchange
 - unit of account and store of value
- decentralized or centralized (cryptocurrencies vs. CBDCs)
 - efficient, secure, and accessible alternative to fiat currencies
- implications for financial inclusion, privacy, and monetary policy

Types of Digital Currencies

- Cryptocurrencies, central bank digital currencies (CBDCs), and hybrid digital currencies
- *Cryptocurrencies*: decentralized / cryptography to secure transactions and control the creation of new units
 - no government or central authority
 - borderless and censorship-resistant (i.e. Bitcoin, Ethereum, and Litecoin)
- *CBDCs*: issued and backed by a central bank or government
 - digital version of a fiat currency
 - greater financial inclusion / faster and cheaper payment systems / enhanced monetary policy tools
 - either retail or wholesale form
- Main difference: decentralization vs. backing of a central authority
- Hybrid digital currencies: elements from both types (i.e. cryptocurrencies and CBDCs)



Cryptocurrency

[krip-tō-'kər-ən(t)-sē] A digital or virtual currency secured by cryptography and based on a network that is distributed across a large number of computers.



Central Bank Digital Currency (CBDC)

[ˈsen-trəl ˈbɑŋk ˈdi-jə-tol ˈkər-ən(t)-sē]

Digital tokens, similar to cryptocurrency, issued by a central bank.

- Advantages of digital currencies
 - *Efficiency*: faster and lower transactions cost
 - *Accessibility*: financial inclusion
 - *Security*: secure transactions (cryptography)
 - *Decentralization*: no single authority / control
 - *Transparency*: transparency and traceability in transactions (public ledger)
 - *Global reach*: cross-border transactions without need for currency exchange
 - *Programmability*: programmable features for the development of new financial products and services



- Disadvantages of digital currencies
 - *Volatility*: high price volatility, unreliable as store of value
 - *Regulation*: lack of clear regulatory framework, uncertainty and limits over adoption
 - *Cybersecurity Risks*: hacking and other types of cyber-attacks / user funds at risk
 - *Limited Acceptance*: limited acceptance as a means of payment, low functionality
 - *Complexity*: needs familiarity with technology
 - *Energy consumption*: large energy consumption / environmental concerns



- CBDCs offer several advantages
 - *Increased financial inclusion*: access to financial services for individuals and businesses
 - *Improved payment efficiency*: faster and cheaper payment services
 - *Enhanced monetary policy tools*: new tools of monetary policy (i.e. negative interest rates and direct targeting of individuals or businesses)
 - *Increased financial stability*: reduced risk of bank runs and financial instability
 - *Improved security*: advanced technology and cryptography, enhanced security and reduced risk of fraud and hacking
 - *Better data collection*: better information on economic activity, improved analysis and decision-making



• Potential disadvantages of CBDCs



- *Privacy concerns*: central banks' access to big data of financial transactions, concerns over privacy and security
- *Risk of cyber-attacks*: vulnerable to cyberattacks / possible theft or loss of funds
- *Complex implementation*: complex process / significant technical infrastructure and efficient allocation of resources
- *Legal and regulatory challenges*: less developed legal and regulatory framework / challenges w.r.t. their impact on monetary policy and financial stability
- *Technical difficulties*: significant upgrades to existing payment systems / technical difficulties in integration
- *Resistance from the public*: public resistance in adopting a CBDC due to low familiarity with DCs or concerns about security and privacy

- The structural, regulatory, and technical challenges
 - (i) Structural Challenges:
 - Lack of clear and consistent regulations and standards
 - Complex monetary systems: integration complex and difficult
 - (ii) Regulatory Challenges:
 - Money laundering and terrorist financing: use for illegal activities
 - Consumer protection: vulnerable to scams and fraud
 - Privacy concerns: balancing privacy concerns with financial surveillance
 - (iii) Technical Challenges:
 - Scalability: need to handle large amounts of transactions
 - Security: prevention of hacking and theft
 - Interoperability: technical integration and compatibility
 - User experience: user-friendly design and testing / piloting



Part III- Global, Regional and Local Trends

- Emerging Market and Developing Economies (EMDEs) have made more significant strides in their CBDC initiatives compared to Advanced Economies (AEs)
- Banks in EMDEs show greater participation in retail (29%) and wholesale (16%) CBDC pilot initiatives, in contrast to 18% and 10%, respectively in AEs



Central Banks' Currency Digitalization Initiatives

- all currently active CBDCs are operational in EMDE jurisdictions
- EMDEs emphasize financial inclusion-related drivers more prominently in their retail CBDC initiatives and place a greater emphasis on monetary policy implementation compared to AEs
- convergence between AE and EMDE central banks, as both groups increasingly prioritize domestic payment efficiency, payment safety, financial stability, and cross-border payment efficiency as their key motivations for CBDC exploration

Structural, Regulatory and Technical Issues

- Structural Challenges
 - Infrastructure Development: i) reliable digital verification mechanism, ii) reinforced payment systems
 - Access and Inclusion: i) smooth operation of payment systems, ii) financial inclusion, iii) efficient monetary transmission mechanism
 - Integration with Existing Systems: i) interoperability, ii) collaboration with stakeholders
- Regulatory Challenges
 - A Comprehensive Legal Framework: i) anti-money laundering (AML), ii) consumer protection, iii) combating the financing of terrorism (CFT)
 - Cross-Border Transactions and International Regulatory Cooperation: i) international regulatory cooperation, ii) foreign exchange controls, iii) harmonization of monetary policies
 - Balancing Privacy Rights and Regulatory Oversight: i) safeguard privacy, ii) ensure regulatory oversight such as AML or know your customer (KYC) procedures
- Technical Challenges
 - Scalability: i) capacity to accomodate immense volume and # of transactions, ii) compatibility w/ existing infrastructure, iii) interoperability
 - Cybersecurity: i) avoid monetary policy, financial stability or payment system risks

Initiatives by Global Institutions

- The Bank for International Settlements (BIS)
 - Innovation Hub
 - Project Mandala: feasibility of encoding juristiction-specific policy and regulatory requirements into a common protocol for crossborder use
 - Project Sela: feasibility of a retail central bank digital currency (rCBDC) ecosystem that combines accessibility, competition and preventative cyber security, while retaining key advantages of physical cash
 - Project Solaris: exploring key aspects of how central bank digital currencies (CBDCs) could work for offline payments, a security a resilience framework for CBDC systems and a paper on Closing the CBDC threat modelling gaps
 - Project Mariana: explores automated market-makers (AMM) for the cross-border exchange of hypothetical Swiss franc, euro and Singapore dollar wholesale CBDCs
 - Project Rosalind: developing prototypes for an application programming interface to distribute retail CBDC
 - Project Icebreaker: experiment for a new architecture for cross-border retail CBDCs
 - Project Tourbillon: explores how to improve cyber resiliency, scalability and privacy in a prototype Central Bank Digital Currency (CBDC)
 - Project mBridge: A prototype of multiple Central Bank Digital Currencies (mCBDCs) developed by the Bank for International Settlements Innovation Hub and four central banks demonstrating the potential of using digital currencies and distributed ledger technology (DLT) for delivering real-time, cheaper and safer cross-border payments and settlements
 - Project Dunbar: explores how a common platform for multiple central bank digital currencies (multi-CBDCs) could enable cheaper, faster and safer cross-border payments. It identified challenges of implementing a multi-CBDC platform shared across central banks and proposed practical design approaches to address them
 - Project Helvetia: explored how central banks could offer settlement in central bank money in a future in which more financial assets are tokenised and financial infrastructures run on distributed ledger technology (DLT), focusing on operational, legal and policy questions
 - Project Jura: explores cross-border settlement of tokenised assets between financial institutions in wholesale central bank digital currencies (wCBDCs) on a distributed ledger technology (DLT) enabled platform
 - Aurum: The BIS Innovation Hub and the Hong Kong Monetary Authority have completed a retail CBDC technology prototype

Initiatives by Global Institutions

- International Monetary Fund (IMF): important role in shaping the landscape of CBDC development by offering guidance and support to central banks (publications and technical assistance)
- Financial Stability Board (FSB): diligently monitored the ongoing developments within the realm of digital currencies / unequivocally advocates for heightened coordination among regulatory authorities, emphasizing the necessity of proactive risk mitigation strategies
- The United Nations (UN): guides policy-makers through its publication of comprehensive reports and research papers that delve into the prospective advantages and potential drawbacks associated with CBDCs
- The World Bank: comprehensive exploration of blockchain technology and digital currencies, through reports addressing both the technical dimensions of CBDCs, and the conceptualization of CBDCs as instruments capable of expediting cross-border payments
- The World Economic Forum (WEF): actively contributes to the advancement of CBDCs as a platform of informed discussions and debates on CBDCs, extensive research and reports to provide insights into the potential impacts of CBDCs on the global economy
- Financial Action Task Force (FATF): while does not directly participate in the development of CBDCs, its crucial role lies in preventing the misuse of CBDCs for unlawful purposes
- Academic and Research Institutions: universities and research institutions engage in multifaceted activities on digital currencies such as empirical research, educational initiatives, and prototype development
- Pioneering Countries
 - Switzerland, Sweden, The Bahamas, China, Uruguay, Korea, Cambodia, Canada, Japan, Estonia, Ecuador, Russia etc.

Status of OIC Member Countries

- Saudi Arabia: Saudi Central Bank (SAMA) and the Central Bank of the UAE (CBUAE) unveiled a collaborative digital currency initiative known as Project Aber
- United Arab Emirates: Apart from the Aber project with SAMA, UAE is partnered with BIS along with Thailand, Hong Kong and China in a wholesale CBDC project (mBridge)
- Türkiye: Central Bank of the Republic of Türkiye (CBRT) through a research initiative called "Central Bank Digital Turkish Lira Research and Development« / first pilot test carried out in December 2022
- Malaysia: in partnership (Project Dunbar) with the BIS Innovation Hub, Reserve Bank of Australia, Monetary Authority of Singapore, and South African Reserve Bank, to explore a wholesale CBDC for international settlements / no immediate plan for a retail CBDC launch
- Indonesia: In terms of retail CBDC, Bank Indonesia issued a white paper concerning the development of Digital Rupiah / elaborated the high-level design for Digital Rupiah under Project Garuda
- Pakistan: The State Bank of Pakistan interested in exploring CBDCs / also raised concerns about the potential impact on the country's financial system / studying the feasibility and implications of CBDCs
- Qatar: preliminary stages of its investigation into the development of a CBDC
- Kuwait: The Central Bank of Kuwait interested in CBDCs w/ research on the topic / no concrete initiatives or pilot projects as
 of September 2023
- Bangladesh: The Bangladesh Central Bank to initiate a feasibility study for the implementation of a CBDC / main objective to facilitate digital payments and stimulate the growth of startups and e-commerce within the country
- Nigeria: launched eNaira on October 25, 2021, a CBDC fully available to the public / led in implementing a CBDC despite challenges that the Central Bank of Nigeria (CBN) views as initial obstacles

Level of Financial Development and Digitalization of Currencies

- degree of financial sector development has substantial influence on the process of digitalizing currencies
- robust financial sector lays a solid groundwork for the acceptance and effective execution of digital currencies
- countries with underdeveloped financial infrastructure, substantial investment in technology needed for CBDCs
- well-defined and robust regulatory framework to guarantee the stability, security, and legality of CBDC operations
- well-established regulatory frameworks more adept at tackling anti-money laundering (AML) and know-your-customer (KYC) concerns, safeguarding consumer interests, and mitigating fraudulent activities

Level of Financial Development and Digitalization of Currencies

- level of financial sector development is closely linked to financial inclusion
- in countries with well-developed financial infrastructures and services, a significant portion of the population has access to banking and digital payment options
- introduction of CBDCs in such environments complement existing services and enhance financial inclusion
- in countries with underdeveloped financial sectors, CBDCs to bridge the financial inclusion gap as a secure and accessible digital payment solution to underserved populations

Level of Financial Development and Digitalization of Currencies

- under robust and enduring economic conditions, a greater likelihood available resources for research, development, and implementation of CBDC
- significant level of acquaintance and confidence in digital financial exchanges given a robust electronic payments framework, encompassing card-based transactions and digital wallets
- well-established and trusted banking system, users may be more inclined to embrace CBDCs as an extension of the existing financial system



Shari'ah Perspective on Digital Currencies

- **internal parameters** (for compatibility of DCs to Islamic principles)
 - Acceptability: For a currency to be Shari'ah-compliant, it must be embraced as a legitimate form of payment
 - Medium of Exchange: A Shari'ah-compliant digital currency should not only be accepted but should also effectively function as a medium of Exchange (velocity, scalability & low transaction cost)
 - **Store of Account**: Another vital internal parameter pertains to the currency's ability to serve as a reliable store of account over time (stability & predictability)

Shari'ah Perspective on Digital Currencies

external parameters

- Legal Tender: Legal recognition is a fundamental requirement to ensure that the currency aligns with Shari'ah principles
- **Compliance with Regulatory Requirements**: Shari'ah-compliant DCs should adhere to relevant regulatory guidelines
- **Stability**: This entails avoiding excessive fluctuations in value, which could jeopardize the purchasing power of the currency
- **Gambling and Speculation**: Islamic principles prohibit engaging in speculative transactions resembling gambling and excessive uncertainty
- **Technology Risk Mitigation**: Shari'ah compliance of digital currencies requires robust security measures and governance frameworks
- **Transparency and Disclosure**: Users should have access to comprehensive information about the digital currency's technology, transactions, and financial aspects
- Asset-Backed Nature: Some scholars argue Shari'ah-compliant digital currencies should be backed by tangible assets, such as commodities or real estate



Part IV - Case Studies



- Case studies on five countries
 - one is a non-OIC country
 - based on the level of financial sector development and digitalization
 - phase in CBDCs, legal and regulatory framework, current initiatives, coverage, challenges, and issues
- Lessons learnt from practices of leading countries
 - share knowledge and experience sharing
 - transfer knowledge and increase cooperation between OIC members
- Specific recommendations
 - derive general advice for all the OIC member countries

Case Studies

Five criteria for Case Country Selection: 1 four countries among the OIC members and one non-OIC country; 2 different geographic regions; 3 legal systems/regimes; 4 different levels of financial sector development and 5 different CBDC adoption levels

Criteria	Description	Approach
Ι	OIC member countries	COMCEC List
II	Geographic groups: African, Arab, and Asian	COMCEC List
III	Legal system/regime	World Factbook
IV	Development level of financial sector	IMF FD Index
V	CBDC adoption and implementation level	Atlantic Council

Case Studies

- Examples of CBDCs (Atlantic Council)
 - *Countries launched CBDCs*: Nigeria, Anguilla, Antigua and Barbuda, Dominica, Grenada, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and The Bahamas
 - *Countries piloting CBDCs*: Australia, China, Ghana, Hong Kong, India, Iran, Kazakhstan, Malaysia, Russia, Saudi Arabia, **Singapore**, South Africa, South Korea, Sweden, Thailand, UAE, and Ukraine, Türkiye
 - *Countries that are at the development stage*: Austria, Bahrain, Belize, Bhutan, Brazil, Canada, Cambodia, Estonia, Finland, France, Germany, Haiti, **Indonesia**, Ireland, Israel, Italy, Japan, Lithuania, Macau, Mauritius, Netherlands, Norway, Palau, Philippines, Spain, Taiwan, Tunisia, UK, USA, and Venezuela

THE STATE OF Central Bank Digital Currencies (CBDC) AROUND THE WORLD IN 2023



Case Studies

Five selected case countries (OIC and non-OIC)
Indonesia: OIC, Asian Group, Mixed (Civil Law + Shari'ah)
Nigeria: OIC, African Group, Common Law
Qatar: OIC, Arab Group, Mixed (Civil Law + Shari'ah)
Pakistan: OIC, Asian Group, Mixed (Common Law + Shari'ah)
Singapore: Non-OIC country, Common Law

Status	OIC Countries	
Pilot	Iran, Kazakhstan, Malaysia, <mark>Nigeria (Launch)</mark> , Saudi Arabia, UAE, Türkiye	
Development	Bahrain, Indonesia, Tunisia	
Research	Azerbaijan, Bangladesh, Jordan, Oman, <mark>Pakistan, Qatar</mark>	
Inactive	Benin, Egypt, Kuwait, Lebanon, Palestine	
Cancelled	Senegal	



Part V – Conclusion and Policy Recommendations

- a comprehensive strategy for transition at the national level
- raising public awareness and educational campaigns
- technological capacity build up, technical and physical infrastructure
- user-friendliness (i.e. downloadable apps in smartphones etc.) along with the security assurances
- meeting higher demand for digitally enabling devices such as smart phones, and computers / require governments' involvement in mitigating the costs in lower-income countries
- privacy concerns along with the security of the total system addressed by the central banks, in particular when cross-border transactions take place
- banking supervisory institutions and other financial/capital market regulatory institutions must collaborate with central banks
- inter-governmental sharing of biometric information might become another sensitive issue in that regard



Thanks for Your Patience and Kindness...