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CENTRAL BANK DIGITAL CURRENCY: LESSONS LEARNT FROM THE SAND DOLLAR

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ABSTRACT

This research examines the implemention of the Sand Dollar in the Bahamas and draws several suggestions for policy makers when considering this new type of money in order to achieve the objectives. Besides, this study also provides basic insight into the background of development and motivations for this currency around the world. The study points out that the authorities need to promote more educational programs to introduce and bring more knowledge of the benefits of this currency and re-consider the non-interest bearing feature as it might be less appealing for holders.

Keywords: *CBDC, educational programs, motivations*

1. INTRODUCTION

In recent years, the Central Bank Digital Currency (CBDC) has received a lot of attention and is considered as a new prospect for payment in the future because of its outstanding characteristics such as promoting financial inclusion and bringing stability to the payment system. CBDC is a type of electronic currency, issued and a liability asset of the Central Bank and differs from other forms of digital or virtual currency, including cryptocurrencies such as bitcoin and "stablecoins", which are not issued by central banks or generally considered legal tender. Notably, CBDC can use centralized or decentralized technology systems, and policymakers should evaluate the trade-offs between technological options before issuing CBDC. Countries around the world has explored the possibility of issuing this currency and gone through different stages in the research. Up to now, there are four countries official launching this currency and the lessons learnt from these experiences would be of immerse value for other countries since there would be no single model that can fit every case. This study explores the experience of Bahamas, a first country in the world issuing CBDC by looking at the reasons and objectives for this currency as well as assessing the success of or whether this currency is too ambitious and hard to assess all its impacts.

The structure of this study is as follows. Section 2 will provide background of this currency in terms of definition, classification, the current status of this currency's development around the world and some motivations and the benefits that this currency can bring. Section 3 is spent on the literature review about this currency. Section 4 provides insight into the case of Bahamas and suggest several lessons can be learnt. Section 5 is the implications for policy makers in order to achieve success implementing this type.

Central bank digital currency (CBDC) is a new type of money, existing with cash and deposit at the commercial banks (Engert & Fung, 2017; Kumhof & Noone, 2018; IMF, 2023). CBDC is in money in digital form, and issue by Central Bank. Many people often linked CBDC to cryptocurrencies such as bitcoin, however the only link between them is the blockchain technology flatform in which they are operating on. The key difference between CBDC and other types of crypto assets and digital money is that (i) the CBDC is back by Central Bank and (ii) it serves as

a means of payment backed by central's bank trust, (iii) centralization and (iv) anonymous. Figure 1 represents the classification of digital money in which CBDC relies on, and CBDC differs by the issuers (private vs Central Bank).

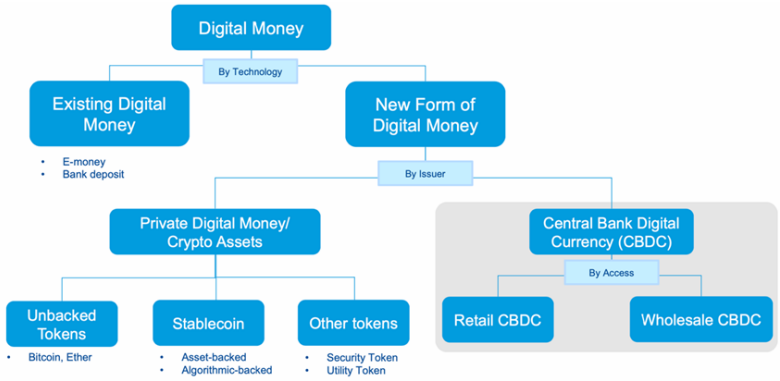

Figure 1. Classification of digital money
Source: IMF, 2023

CBDC can be classified into wholesale CBDC and retail CBDC. Wholesale CBDC is a digital money issued by CB or the government and is used in large financial transactions, mainly used in financial institutions and commercial banks and for interbank payment system. The main aim of wholesale CBDC is to improve efficiency and speed of the national payment system as the transactions can be made directly with Central Banks without the role of financial intermediaries.

The wholesale CBDC is believed to improve the liquidity of the system as it provides a more efficient and safe payment system between financial institutions, reduces transaction costs and reduce the burden on the payment system, enhance the risk management as it is traceable and the supply of money is entirely controlled by Central Bank. In other words, wholesale CBDC is used for settlement of large interbank payments and is similar to Central bank reserves and settlement accounts. On the other hand, retail CBDC is daily used by public and participants in the retail market. Retail CBDC is considered as an alternative for traditional payment system by offering a new way for storing value and making payments. A CBDC is different from existing forms of cashless payment instruments for consumers and businesses, such as credit transfers, direct debits, card payments and e-money since it is a direct claim on a central bank rather than the liability of a private financial institution. The retail CBDC can be accessed via mobile app, card payment system or other methods suitable for national payment system. The aim of retail CBDC is to provide a modern, safe and more convenient method of payment, improve efficiency, reduce the relines on cash and improve the control over monetary system of Central bank.

Current status of CBDC development around the world

Based on the survey by BIS in 2021 for 81 Central Banks, the status of involvement in CBDC projects have been significantly changed. The respondents can be grouped into 2 groups: 25 respondents come from advanced economies and the rest come from emerging and development economies, representing 76% of the world population and 94% of global economic output (BIS, 2022).

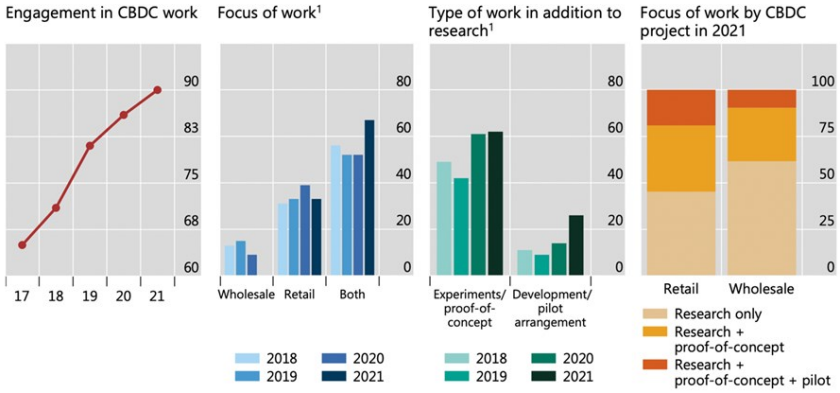

Figure 2: Central bank involvement in CBDC projects
Source: BIS, 2022

Figure 2 illustrates the involvement in CBDC projects of surveyed central banks. Over the last 5 years, the participation of Central Banks has significantly increased from 67% in 2017 to 90% in 2021. All Central Banks show interest in conducting retail CBDC research or in both wholesale and retail CBDC and no country focuses only wholesale CBDC. Moreover, the work on retail CBDC is at a more advanced stage than the work on wholesale CBDC since more than 20% (11 out of 85) of central banks are piloting or launching retail CBDC for public uses, two times higher than the percentage of central banks establishing or piloting wholesale CBDC.

For the development of retail CBDC, both emerging and advanced economies show interest in promoting financial stability and enhancing the domestic payment system and the former focuses more on financial inclusion and reducing cash usage while the latter emphasis on intensifying the payment system resiliency and safety. For wholesale CBDC, cross border payment efficiency has become the key determinant and motivation for both emerging and advanced economies. Surprisingly, Asia-Pacific countries have been at the forefront of digital innovation, and their interest in CBDCs is a natural next step. India, Russia, China, Thailand, Singapore and Hong Kong SAR have been the frontrunners even in a global context, thanks to their technological advantage and relatively mature private sector digital payment platforms. Figure 3 shows the development stage of CBDC around the world, with more banks engaging into the pilot stage and 4 central banks have official launched CBDC (Bank of Jamaica - 2023, Reserve Bank of Zimbabwe -2021, Central Bank of Bahamas - 2017 and Central Bank of Nigeria – 2021).

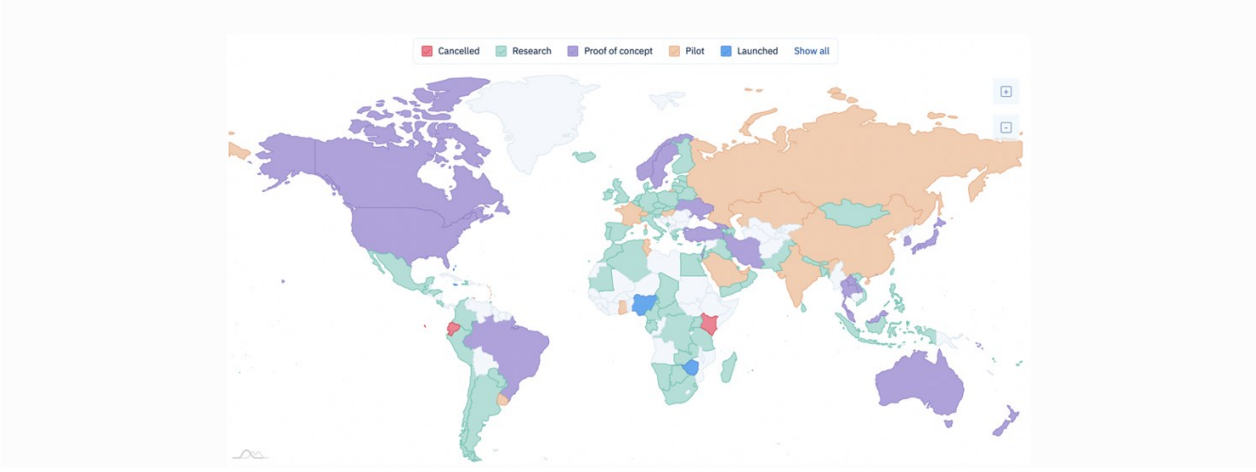

Figure 2: CBDC Tracker as of Mar 2024
Source: CBDC Tracker

Motivations for exploring the CBDC

There are several reasons for adopting CBDC thanks to the advantages that it might bring. Since CBDC is a new representative form of cash, it portraits all the characteristic of cash such as unit of account, storage of payment and medium of exchange. Furthermore, CBDC can enhance the efficiency and effectiveness as well as competition of the payment system, and the resilience in the context of increasing concentration in the hands of few very giant companies (Bindseil, 2020).

The payment system, as such, tend to become natural monopolies thanks to the strong network, economies of scale and economies of scope. However, some monopolistic private issuers may abuse that power and providing inadequate, expensive and disrupted services resulting to higher inefficiency (Ducci, 2020). Some providers even sell consumer data to third party or underestimates the social cost of operational failure, cyberattacks and under-invest in security.

Based on the technical platform, the CBDC can work 24/7/365 and still continue to operate if the system goes failure. In China, the electronic payment system only consists of two companies: AliPay and TenPay (Zhang & Williamson, 2021). The Public Bank of China express their concerns if one of the two companies runs in troubles and might cause serious problems to the payment system in China, and one of the solutions is to adapt the e-CNY as a new means of payment. The Central Bank of Sweden also support the above view by developing the e-krones.

CBDC can be a means to support financial digitization, reduce the cost of issuing and managing physical cash, and improve financial inclusion, particularly with countries with many unbanked populations and underdeveloped financial systems (Foster, Blakstad, Gazi & Bos, 2021). In countries with large rural or remote areas, or the ease to distributing cash has deteriorated due to natural conditions, disaster, storms, earthquake…, service providers may have no incentive to offer banking services to that segment of the population. One solution is removing the distribution of cash to remote areas and providing baking services such as mobile money, retail CBDC to those unserved population. Taking Bahamas and ECCU as an example, the country always suffers from natural disaster and urging for the rapid resilience of financial system from such event. The infrastructure is destroyed, the streets are flooded making it so difficult to transport physical money to those needed. Moreover, due to the nature of this country with so many islands and sub-islands, nearly 20% of the population has no access to financial services such as bank account. (IMF, 2019).

The same is true with ECCU (Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines) with many islands making is more difficult for financial institutions to expand their economies of scale and search for the most appropriate providing channels to enhance profits. Therefore, foreign banks tend to exit the market, resulting to an even lower level of financial inclusion. The storms in Bahamas in 2019 acted as a motivation for faster development of Sand Dollar in order to support payment and fiscal stimulus to those affected areas. The ECCB also accelerated the pilot stage of D-cash to those suffering from the volcano event in St.Vincent and Grenadines are in 2021. In China, even with a high level of financial inclusion and advanced technology, the populations living in remote and rural areas have no access to financial services. The Chinese government has been trying their best to provide and promote digital banking services, however more than 10% of the population has not been accessed to basic banking services. The CBDC could be an appropriate solution in promoting financial inclusion to the population. However, if the barriers to financial inclusion come from weak digital communication infrastructure, then the call of collaboration for investment would be necessary.

Issuing CBDC and transforming towards digitalization of financial services is believed to reduce the cost associated with issuing and managing physical cash. These costs fall mostly on banks, households and firms and is estimated at around 0.6 percent of GDP in Uruguay (Alvez and others, 2019), 0.2 percent in Norway, 0.6 percent in Belgium (Kosse and others, 2017), 1 percent in Albania and 2.5 percent in Guyana (Banka, 2018). Although the fixed cost for introducing and maintain CBDC might be fairly significant, the operational cost would be low as there is little need for maintenance except for the need of customer services. CBDC might be acting as a key to control illegal activities such as tax invasion, anti- money laundering, terrorism support … thanks to the characteristics of Blockchain technology. Besides, the use of physical cash form entitles printing, transporting, issuing, preserving while using digital forms can waive off these expenses.

However, digitalization does not necessarily mean reducing costs as there are additional development and operational costs associated with CBDC and it falls into 5 categories (i) labor, (ii) infrastructure, (iii) software, (iv) cyber security and (v) support.

The birth of cryptocurrencies gradually becomes a great threat to the countries around the world, and those currency pose many comparative advantages compared to currency currencies. Stable coin based payment systems like Libra, or private issued coins such as Bitcoin.. gain a substantial share and value in the payment markets. If the percentage of population switching to another foreign digital currency is large enough, then the Central Bank will be restricted its ability to rescue the market and control the economy, such as monetary policy and the role of lender of last resort.

A well-designed CBDC might ensure that public money remains a relevant unit of account, and in order to do so, the trust of the public on the local central banks must be of high level (Brunnermeier and others, 2019). Moreover, CBDC could help improve traction of local currency as means of payments in jurisdictions attempting to reduce dollarization. However, if the roots of the problem is the losing trust in the local government, hence later in local currency due to a long period of unsound domestic policies and macro instability, then CBDC is certainly not a remedy**.** CBDC can only foster financial inclusion, increasing use of local currency in payments, and possibly contribute to de-dollarization as part of a comprehensive strategy that addresses the fundamental causes of dollarization through consistent fiscal, monetary, and financial policy mix that stabilizes the macroeconomic framework, lowers inflation, ensures a healthy financial system, and develops local currency denominated instruments (such as a local bond market and availability of hedging instruments against foreign exchange rate exposures).

Last but not least, CBDC issuance could improve the effectiveness of monetary policy. And this paper will focus on the impacts of monetary policy transmission in a CBDC environment. The impact of CBDC issuance can exert on economic environment with a clear distinction between (i) level effects (the issuance of CBDC could tighten or loosen financial shocks) and (ii) transmission effects (the impact of CBCD on output, employment and inflation). Since CBDC offers a safe store of value and more efficient methods of payment, which turns in greater competition among commercial banks, increase bank's share of wholesale funding and lower bank profits. These impact on the macroeconomic environment affects monetary policy.

Initially, the issuance of CBDC triggers adjustments in financial conditions, leading to either a contraction or expansion of economic activity, commonly referred to as "level effects." Subsequently, alterations in the macroeconomic milieu have the potential to bolster or undermine the efficacy of monetary policy transmission channels, denoted as "transmission effects." Enhanced transmission occurs when changes in monetary policy exert more substantial impacts

on macroeconomic variables in an economy featuring CBDCs compared to one without, holding other factors constant. Notably, while "level effects" manifest primarily during the initial integration of CBDC, "transmission effects" persist even after its full assimilation into the economy.

Research related to CBDC tends to study the impact of this currency on commercial banks since this currency affects bank deposits through interest lending rate. Andolfatto (2018) argues that if CBDC offer certain rate of interest, it could expand the banks' depositor base by increase demand for deposits and the unbanked segment will pay the cost of accessing the banking sector. However, it also might be possible that the competitive pressure might erodes all the benefits of the bank. Studies by Chiu et al. (2020) also support Andolfatto (2018) findings while conducting the impact of CBDC on bank lending with an interest bearing assets. Brunnermeier and Niepelt (2019) consider CBDC having same liquidity as bank deposits and argue that if household's deposits are exchanged for CBDC, then there is hardly any impact on the allocation of assets or in other words, CBDC does not tighten of relax the constraints that they face, the choice of portfolio allocation and the distribution of wealth across household. Fernandez-Villaverde et al. (2020a) developed a model of bank runs and believed that under normal conditions, the allocations of deposits is the same between conventional deposits and CBDC. However in the period of bank runs, if the Central Bank commits not to liquidate its long term assets, then CBDC can limit the possibility of runs and all depositors might be holding CBDC instead of deposits.

In recent years, the development of central bank digital currencies (CBDCs) has captured significant attention from scholars and economists alike. Auer et al. (2022) conducted a review of the literature, which primarily focuses on two key aspects: (i) technologies, operational architectures, and privacy considerations, and (ii) the macroeconomic implications for monetary policy, the financial system, and financial stability. Nevertheless, numerous questions concerning CBDCs remain unanswered (Carapella and Flemming, 2020; Soderberg et al., 2022).

Studies have primarily focused on the developmental aspects of CBDCs. For instance, Barontini and Holden (2019) conducted a survey on the global adoption of CBDCs and concluded that the majority of central banks are still in the early conceptual stages of CBDC development. Auer et al. (2022) extended this research and observed that countries with higher innovation capacities show a keen interest in CBDC development, while CBDCs in retail contexts tend to emerge in nations with highly informal economies. Boar et al. (2020) noted that emerging market economies exhibit stronger motivations to develop CBDCs compared to advanced economies. Boar and Wehrli (2021) further emphasized that most central banks currently have no immediate plans to issue CBDCs, although the onset of the Covid-19 pandemic seems to have spurred some central banks to initiate plans for their development. Despite the significant interest among policymakers, challenges persist in CBDC issuance, including legal constraints (Nabilou, 2020).

Various studies have concentrated on the design aspects of CBDCs, with a focus on two main technological designs: cash-like CBDCs and deposit-like CBDCs. Agur et al. (2022) highlighted that a cash-like CBDC might result in the gradual disappearance of physical cash, whereas a deposit-like CBDC could potentially dampen bank credit and economic output. Juks (2018) specifically examined the scenario of the e-krona, the Swedish CBDC, suggesting that if the e-krona lacks interest-bearing features (resembling a cash-like CBDC), its introduction could lead to increased volatility in capital flows and exchange rates, curtail credit supply and financial stability, and adversely affect the economy. Carapella and Flemming (2020) contended that if

CBDCs are designed to function similarly to deposits (deposit-like CBDCs), they could serve as an interest-bearing alternative to traditional commercial bank deposits.

Numerous studies have explored the impacts of CBDCs on financial stability, particularly within the banking sector. Nevertheless, a consensus remains elusive, with many studies presenting arguments lacking empirical evidence. For instance, Kumhof and Noone (2021) posited that the introduction of CBDCs could alter banks' balance sheet sizes, private credit availability, and liquidity provisions. Concerning the e-krona, Juks (2018) contended that if this CBDC doesn't bear interest, it could detrimentally affect credit supply and financial stability. Similarly, Mancini-Griffoli et al. (2018) suggested that CBDCs might heighten operational risks in payment systems, compromise financial integrity, increase funding costs for deposit-taking institutions, and consequently reduce financial stability. Carapella and Flemming (2020) concurred that CBDC introductions might trigger deposit withdrawals from private banks, leading to reduced private credit supply, higher nominal interest rates, lower reserve-deposit ratios for banks, and decreased bank stability. Minesso et al. (2022) contended that CBDC systems could exacerbate international shock spillovers and increase international interconnectedness, potentially culminating in bank panics (Williamson 2022). Conversely, Mancini-Griffoli et al. (2018) argued that CBDCs could enhance payment system benefits, mitigate some risks, and promote financial inclusion. Chiu and Keister (2022) proposed that CBDCs might stimulate bank credit supply by fostering competition among banks. Andolfatto (2020) asserted that CBDCs might not negatively impact bank lending, positing that competitive pressure could expand deposit funding through increased financial inclusion and savings motives.

3. RESULTS AND DICUSSIONS

The emphasis has primarily been on examining the impact of CBDCs on monetary policy and its transmission mechanisms. Mancini-Griffoli et al. (2018) put forward the argument that CBDCs might not significantly alter monetary policy transmission, contrasting with the perspective of Meaning et al. (2018), who asserted that CBDCs could potentially enhance it. Similarly, Bordo (2021) proposed that CBDCs might enhance the effectiveness of monetary policy, while Lee et al. (2021) suggested that CBDCs could emerge as a pivotal tool in shaping the landscape of a future digital economy.

The overview of Bahamas country and the objective of the Sand Dollar

Bahamas is located in the Atlantic Ocean and consists of 700 islands but only 30 of them are inhabited. The currency in circulation is Bahamian Dollar (BSD), and is pegged with the USD with the ratio of 1:1, which implies that all merchants accepts both USD ana the Bahamian Dollar for payment. This exchange rate system provides great convenience for foreigners not only from the US but also to the non- residents using the financial services. However, it also exerts high pressure on the Central Bank of Bahamas (CBB) to control and intervene in the amount of cash in circulation so that the price level does not change and the exchange rate against the USD stays at 1:1. Moreover, due to the complicated geographic conditions with large number of small islands surrounding by water, the movement of physical cash (currencies + coins) is so costly.

The cost of entry for foreign commercial bank is quite high leading to the number of banks declining. Therefore, the government is forced to transfer large amount of money to different islands so the residents and businesses can make transaction and pay the bill. It is estimated that more than 20 of the population is unbanked, which means lacking access to financial services.

Moreover, the country frequently suffers from natural disaster, destroying the physical capital structure such as ATMs and bank buildings, and flooding the roads… To tackle these problems, the CBB has launched a project on central bank digital currencies and the Sand Dollar is implemented with a view to combine the well- developed financial sector and the Blockchain technologies into a single digital currency for payments backed by the Central Bank. The Sand Dollar, which was officially launched in October 2020, is believed to be the world's first CBDC. PwC regard this currency is the "world's most mature CBCD" while the Official Monetary and Financial Institutions Forum described it as a "ground breaking innovation" and the EBB stated that it is "the global leader in CBDC development". Therefore, the Sand Dollar is developed with the aim to enhance financial inclusion by improving access to digital payment for unbanked and underbanked and reducing transaction cost, improving the speed of transactions and more effective information gathering from the government.

The Sand dollar payment

Before launching the currency, the CBB has implemented pilot study in two locations, the Exuma and the Abaco. While the former is believed to generate a close representative structure of Bahamas, the latter was chosen to test the recovery of financial system. Before the pilot, nearly 93 percent of adults has access to banking service, still lower than the average of Bahamian at 94.3 percent. The group with the lowest rate of access to financial service is those aged over 55 and those are the ones who are also reluctant to using digital payments.

At the beginning, the Sand Dollar could only be used within the border, but the EBB is ambitious and would like to create an international payment network in the future, implying that the Sand Dollar could be converted into other digital currencies. Amid the Covid 19 pandemic, the pilot proved to be successful. Once the users download the app via Android or iOS software on their smart device, they need the Authorized Financial Institutions (AFI) to validate their required Know Your Customer (KYC). Once the account is validated, the users can put money to their wallets through bank transfer or cash deposits with the AFI, and after that, users are free to use their SandDollars for transactions.

The SandDollar wallet has three tiers: the basic, the regular and the advanced level. At the basic level, users are able to store up to 500 SandDollars and spend up to 1,500 SandDollars per month. Customers at the basic level are only asked to provide their name, phone number, and email address, similar to what is required to take a medium size amounts of cash from a bank. The next level is regular where ECC expects high number of users, requires customers to validate their identity, allowing them to link their bank accounts to the Sand Dollar wallets and easily move between them. At this tier, customers can hold up to 8,000 Sand Dollar and make up to 10,000Sand Dollar spending per month. The Advanced level is available for businesses and individual who would like to engage in large transaction needs. Accessing this tier required submission of additional documents and pass due diligence checks. The Tier 3 wallet and allows users to hold between 8,000 and 1,000,000 SandDollars, without transaction limits.

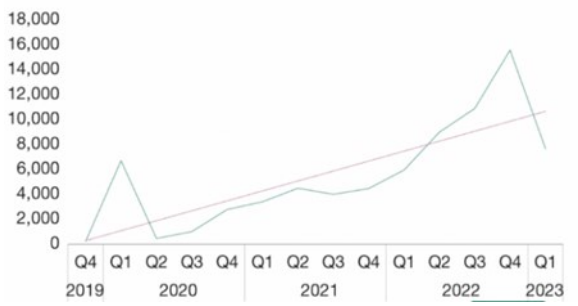

Figure 4. Number of SandDollar transaction, quarterly data
Source: Bank of Bahamas (2023)

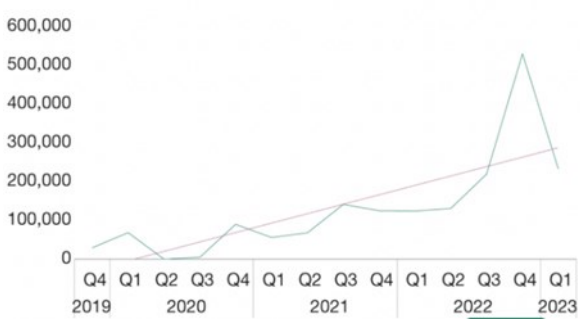

Figure 5. SandDollar transaction value, quarterly
Source: Bank of Bahamas (2023)

Another option for payment is through the prepaid cards as a result of collaboration between Mastercard, therefore wherever merchant points accept Mastercard Cards, the users can use SandDollar for transactions.

During the early stage, there was small of transactions with the amount of transactions monthly amount to around 15,000 SandDollar. However, after the Covid-19 started to fade out and the ECC resumed the education and promotion packages, the numbers stared to pick up in 2021 with the monthly transaction amount by 33,000 SandDollar. In 2022, transactions continue to increase with an average of around 85,000 SandDollar per month thanks to the highly pandemic related payments. However, in 2023, there was a significant drop in the amount of SandDollar transaction as well as monthly transaction value. The total SandDollars in circulation as up December 2023 were approximately 1,691,857, however, this still represent less than 1% of total Bahamian Dollars, a fairly low percentage. Therefore, the role played of SandDollar is very marginal. As of Dec 2023, there were nearly over 120,000 wallets, and around 1,780 of those are merchant wallets.

Lessons learnt from the Bahamas case

Despite enormous efforts from the EBB, such as During September 2023, SandDollar Ambassadors continued supporting planned promotional events across New Providence. These events included The Nassau Conference and a top-up and rebate event held at the Mall at Marathon. At the Mall, consumers received a $20 rebate when they showed proof of a recent top-up and a $10 rebate when they showed evidence of a current transaction at any of the participating Mall stores. Central Bank's online rebate programme was launched as an extension of the top-up and rebate programmes introduced during the months of June-August 2023. Incentives were made available to customers of AML Foods' and Super Value's New Providence locations, Solomon's Freeport and Lucaya (Grand Bahama) locations, and Grand Bahama's Sawyer's Fresh Market and

all Super Value and Quality Supermarkets in New Providence. The online rebate programme allows consumers to experience the efficiency of receiving remote payments via SandDollar and will continue through October

Despite enormous efforts from the CBB, the adoption rate of Sand Dollar is still very low and there are several reasons and lessons can be learnt from it. The CBB blamed for the more priority is given to attract more new AFI to join the network rather than given to those users.

Firstly, the financial exclusion is not the major problem for Bahamas by international standards, therefore the aim to improve financial inclusion is limited. Hence, the solution to enhance financial inclusion is through education and increase knowledge among individuals and to encourage the greater use of bank cards and encourage the elder to use more of electronic payments. Carlissa (20022) also agreed with this finding that there will be need to improve digital skills of the population since there are disparities in financial services for those who are typically underserved, such as women, the poor and the less educated. Only when the public know about the difference between different forms of money, they can make clear choices. Mover, if limits and thresholds are introduced, the public needs to be well explained to fully recognize the benefits. More and more information needs to be provided to the public about the benefits of the Sand Dollar. The general public awareness of the fundamental different forms of monetary forms, affects the success of the CBDC.

Secondly, it takes time to change the behaviour and habit, and to gain the trust from the public, therefore it might be a bit early to judge that the Sand Dollar might bring less benefits than expected. The CBB might engage in more active network building with partners with organization where the Sand Dollar is the only means of payment. Furthermore, residents might be forced to participated in the event or the CBB might seek cooperation from the government to allow more payments can only be made in Sand Dollar.

Thirdly, concerns about privacy and securities also arise with the new forms of payments. Some consumers are reluctant to adopt these digital means of payment, so even the Sand Dollar might be more convenient, they will losing out of privacy as they are being controlled and their information might be leaking to third party or be vulnerable to cyber attacks. Wenker (2022) pointed out the low initial acceptance rate of Sand Dollar might be due to the fact that "an official currency, must meet several requirements and is seen as a means of payment with low anonymity". Besides, the tracking characteristic might reduce the popularity of this currency.

Finally, "pilot" study results might not be a good indication for policy implementation on a wider scale as the practice on a large scale might be very different. It is very important to know that the products if designed to fit the needs of the society and the objective of the authorities and policy makers might be somewhat different from the public. For instance, the negative interest rates might be appealing to authorities but on the other hand acting as the drawbacks of this currency to the public. If the CBDC structure and design should be easy to use, and offer more privacy than physical cash, this currency will be more and more attractive with high adoption rates.

4. CONCLUSIONS AND SUGGESTIONS

In the previous section, we have pointed out the reasons and the difficulty that the CBB and monetary authorities in Bahamas are currently facing when implementing CBDC, that might lead to the success of failure of this currency. This section will provide implications for a successful

implementation of this currency. It is worth to note that this is just a guidance since not all countries are alike and the success of this currency depends on other factors such as regulatory framework and legal registration, which takes time to set up.

Financial educational programs need to massively implemented to enhance public knowledge and to increase digital skills. For example, in Bahamas, a special training program is initiated with the main objective is to "accelerate education around digital financial services" (Central Bank of Bahamas, 2023). In Jamaica, a special web page is built to explain the functions of CBDC with the objective to provide knowledge of the functions, features and form of usages and answer frequent possible questions. Furthermore, some actions can be made to increase the access to banking service and increase the digital skill of the public are paying salaries, scholarships, other compensation packages through digital payments.

Privacy protection and security should be one of the top priorities. This can be the dilemma to maintain security and protect privacy, what need to be done in order to pursue the features of untraceable cash? The money authorities need to design a system of identifying consumers in order to avoid transactions related to terrorism, corruption or money laundering… Maintaining the privacy of payment the same way as cash or allowing offline payment option can be the key to increase the acceptance rate of CBDC.

The current non-interest bearing feature CBDC might be less appealing to the public. If increased interest rate of holding CBDC, this would lead to an increase in the remuneration of their deposits to attract bank deposits and bank loans could be strengthened, which later affect banks' profit. Some depositors might switching from commercial bank deposits to CBDC deposit at Central bank, and to prevent this from happening, banks might need to increase deposit rates as well as lending rates. Changes in interest rates will induce household and firms to decide intertemporal choice of consumption and investment, especially when they are exposed to interest sensitive lending and saving activities.

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