journal Of Legal and Economic Studies ISSN 2602-7321/ EISSN 2773- 2649

Vol : 06 No: 01 Year: 2023 Page : 108 - 129

CENTRAL BANK DIGITAL CURRENCY PROJECTS IN MENA REGION AND AFRICAN CONTINENT

Mohammed Zine El Abidine ABDELOUAHAB, University of Oran 2, Algeria
m.z.abdelouahab@gmail.com

Send Article Date: 06 /08/2023 Date of acceptance of the article: 20/08/2023

Abstract

With the rise of crypto-assets (or private digital currencies) and their potential risks, many countries around the world are actually pursuing projects for the launch of digital central bank currencies. After a presentation of the specificities and technical features of these public digital currencies, as well as central banks' motivations about them and challenges they create, we focus on the study of ongoing projects by the countries of two regions, to which Algeria belongs geographically and with which it shares many similarities, in particular the level of economic development (developing economies), namely the Middle East and North Africa (MENA) region and the African continent. This study could help draw lessons for the success of an Algerian digital currency project, recently announced by the public authorities.

Keywords: Central Bank Digital Currency; MENA; Africa; FinTech; Payment Systems.

JEL Classification Codes : E42 ; E52 ; E58 ; O33

Introduction

Countries' interest in Central Bank Digital Currencies (CBDCs) has emerged amid the rise of private digital assets or currencies (PDCs) and the risks they represent for the stability of financial systems because of their high volatility and the speculative nature of their exchanges. Unlike PDCs, a CBDC is a digital version of the currency issued, managed and controlled by the country's central bank and thus constitutes for it a liability (debt) denominated in the legal unit of account and serves as a means of exchange and a store of value. It also differs from other existing non-cash payment instruments such as transfers, debits, card payments and electronic money, which are electronic payment vehicles involving a

liability of a private financial institution, unlike the CBDC which represents a liability for (or claim on) the central bank.

Our paper also focuses on the technical features of CBDCs. Thus, there are two use cases: retail (or general public) use and wholesale (or interbank) use. Several designs (or architectures) of CBDC payments and data transfer circuits are possible according to the number of levels between the issuer (the central bank) and the final users, and also according to whether the claim on the central bank is direct or indirect: so we can find direct, hybrid, intermediated or indirect architectures. Furthermore, CBDC projects must also consider the type of technology used for data storage and payment transmission: centralized and/or distributed ledger technologies.

The potential motivations for central banks to issue CBDCs are numerous, such as: financial stability, payment security and efficiency, financial inclusion, monetary policy effectiveness, transparency and fighting against illicit transactions, reducing the size of the informal economy, etc. At the same time, several risks can be generated by the use of CBDCs, including risks related to: cyber-security, data protection, disintermediation, cross-border transactions' control, etc.

Finally, an empirical section in our paper sheds light on achieved or current CBDC projects pursued by central banks in two developing countries, regions, namely the Middle East and North-Africa (MENA) region and the African continent. We first explore the current statuses (or phases) of these projects. We also study the technical features of projects (use case, architecture and technology). We then analyze the advantages that motivate these countries the most, as well as the role of the Covid-19 pandemic and geopolitical tensions related to the war in Ukraine in the growing interest for CBDCs observed since 2020. This study could help draw lessons for the success of an Algerian digital currency project recently announced by the public authorities. The conclusion gives some recommendations on necessary preconditions and measures to do so.

THE FIRST TOPIC: CONCEPTS AND THEORETICAL ASPECTS OF PRIVATE AND PUBLIC DIGITAL CURRENCIES

In this topic, we will first focus on the concepts and theoretical aspects related to the two types of digital assets (PDCs and CBDCs), then present the key

elements that public authorities must take into account when implementing public digital currency launch projects

FIRST REQUIREMENT: PRIVATE DIGITAL CURRENCIES AND DIGITAL CENTRAL BANK CURRENCIES

In this section, we begin by showing the differences between PDCs and CBDCs, as well as other types of assets, in order to understand these concepts that may seem somewhat intertwined.

Firstly: Private digital currencies (PDCs)

1. Definition

PDCs are a kind of "crypto-assets" issued by the private sector, created to function as decentralized means of payment, *i.e.* independently from central banks' control. PDCs, like other crypto-assets[1], mainly use cryptographic technologies to secure transactions and control the creation of new units, and are often based on distributed ledger technologies (DLTs), such as the Blockchain technology or other similar technology, that allow transactions to be recorded and verified transparently and safely[2]. Crypto-assets, including PDCs, are generally traded on peer-to-peer decentralized networks, without intermediaries and without high costs.

2- PDC typology

a- Unbacked PDCs are the first generation of crypto-assets that emerged by the end of the 2000s, of which the most famous (and most important in terms of market size) are: Bitcoin, Ethereum, BNB, etc.

[1] In addition to private crypto-currencies, crypto-assets include other asset classes such as: Utility Tokens, Security Tokens, and the Non-Fungible Tokens (NFTs).

[2] A Distributed Ledger Technology (DLT) is a means of storing data using distributed ledgers (data registers) in the form of a repeated digital copy of data available at multiple locations. It is a database stored, shared and synchronized on a computer network. Data are updated by consensus of network members. Blockchain is a distributed ledger in which data about encrypted transactions are stored in blocks. A new block is linked to the existing chain of blocks (the blockchain) through a computerized process that validates transactions. Blockchain is the most famous DLT, but not the only one (IMF, 2022).

b- Stablecoins are the second generation of crypto-assets, designed to overcome the problem of excessive volatility of unbacked crypto-assets, so that the value of the digital asset remains stable *vis-à-vis* other assets. The "centralized or classic" stablecoins are backed by currencies in the traditional sense, such as US dollar or euro which constitute a guarantee collateral. The most important centralized stablecoins (in terms of market size) are: USDT (from *Tether*) and USDC (from *Coinbase* and *Circle*).

c- Decentralized finance (DeFi) includes the so-called "decentralized or algorithmic" assets that are backed in a complex way by other (non-stable) crypto-assets and/or a basket of currencies US dollar, euro, etc.), such as Terra USD (or *Terraform Labs* UST).

d- Global Stablecoins. In the case of a large use in the future of one (or more) stablecoin or the launch of new assets by large companies or technology platforms (BigTechs), such as Diem (ex-Libra) –the "currency" of Facebook (Meta), and with the condition of being authorized by the national legislations, these stablecoins would then be called Global Stablecoins (GSCs). They could exercise more monetary functions, particularly as means of payment on a global scale, or even as international store of value assets.

Secondly: 3. Digital Central Bank Currencies (CBDCs)

1- Definition

A central bank digital currency (CBDC) is a digital public currency issued by a central bank and denominated in the national unit of account. A CBDC is just a digital version of the currency issued, managed and controlled by the central bank and represents a liability for it as for any national currency (IMF, 2022). A CBDC is a digital form of central bank-money that is different from reserves or settlement balances held by commercial banks at the central bank (BIS, 2018). According to Agustin Carstens –General Manager at the Bank for International Settlements (BIS), the principle of digital currency itself is not something new. He points out that ".. *Commercial bank money has been digital for decades, and we already use digital means of payment on a daily basis. Central banks already provide wholesale digital money to banks.*" (Carstens, 2021, p. 1).

2- Some CBDC Specificities

a- Monetary and legal aspects

The fact that a CBDC represents a central bank liability denominated in an existing unit of account that serves as both means of exchange and store of value distinguishes it from PDCs and other crypto-assets (IMF, 2022). In reality, the latter are not "real currencies". PDCs don't fulfill the three traditional monetary functions because: they don't represent a means of exchange easily usable for ordinary or everyday payments; it is not a unit of account which makes it possible to easily compare the prices of goods and services; and finally, it cannot be used as a safe store of value. This is due to the highly volatile prices of these assets, exclusively determined by supply and demand on digital platforms. These assets are issued by private issuers (private companies or through fully decentralized issuance). Also, these assets do not rely on a trusted third party, such as a central bank or a state, and have no intrinsic value or legal tender. This is why these assets are not considered as currencies, in economic and legal sense (IMF, 2022).

In fact, crypto-assets are primarily traded for speculation[3]. But, if by consent of a payment community they are used for payment or store of value purposes, they will *de facto* acquire the status of currency in the economic sense; hence the qualifiers crypto "currencies" or private digital "currencies" are increasingly accepted. That said, the perception of crypto-assets as currencies in the legal sense could also change. For example, in September 2021, El Salvador became the first country to adopt a crypto-asset –the bitcoin– as its legal tender alongside its official currency – the US dollar. Bitcoin is allowed to initially perform the function medium of exchange (Alvarez et al., 2022).

b- Differences between CBDCs and existing electronic means of payment

CBDCs can also be confused with other cashless payment instruments (transfers, debits, card payments and electronic "money"). These instruments are, like physical payment instruments (*e.g.* checks), electronic payment vehicles involving a liability (debt) of a commercial bank (or other private financial institutions), while a CBDC represents a claim on the central bank (Bech & Garratt, 2017).

[3] Speculative use of crypto assets is one of the reasons governments and international financial institutions are reluctant, if not hostile, to them. In the event of a loss of confidence in one or more of these assets, financial turmoil could become systemic, and the risk of international financial crises becomes very likely (IMF, 2020; FSB, 2022).

More specifically, electronic money (also known as e-money or virtual money) could be confused with the CBDC. Electronic money represents a balance of available funds (for a consumer) stored on an electronic payment device (chip, prepaid card, mobile phone or computer system) as a non-traditional account with a commercial bank or other e-money providers. The stored monetary value represents a claim on the e-money issuer, against which the consumer can request a repay of the balance at any time and in full (IMF, 2022). Here again, the balance does not represent a direct claim on the central bank, as we have seen in the case of CBDCs.

In short, we can say that a CBDC can be distinguished from other forms of money (or what is considered to be money) in that it is: a currency in **digital** form (unlike cash or commodity money or local currencies), issued by a **central bank** (unlike electronic forms of bank reserve deposits at the central bank, electronic money or PDCs), which can be exchanged in a **decentralized** process between peers (where transactions are done directly between the ordering party and the beneficiary without requiring the intervention of an intermediary), and finally, which may be **accessible** for the general public, (Bech & Garratt, 2017).

SECOND REQUIREMENT: CBDC PROJECT IMPLEMENTATION

In this section, we outline the various aspects that a central bank should consider when deciding to implement a CBDC issuance project. These aspects are, firstly, related to the motivations (or objectives) of monetary digitalization, and also the risks and potential challenges related to this undertaking. Secondly, the central bank should study the technical features of its future digital currency (use cases, architecture, technology, partners, etc.).

Firstly: Central bank motivations for CBDCs and their challenges [4]

1- Motivations

The central banks' motivations for (or expected benefits by) the creation of CBDCs are expressed through surveys conducted by international monetary institutions, such as the Bank for International Settlements (BIS) or regional

[4] These elements are based on a synthesis of several sources, including: Carstens (2021), AMF (2022), BIS (2022a), AFI (2022), IMF (2022).

institutions, such as the Arab Monetary Fund (AMF). It should also be noted that motivations vary according to the situation and needs of each economy and, in general, between advanced economies and emerging and developing economies.

These motivations can be summarized in the points below.

- Motivations related to financial stability and payment supervision:
  - Financial stability
  - Payment security
  - Transaction transparency and fighting against illegal transactions
- Motivations related to monetary policy:
  - Greater confidence in the local currency
  - Monetary policy effectiveness
  - Reducing dollarization and parallel currency market
  - Greater seigniorage income for the issuing central bank

- Motivations related to economic development:
  - Financial inclusion
  - Greater efficiency of domestic and cross-border payments
  - Informal sector inclusion and reducing cash use impact
  - Promotion of financial innovations
  - Support for e-government initiatives

2- CBDC related challenges and risks

The launch of a CBDC also presents potential challenges (or risks). This may vary according to the specific design and implementation of CBDCs, as well as their interactions with the existing financial and economic system, which makes careful management and appropriate regulation very important to eliminate or at least to reduce potential risks. These risks can be summarized in the points below.

- Cyber security risks
- Privacy and data protection risks
- Disintermediation risks (reducing the role of the banking system)
- Risks related to financial inclusion
- Monetary policy risks
- Regulatory and conformity risks
- Risks related to cross-border transactions

- International positions on local CBDCs and monetary policy.

Secondly: Technical features of CBDCs

1- CBDC case use

There are two kinds of CBDC design: "retail" (or general purpose) CBDCs and "wholesale" (or interbank) CBDCs.

- **Retail CBDCs** allow the general public (individuals and companies) to use digital currency as a medium of exchange (doing payments) and as a store of value.

- **Wholesale CBDCs** are limited to the use by another category of economic agents: financial institutions. They are intended to be used for large interbank settlements (as currently done with reserves and settlement balances held by commercial banks at the central bank) and also to provide (digital) central bank-money for settlements related to assets in the new digital infrastructures (BIS, 2022b).

2- CBDC Architecture (Design)

According to Auer and Böhme (2021), CBDC payment and data transfer channel (more specifically retail CBDCs) can be designed according to four architectures (or designs) depending on the number of levels between the issuer (the central bank) and the final users, and whether the claim on the central bank is direct or indirect.

- **Direct architecture** is a design of retail CBDC with only one level. There are no intermediaries between the central bank and the digital currency users (individuals and companies). The claim (the transaction amount in CBDC) is direct on the issuing institution, which manages all payments in real time and thus keeps a ledger of all clients' retail assets.

- **Hybrid architecture** is a design of retail CBDC with two levels. There are intermediaries between the central bank and the digital currency users. These intermediaries, which are professional operators usually from the private sector (or Payment Service Providers – PSP), manage payments in real time,

even if the transaction amount in CBDC is a direct claim on the central bank. The latter may records a copy of all retail CBDC holdings.

- **Intermediated architecture** is a variant of hybrid architecture. It represents a retail CBDC design with two levels, like the previous design where intermediaries (PSP) manage payments in real time too, but the central bank only records the (wholesale) offline balances of intermediaries. Thus, this architecture, even if it is designed for a detail CBDC, also includes a wholesale mode.

- **Indirect architecture** is a wholesale CBDC design. Like a closed payment system in bank money, CBDC users have direct claims on commercial banks (or financial intermediaries), which in turn hold CBDC as a claim on the central bank. Thus, digital currency used by individuals and companies becomes an indirect claim on the central bank. Commercial banks manage the retail CBDC registers of final users, while the central bank manages the wholesale payments of intermediary banks.

3- The different phases (statuses) of a CBDC project

Financial and monetary digitalization is a relatively new field of research. This makes CBDC launch a very complex task for central banks. Because of the important impacts in terms of benefits and risks, and the effects on the whole economy, central banks should take sufficient time to study the feasibility of their projects by assessing the necessary preconditions, technical features, and by conducting small-scale testing, whether for retail, wholesale, mixed or cross-border CBDCs' projects. The phases (or statuses) through which a CBDC project evolves can be defined as follows:

- **The Research phase**. At this stage (or CBDC status), countries create working groups to study the feasibility of their digital currency projects (use cases, motivations, risks, impact, etc) and start publishing research reports.

- **The Development phase**. At this stage, countries develop the technical design of the CBDC and conduct small-scale testing in controlled environments. This phase can also be described as "proof-of-concept" status of the project.

- **The Pilot phase**. At this stage, countries carry out deeper tests of the CBDC, for example for interbank or cross-border uses and/or retail uses, in a real environment, but with a limited number of participants (users and intermediaries).

- **The Launch phase**. Finally, countries officially launch their CBDCs for widespread retail and/or wholesale use.

THE SECOND TOPIC: CBDC PROJECTS IN MENA AND AFRICA - AN EMPIRICAL STUDY

In this topic, we first explore the current state of ongoing or already achieved CBDC projects, led by central banks of developing countries in two regions of the world, namely the MENA region and the African continent. We also study, within the limits of available data, the technical features of these projects (use cases, designs and technologies). We then analyze the benefits that most motivate the countries concerned, and the role of the Covid-19 pandemic and geopolitical tensions (war in Ukraine) in explaining the rising interest in CBDCs since 2020.

FIRST REQUIREMENT: GEOGRAPHICAL DISTRIBUTION AND CURRENT PHASES OF CBDC PROJECTS

Before focusing specifically on the two regions (MENA and the African continent), we give an overview of the current state of the world's CBDC projects. We also give comparisons between the current states of projects in the two regions and at world scale.

Firstly: An overview of the current state of CBDC projects in the world

According to the "CBDC Tracker" database edited (and frequently updated) by Atlantic Council – Geoeconomics Center[5], in December 2022, 117 countries and two monetary areas (controlling more than 95% of global GDP and nearly 80% of world population) were exploring projects to create their CBDCs.

[5] CBDC Tracker Database from Atlantic Council: https://www.atlanticcouncil.org/cbdctracker (03/31/2023)

Eleven emerging or developing countries have already "**launched**" their CBDCs: the Bahamas, Eastern Caribbean countries, Nigeria and, most recently, Jamaica.

Eighteen countries' projects –most of which are emerging economies (except Japan and Australia), were at "**pilot**" phase. This group includes some major emerging countries such as China, Russia, India, South Korea and Thailand.

The "**development**" phase represents the status of CBDC projects in 32 countries, most of which are advanced economies in Europe and North America.

Thus, the most active phases of CBDC projects in the world (launch, pilot and development) were undertaken in 61 countries, which represent just over half of world projects by December 2022.

Also, the number of countries whose projects are still at the "**research**" phase is 40 –mainly developing countries, or one third of all projects, and which are principally located in Africa, Asia and Latin America.

Finally, 14 countries, such as Egypt, Argentina and Iceland, have declared interest in CBDCs but did not significantly develop their projects (**inactive** projects). Three other countries, namely Ecuador, Senegal and Benin[6] have declared their projects **cancelled**.

Secondly: CBDC projects in MENA and Africa regions

1- MENA Region

As shown in Figure (1), 14 countries in MENA region have expressed interest for CBDC creation. Project statuses are currently at different levels, but no project has yet resulted in an effective full launch. The total of projects is 16, as two countries have two projects each.

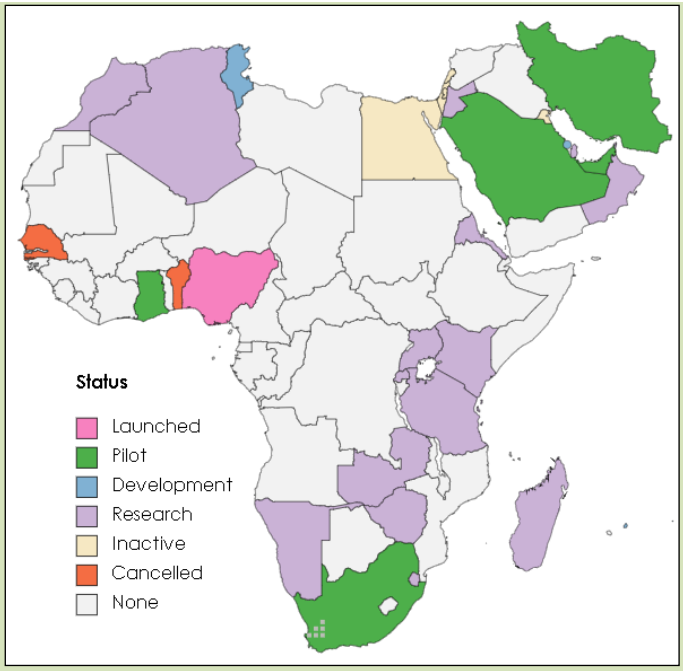
[6] The Benin project is reported in the CBDC Tracker as Inactive, but in reality the project was cancelled, as we will see in more detail when studying the African projects.

The most advanced projects in the MENA region are at "**pilot**" phase: one retail CBDC project for domestic use by Iran called "*Crypto-Rial*"; one wholesale CBDC project by Saudi Arabia with the United Arab Emirates called "*Aber*" for domestic and cross-border use; as well as another wholesale project for the Emirates with three Southeast Asian countries (China, Hong Kong and Thailand) for cross-border payments, called "*Multiple CBDC Bridge*" (or *m-Bridge*).

Two CBDC projects are currently at a "**development**" phase with limited scale testing: one by Bahrain for wholesale use (in technical partnership with JP Morgan Group and a local bank ABC), and one wholesale project by Tunisia (in partnership with Bank of France) with cross-border tests.

The "**research**" status, which represents the early study phase of a CBDC project, are announced by five MENA countries: Morocco in 2021, Jordan, Oman and Qatar in 2022, and more recently Algeria in 2023. Apart from Morocco, which initially declared its interest in retail CBDC, no details are announced by these five countries about the technical aspects (use case, architecture, technology, geographical extent of payments). Indeed, the research phase is often marked by the lack of information provided and a cautious approach by public authorities (and central banks) of the countries concerned – an aspect that generally characterizes institutions in developing economies compared to advanced economies.

Figure (1). Countries with CBDC projects in MENA and Africa, March 2023*



***** If a country pursues more than one CBDC project, the figure reports the status of the most advanced project, as in the case of Tunisia.

Source: By the author from CBDC Tracker data (Atlantic Council) –Dec. 2022 update, completed by data from national central banks and professional media. The map is produced by the author using the application *MapChart* for geographical map editing.

Algeria announced, through a statement by its Prime Minister at the end of December 2022, the intention of the Bank of Algeria to launch a national digital currency which will be called the "Digital Algerian Dinar" (APS, 2022). The decision was formalized by the promulgation of the new "Monetary and Banking Law", published in the Official Journal by the end of June 2023[7].

The MENA region also has five "**inactive**" projects where the countries concerned have not published any information since the initial announcement of their interest in the creation of a CBDC. This is the case for Palestine (since 2017), Lebanon and Egypt (2018), and since 2019 for Kuwait, and Tunisia (for the retail project and not the cross-border wholesale project in partnership with the Bank of France, mentioned above).

[7] Law No. 23-09 of the third Dhou El Hidja 1444 corresponding to the 21st June 2023 on Monetary and Banking Law.

2- African continent

The African continent has 23 CBDC project announcements made by 20 countries, including the African component of the MENA region (Algeria, Egypt, Morocco and Tunisia). Thus, sub-Saharan Africa includes 16 countries with projects declared and that are actually at different levels of progress.

Nigeria is the only African country where a CBDC (the *e-Naira*) was effectively "**launched**" for domestic retail use in October 2021. The projects of two countries have a "**pilot**" status: Ghana with the "*e-Cedi*" project for retail use; and South Africa with two wholesale CBDC projects (*Khokha* project since 2018 for domestic payments, presumably, and *Dunbar* project for cross-border payments since 2021 in association with Australia, Malaysia, Singapore and the BIS).

The "**development**" status is reported for projects by two countries: one by Mauritius for mixed use (both retail and wholesale), and another by Tunisia – mentioned above in the item on MENA projects. The "**research**" status represents the largest number of observations in Africa, with 12 countries, most of which are likely predestined for retail uses (Algeria, Eritrea, Eswatini, Kenya, Madagascar, Morocco, Namibia, Rwanda, Tanzania, Uganda, Zambia, Zimbabwe), in addition to South Africa which, in addition to its two wholesale projects with a "pilot" status mentioned above, has started a retail project more recently (in 2021).

Finally, the only project which is actually classified as "**inactive**" is that of Egypt; and the two "**cancelled**" projects are those of Senegal and Benin, both members of the West African Economic and Monetary Union (UEMOA) –an experiment started in 2016 by Senegal and then Benin, then abandoned following the refusal of and pressure made by other countries in this monetary area.

3- International comparisons

Apart from the official launch of Nigeria's digital currency, the MENA projects seem to be relatively more advanced than those in the African continent. Indeed, as shown in Table (1) below, the share of MENA countries with announced projects (all statuses combined) is 61% of all countries in the region, while this share is only 37% for Africa. The percentage for the MENA region is almost identical to that for the world (59%), although the latter covers more than

95% of global GDP and nearly 80% of the world's population, as mentioned above.

When taking into account only the three most active phases of CBDC projects, namely the cases of official launches or phases of pilot or development, we will find five cases for MENA (nearly 36% of all current projects for this region), and five cases for all of Africa (20% only). At the global scale, these three statuses are found in 61 countries, or just over half of the countries concerned by CBDC projects (all statuses combined). This indicates a relative lag between the two regions relative to the global dynamics –a more pronounced lag for the African continent.

Table (1). Number of countries with declared CBDC projects – MENA, Africa and World, March 2023

	MENA		Africa*		World	
Status	**Nb. of countries**	**%**	**Nb. of countries**	**%**	**Nb. of countries**	**%**
Launched	0	0	1	5.0	11	9.4
Pilot	3	21.4	2	10.0	18	15.4
Development	2	14.3	2	10.0	32	27.4
Research	5	35.7	12	60.0	40	34.2
Inactive	4	28.6	1	5.0	14	11.9
Cancelled	0	0	2	10.0	2	1.7
Total of countries with announced projects	14	100	20	100	117	100
% of all countries in the region	61		37		59	

***** Including African countries of MENA region (Algeria, Egypt, Morocco, and Tunisia)

Source: By the author from CBDC Tracker data (Atlantic Council) –Dec. 2022 update, completed by data from national central banks and professional media.

SECOND REQUIREMENT: COMMENTS

In this section we give some comments on: the technical features of CBDC projects in the MENA region and the African continent, central banks' motivations, and analyze the reasons why there is a growing interest for CBDCs since 2020 in these two regions as well as at global scale.

Firstly: Technical features of CBDC projects in MENA and Africa

Table (2) shows that the intentions for CBDC projects in MENA (for which the nature of use is already decided) are relatively balanced between retail and wholesale purposes. This is different from Africa, where retail use represents the majority of projects (eight projects) comparatively to the wholesale projects (three projects by South Africa and Tunisia) and mixed use (two projects by Eswatini and Mauritius).

In terms of CBDC designs and technologies to adopt for the different projects, we can see that in the majority of cases, in MENA or Africa, preferences have not yet been decided. This is due to the fact that many of the projects in both regions have not yet reached an advanced stage of maturity (expressed by launch, pilot or development statuses), as we have already seen in Table (1).

Table (2). Technical features of MENA and Africa CBDC Projects, March 2023

		MENA	Africa*
Use case	Retail	6	8
	Wholesale	5	3
	Mixed	0	2
	Undecided	5	10
Architecture (Design)	Direct	0	1
	Intermediated	1	4
	Indirect	0	0
	Undecided	15	18
Technology	Conventional	0	0
	DLT	3	3
	Both	1	0
	Undecided	12	20

***** Including African countries of MENA region (Algeria, Egypt, Morocco and Tunisia)

Source: By the author from CBDC Tracker data (Atlantic Council) –Dec. 2022 update, completed by data from national central banks and professional media.

Secondly: Central banks' motivations

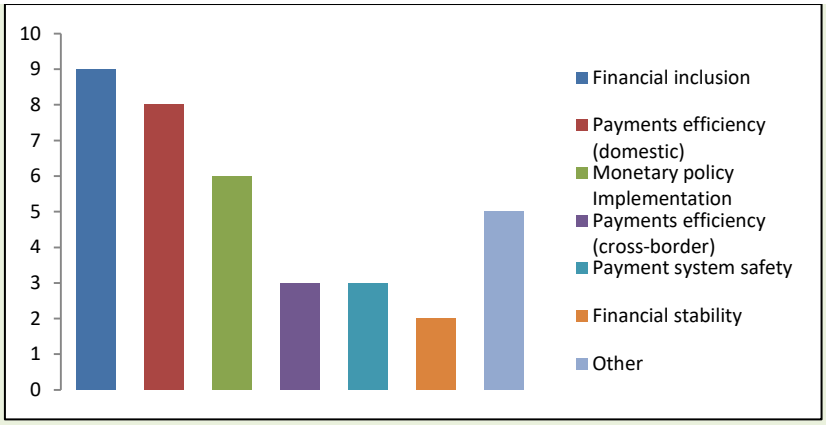
Figure (2) provides a ranking of motivations for CBDCs reported by a set of central banks in MENA and Africa.

Financial inclusion stimulation is considered as the primary motivation or benefit expected from adopting CBDCs in these regions. This is not surprising because, in general, developing economies often suffer from relatively low access to financial services and low rates of banking compared to advanced economies. The objective of financial inclusion also includes reducing the size of the informal sector, which is a common structural characteristic in developing economies, especially in sub-Saharan Africa.

Secondly, the central banks pursuing CBDC projects in MENA and Africa aim to improve the **efficiency of domestic payments** through the advantages of monetary digitalization in terms of reducing costs of transactions, and improving speed and simplicity of payments.

Thirdly, there is interest for the **monetary policy implementation**. Indeed, several central bank statements highlight the argument of strengthening monetary sovereignty by reducing dependence on foreign currencies, especially in countries with high dollarization as in the case of Lebanon and some African countries. A CBDC could promote a cashless system that strengthens domestic currency flows and thus improves confidence in it. Another aspect of money management concerns the increase in seigniorage income. Savings could be achieved by reducing the cost of printing, transporting and storing cash (banknotes and coins). The potential for savings is expected to be greater in countries with high cash circulation.

Figure (2). Central banks' motivations for CBDCs – MENA and Africa



Source: By the author from CBDC Tracker data (Atlantic Council) –Dec. 2022 update, completed by data from national central banks and professional media.

In addition to these three main motivations, statements by central banks wishing to launch CBDCs in MENA and Africa regions also point out other advantages, such as: improving the **efficiency of cross-border payments** (in terms of cost and time); increasing the **safety of payment systems** (notably through DLTs such as Blockchain technology); strengthening **financial stability** and reducing the influence of private crypto-currencies and stablecoins by providing a stable public digital alternative.

Other motivations include: **integrity, transparency and traceability** (helping to fight against illicit activities such as corruption, tax evasion, crime, money laundering or terrorist financing) through reducing dependence on cash payments; promoting **financial innovations**; and avoiding **foreign sanctions** imposed by other states, such as in the case of Iran, and Russia more recently.

Thirdly: The growing interest for CBDCs since 2020

The chronology of central bank statements the in the two regions about their motivations for CBDC projects shows a growing interest from 2020. Beyond the motivations cited above, this is most likely due to two major events which led to an acceleration of CBDC projects around the world, namely the Covid-19 pandemic and the outbreak of war in Ukraine and the geopolitical and economic tensions it has fueled.

Indeed, the **Covid-19 pandemic** that began to spread around the world in early 2020 has prompted many countries already engaged in CBDC projects to intensify their work (BIS, 2022b). During the Covid-19 pandemic, social distancing measures, public belief that coins and banknotes could spread the virus, and the new G2P payment systems (from government to people), further boosted the trend towards digital payments. All these factors have increased the need to accelerate work on CBDC projects (Auer et al., 2020).

On the other hand, from the beginning of the **armed conflict in Ukraine** in February 2022, a significant part of Russia's reserve assets deposited in US and European monetary and financial institutions were "frozen" (about USD 300 bln), with the aim to prevent Russia defending the ruble and financing the war. Also, the exclusion of Russian banks from the SWIFT international payment system has been part of collective sanctions, whose driving force is the use by the US of the dollar's hegemony and its role as the main international currency for trade and reserves. Financial sanctions against Russia led many countries to consider potential payment systems that could enable them to avoid the dollar in the future. Indeed, 2022 saw an acceleration of wholesale CBDC projects: the Atlantic Council's CBDC Tracker database lists nine tests of cross-border projects for wholesale CBDCs and seven cross-border projects for retail CBDCs. This represents nearly the double of cross-border projects in 2021[8].

Conclusion

Despite a relative lag behind the rest of the world, more and more countries in the MENA region and the African continent are interested in creating digital versions of their currencies. A total of 34 projects were reported by 30 countries in both regions (including four countries with five projects belonging simultaneously to the two zones, namely Algeria, Egypt, Morocco, and Tunisia). However, many of these projects are only at a preliminary stage of study (research status). The most advanced projects are: one effective launch of a CBDC for retail use (*e-Naira*) by Nigeria in 2021; pilot status for two wholesale projects by South Africa, two wholesale projects by the United Arab Emirates, including one with Saudi Arabia, and one retail project for each by Iran and Ghana. Projects currently at "development" phase (or proof-of-concept) that involve small-scale testing are

[8] CBDC Tracker Database from Atlantic Council: https://www.atlanticcouncil.org/cbdctracker (03/31/2023)

conducted by three countries: Tunisia, Bahrain and Mauritius, for wholesale and mixed use.

Interest in wholesale CBDCs for cross-border payments is currently limited to only three projects: *Dunbar* project between South Africa, Australia, Malaysia, Singapore, and the BIS; *Aber* project between United Arab Emirates and Saudi Arabia; and the *m-Bridge* project in which the Emirates joined China, Thailand and Hong Kong. In terms of architecture and technology expected for ongoing or achieved CBDC projects, it can be seen that in almost all cases in MENA and Africa the choice have not yet been done. This is because many of the projects in both regions have not yet reached an advanced stage of maturity.

Lessons from this study and from other international experiences can be drawn for Algeria, which has just announced its interest in creating a national digital currency. Many benefits can result from the launch of a CBDC in Algeria and address many barriers to economic development, such as: stimulating financial inclusion, developing domestic and cross-border payment systems, enhancing transparency and the fight against corruption, the reduction of the size of the informal sector and possibly the parallel currency market, strengthening monetary policy transmission channels, etc. To make a digital currency project successful in Algeria, monetary and public authorities must take into account not only the technical features (use case, design, and technology) in line with the adequate objectives, but also the predisposition of the domestic ecosystem to support the launch of the CBDC without problems.

Bibliography List:

- **First: Legal texts**

Law No. 23-09 of the third Dhou El Hidja 1444 corresponding to the 21st June 2023 on Monetary and Banking Law, 2023

- **Second: Articles**

Alvarez, F., Argente, D., & Van Patten, D., Are Cryptocurrencies Currencies? Bitcoin as Legal Tender in El Salvador, *NBER Working Papers*, No. 29968, 2022.

AMF, Central Bank Digital Currencies: A Practical Guide for Arab Central Banks, *Arab Regional Fintech Working Group Papers*, No. 178, Arab Monetary Fund, 2022.

Auer, R, & Böhme, R., Central bank digital currency: the quest for minimally invasive technology, *BIS Papers*, No. 948, June, Bank for International Settlements, 2021.

Auer, R, Cornelli, C., & Frost, J., Rise of the central bank digital currencies: drivers, approaches and technologies, *BIS Papers*, No. 880, Bank for International Settlements, 2020

Bech, M., & Garratt, R., Central bank cryptocurrencies, *BIS Quarterly Review*, Bank for International Settlements, 2017, pp 55-70.

BIS, Central bank digital currencies, *CPMI, Markets Committee Papers*, No. 174, 12 March, Bank for International Settlements, 2018.

BIS, (2022a). CBDCs in emerging market economies, *BIS Papers*, No. 123, Bank for International Settlements, 2022.

BIS, (2022b). Gaining Momentum – Results of the 2021 BIS Survey on Central Bank Digital Currencies. *BIS Papers*, No 125, Bank for International Settlements, 2022.

IMF, Digital Money across Borders: Macro-Financial Implications, *IMF Policy Paper*s, No. 2020/050, International Monetary Fund, 2020.

IMF, *Finance & Development*, a quarterly publication of the IMF, *59*(3), September, International Monetary Fund, 2022.

- **Third: Reports**

AFI, Central Bank Digital Currency – An Opportunity for Financial Inclusion in Developing and Emerging Economies? *Special Report*, Alliance for Financial Inclusion, 2022.

FSB, Assessment of Risks to Financial Stability from Crypto-assets, *Financial Stability Board Report*, February 16, 2022.

- **Fourth: Seminars**

Carstens, A., Digital currencies and the future of the monetary system, *Remarks at the Hoover Institution policy seminar*, Basel, January 27, 2021.

- **Fifth: Websites**

APS, Numérisation des paiements: vers l'adoption du dinar numérique, 26 December 2022 https://www.aps.dz/economie/149280-numerisation-des-paiements-vers-l-adoption-du-dinar-numerique

Atlantic Council –Geoeconomics Center: https://www.atlanticcouncil.org/cbdctracker : 31 March 2023.