

ANALYZING THE POTENTIAL BENEFITS OF CBDCs: LOWER TRANSACTION COSTS, FASTER SETTLEMENTS, AND GREATER TRANSPARENCY IN GLOBAL FINANCIAL FLOWS

Ahmed Mohamed Rashed Altakhloufah Alyammahi, Research Scholar, Texas Global University

Dr. Talluri Vanisree, Research Supervisor, Texas Global University

ABSTRACT

Central Bank Digital Currencies (CBDCs) are the revolutionary new instruments that significantly change the global transaction framework and are revolutionizing the financial sector. This article will examine the anticipated advantages of CBDCs, which should be framed as the kick of attributes of the offering concern: lower transaction costs, faster clearing times, and clearer visibility of financial flows across borders. By examining how payments occur internationally today, the authors highlight the imperfections inherent in conventional systems that are the primary reasons for the pain points the user faces - inefficiencies like high fee rates, slow settlement periods, and low traceability of transaction flows - being precisely the points CBDCs intend to address. The econometrical study is very convincing that advocates adoption of central bank digital currency (CBDC) being a technological fix for a cleaner, more efficient world of operations that operates less on middle-men. Furthermore, rapid settlement speed can prevent the risks surrounding liquidity and capacity treat sentiment toward the underlying model of the market, and the compliance attribute offered by the openness and traceability of transactions promotes regulatory policy approaches and facilitates efforts to combat counterfeit money. Empirical research via case studies and comparative analysis suggests CBDCs can serve as structural tools to overcome barriers to cross-border financial integration and maintain stability of the broader banking system. Therefore, the research uses CBDC as a vehicle to demonstrate strategic opportunities for major world economies related to the use of CBDCs in promoting inclusive growth and innovation in financial infrastructures. While interoperability, technology readiness, and regulatory harmonization remain uncertain, we conclude that the findings suggest that introducing CBDC will radically change current global financial flows to be less expensive, quicker, more efficient, and more transparent. Finally, we discuss relevant policy options and implementation strategies for the successful and smooth implementation of CBDC in the global financial system.

Keywords: Central Bank Digital Currency, CBDC, cross-border transactions, transaction costs, settlement speed, financial transparency, operational efficiency.

I. INTRODUCTION

The global financial architecture is experiencing a significant ideological shift, primarily driven by emerging technologies, regulation, and demand for payment systems that are easier to use, safer, and more transparent. "One of the most eagerly anticipated changes has been the

introduction of Central Bank Digital Currency (CBDC) by regulators, governments, financial markets, and decisionmakers." A CBDC is the digital form of a country's sovereign currency. CBDCs are issued and mandated by the central bank and can radically transform the monetary system, expand access to finance, and facilitate cross-border flows. In contrast to cryptocurrencies, which exist on decentralized networks and are typically quite volatile, CBDCs would be issued and backed by the central banks, and thus maintain stability while providing the benefits afforded to CBDCs of advanced digital functionality while retaining stability.

The inefficiencies usually found in traditional cross-border payment systems have been the root causes of the high transaction costs, slow settlement times, and limited transparency of the payment processes. These issues have been the main reasons for the money seed to not be able to flow freely between countries for a very long time. Consequently, the market has suffered from these issues in the form of businesses, governments, and people. In this context, CBDCs are acknowledged as among the cleverest attempts made to remove the barriers that are creating the frozen and stagnant cross-border flow of money in the structural bottlenecks and operational inefficiencies of international finance. They achieve this through distributed ledger technologies, eliminating the need for intermediaries through real-time settlement, facilitating cheap money transfers, as well as being able to do so instantaneously. The tokenized money flows are thus transformed into money vapor.

This article undertakes the task of discussing the potential benefits of Central Bank Digital Currency (CBDC) in terms of transaction efficiency, cost savings, and transparency. Specifically, the article will first examine the economic grounds for CBDC introduction, then it will illustrate and clarify the cross-border financial markets are impact the technology's development, and ultimately, it will consider the possible strategic economics redemption that can be attained and sustained across the world.

This will be done through the application of explicit economic theory frameworks, comparative analysis from various studies and developing case studies that explores how CBDC may shape international financial transactions to be more efficient, accurate, lower-cost with a trusted record, and potentially transformation and create opportunities towards enhancing global financial systems to be more resilient and inclusive.

II. THE ECONOMIC RATIONALE FOR CBDC ADOPTION

Notwithstanding progress, the implementation of Central Bank Digital Currencies (CBDCs) has been sluggish in the very nations that are either now strategizing or have initiated CBDCs, along with those that have conducted extensive trial programs. Thus far, three jurisdictions have implemented a nationwide CBDC: The Bahamas, Jamaica, and Nigeria. Nonetheless, some other governments have initiated comprehensive trial programs for Central Bank Digital Currencies (CBDCs), including China, the Eastern Caribbean Currency Union (ECCU), and India. These journeys have highlighted the persistent obstacles and significant lessons acquired. The Central Bank of the Bahamas cited other factors for the Sand Dollar's limited adoption,

including insufficient merchant participation in the Sand Dollar network and inadequate integration with the conventional banking system for merchant accounts. Moreover, the banks and credit unions participating in the scheme exhibited doubts and a tepid enthusiasm, even during the initial introduction of the Sand Dollar. Moreover, the initiative failed to sufficiently inform consumers with the features, advantages, and applications of the Sand Dollar, resulting in consumer unawareness and inadequate preparedness for effective utilization.

The ECCU's DCash suffered from insufficient user education, resulting in consumers lacking a definitive use case for DCash as a payment method. The Eastern Caribbean Central Bank acknowledged that its early monitoring of creating the merchant network was inadequate, since its primary focus was on the development of the DCash system rather than on the user experience and utilization of DCash. Ultimately, the absence of integration between merchant point-of-sale (POS) devices and ECCU's traditional finance systems constrained merchants' inclination to utilize DCash. Ultimately, a two-month system outage, along with inadequate communication from the central bank regarding the recovery date, further diminished user confidence in DCash. The DCash pilot was terminated in January 2024 to facilitate the transition to DCash 2.0. with Jamaica, the low adoption rates of Jam-Dex were ascribed to inadequate public education and difficulties with merchant onboarding. Merchants were first mandated to upgrade POS terminals to include Jam-Dex. Furthermore, the absence of incentives or requirements for commercial banks to adapt ATMs for Jam-Dex conversion presented obstacles to adoption initiatives.

The sluggish adoption of eNaira in Nigeria can be partially ascribed to the Central Bank of Nigeria's incremental strategy, which initially permitted access solely to bank account holders and confined eNaira transactions to domestic use. Ree (2023) observes that 98.5 percent of eNaira wallets remained dormant one year post-launch, indicating that the majority of wallet holders were idle.

China's e-CNY is the most extensive central bank digital currency (CBDC) pilot globally, both in terms of circulating currency volume and user base. Diverse applications have been executed, encompassing public transit, pension benefits, educational fees, and tax remittances. As of June 2023, the e-CNY is accessible in many provinces, with a circulation of 16.5 billion yuan and 120 million wallets established. 11 The e-CNY constitutes merely 0.16 percent of China's M0 money supply, which encompasses physical currency in circulation and bank reserves, indicating that it remains well behind privately-owned payment applications like AliPay and WeChat Pay.

In India, the digital rupee experiment has not yet attained widespread acceptance among the large populace, particularly given the prevalence of the extensively utilized Unified Payments Interface (UPI). As of May 2024, the circulating e-rupee amounted to 3.23 billion rupees, an increase from 1 billion rupees in December 2023. Nonetheless, this constitutes a minor portion of the 35.4 trillion rupees in banknotes presently in circulation.

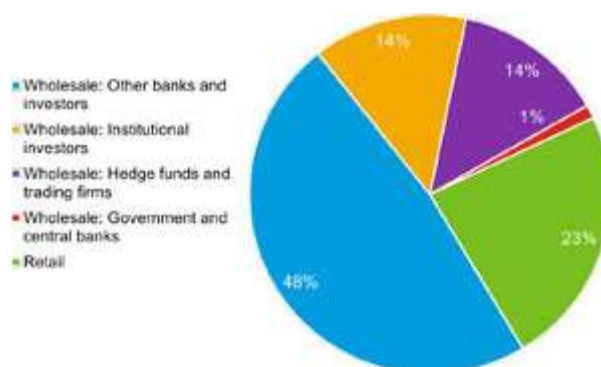
Continued observation will be necessary to monitor trends in CBDC adoption over time. Given the restricted number of nations that have implemented CBDC, it is difficult to derive

conclusions or predict adoption patterns. Furthermore, adopting a new payment method will certainly be a gradual endeavor. Despite limited adoption, the implementation of CBDC might nonetheless bolster confidence in the financial system by offering a dependable, central bank-supported digital payment alternative and settlement infrastructure. It can enhance stability against tail risks and stimulate competition among payment service providers. This paper does not consider CBDC adoption initiatives to be ineffective but highlights the necessity for central banks and stakeholders to work together to improve public comprehension and acceptance of CBDC.

III. TRANSACTION EFFICIENCY IN CROSS-BORDER MARKETS

Cross-border payments represent a significant component of the global economy. It encompasses both wholesale and retail cross-border payment sectors, each characterized by distinct transaction types, costs, and challenges to address. The wholesale sector, valued at around \$145 trillion, comprises mostly high-value transactions conducted between firms, primarily facilitated by larger financial institutions or corporations. The retail sector, valued at over \$45 trillion, primarily comprises lower-value cross-border transactions. Although remittances constitute a little fraction of this sector, they hold significant importance in crucial low-income and emerging economies. This market exhibits significant potential; yet, many segments face elevated costs and protracted processes, particularly in retail transactions. The obstacles mostly arise from the current challenges related to the clearing and settlement of transactions involving foreign financial institutions, particularly the correspondent banking model. This model has been fundamental for global financial transactions; however, there has been a decrease in correspondent banks capable of facilitating these transactions, consequently diminishing competition to address the reduction of cross-border transaction costs (Rice, von Peter, and Boar 2020; Borchert et al. 2024). The G20 Roadmap for Enhancing Cross-Border Payments (FSB 2023b) aims to achieve average retail payment costs of under 1 percent and remittance costs of under 3 percent by 2027 and 2030, respectively. Technological improvements in digital currency, particularly the emergence of central bank digital currencies (CBDCs), could provide a viable alternative to address these challenges. When effectively designed and integrated with current payment systems, CBDCs will enhance efficiency in cross-border payments by minimizing financial intermediaries, decreasing settlement risks, and facilitating faster and more transparent transactions (BIS 2021a; Soderberg et al. 2023). Design characteristics must align with current laws and regulations and be supplemented by requisite legal and regulatory modifications when deemed required. Central Bank Digital Currencies (CBDCs) can additionally enhance and facilitate the advancement of private mobile money and rapid payment systems (IMF 2024b). Additional advances in digital payments, such as the interconnection of rapid payment systems between nations and multilateral cross-border platforms, might theoretically yield comparable enhancements, including a substantial decrease in cross-border transaction expenses. Our scenario analysis will concentrate on CBDCs; however, our conclusions may

be generally generalized to other digital payment technologies, provided their deployment yields a comparable reduction in cross-border transaction costs. This article does an empirical analysis to assess the prospective effects of digital currency and Central Bank Digital Currencies (CBDCs) on cross-border payments, emphasizing the intense margin and various payment patterns. Our analysis indicates that the implementation of CBDCs may significantly decrease cross-border transaction expenses, especially in high-cost payment corridors. Based on the accessible remittance cross-border statistics and the research conducted by Beck, Janfils, and Kpodar (2022), we hypothesize that the introduction of CBDCs may decrease transaction costs by 60 percent. This decrease is chiefly attributable to heightened competition from the emergence of new intermediaries, intensified market rivalry, and, to a lesser extent, improved adherence to anti-money laundering and combatting the financing of terrorism (AML/CFT) regulations. This estimate marginally surpasses the G20's Roadmap objective of a 50 percent reduction in cross-border transaction costs, yet aligns with other forecasts, including the anticipated 50 percent cost reduction for the multicurrency CBDC (mCBDC) Bridge project, commonly referred to as the mBridge project, and the 80 percent reduction proposed in the Oliver Wyman report for multicurrency CBDCs (refer to Ekberg et al. 2021).



While the worldwide cost reductions from a 60 percent reduction in cross-border payments are small, they hold greater significance for remittances. Our projections indicate a comprehensive cost reduction of around \$510 billion, representing 0.3 percent of total cross-border transactions or 0.5 percent of global GDP. While these savings are minor in the worldwide total, the effects fluctuate markedly among various payment methods. The effect of cost reduction in the wholesale sector would be minimal due to the already low transaction costs. Conversely, in the retail sector, where expenses are comparatively elevated, CBDCs may induce a more significant relative decrease. Significantly, the most substantial relative savings would arise from remittances, particularly those associated with various low-income nations and emerging economies, where transaction costs are excessively elevated. A 60 percent decrease in expenditures for these remittance flows might yield savings of over \$17 billion, or to approximately 3.7 percent of the total remittance flows.

IV. ADVANTAGES and DISADVANTAGES

Financial systems, both domestic and international, must reduce their operational costs while increasing their effectiveness. Traditional payment and settlement processes are often riddled with a plethora of middlemen, manual reconciliations, and the use of obsolete technologies that lead to high operational expenses. Central Bank Digital Currencies (CBDCs) provide a revolutionary scheme to rationalize the workflows, reduce the costs, and diversify the operational processes. This part of the article tells us how banks, businesses, and regulators can get the benefits of the efficiencies achieved by CBDCs and at the same time save their operations significantly.

However, there are a few advantages and drawbacks, discussed in detail below.

Advantages:

- 1. The centre of activity:** - You will be at the epicentre of everything, if you choose to work out of the Central Business District. A network of transport will already be there, so customers, suppliers and others who want to get to your office will find it very convenient.
- 2. Awareness:** - Since you are in the hive of activity, you will be aware of what is going on around you, in the market. Competitor's moves, amongst other things, become clear. Operating out of the main commercial nerve-centre of the city means you are up to date with everything in the business-world around you.
- 3. Prestige:** - Being located in the Central Business District leaves a very favourable impression with those your firm deals with on a daily basis. Employees will feel proud of the fact that they are situated in such an important part of the city.
- 4. Infrastructure:** - The infrastructure in the offices located in the Central Business District tend to be of slightly better quality. You will probably enjoy tall buildings offering the finest of amenities and features to make your employees and customers' office experience a favourable one.

Disadvantages:

- 1. Costs:** - Expect high costs. Renting office space around the Central Business District certainly isn't cheap. The daily operating expenses will all likely increase over time in the form of seemingly trivial expenses <insert example>. For instance, if you purchase printer paper, you can expect the price to be a bit higher in the central business district compared to the suburban location.
- 2. Pollution:** - Prime locations typically have some level of persistent noise and air pollution. Traffic delays due to congested traffic can cause significant vehicle congestion. Then consider the immense noise and air pollution caused by the honking

and exhaust emissions of stationary vehicles, all of which creates a common ambient noise and pollution factor.

CBDCs may reduce transaction fees, simplify settlement and reconciliation, and streamline overall compliance. As a result, these contemporary currencies are a positive advance to improving cost reduction and operational efficiencies for users. In addition, once proper resources allocation and reduction of operational complexity take place, traditional financial systems can become more efficient based on costs. Additionally, traditional financing systems can improve stability through proper cost allocations and global economic resilience.

V. ENHANCING SETTLEMENT SPEED AND ACCURACY

Retail central bank digital currencies (CBDCs) and rapid payment systems (FPS) have certain commonalities. Both facilitate immediate transactions for end users, depend on foundational infrastructures managed by the central bank, and permit a significant role for private payment service providers (PSPs) to deliver their services to end users. The primary distinction is that retail CBDCs represent a novel category of central bank currency intended for the general populace, whereas FPS currently facilitates the movement of private funds (such as commercial bank currency or electronic money) among end users. The study examines the comparative analysis of retail CBDCs and FPS, elucidating the reasons for the selection of retail CBDCs by certain jurisdictions, while others have opted for an FPS or a combination of both.

Over the years, the demand for efficient and cost-effective cross-border payments has increased alongside the expansion of international e-commerce, remittances, and various other international activities. This experiment demonstrated the interoperability of CBDC systems with retail payment systems using an interlinking bridge that facilitated the routing of messages and application programming interface (API) calls among various systems. "Project Rialto seeks to enhance cross-border payments through the utilization of central bank money settlement and an automated foreign currency (FX) conversion mechanism." The objective of the project is to provide a proof of concept to illustrate the technical viability of retail cross-border payments using interconnected instant payment systems, complemented by an automated foreign exchange wholesale conversion layer that facilitates the utilization of central bank money as a secure settlement asset.

VI. TRANSPARENCY AND TRACEABILITY IN FINANCIAL FLOWS

The ability to be transparent as well as being traceable are two very important tools that would be very useful in the fight against corruption, upholding of the law, and building the confidence of the financial community. Transparency is a significant factor in the whole payment industry. All but especially the cross-border transactions which have no real-time visibility make it nearly impossible to follow up on funds and maturation of dishonest

activities. Here auditable and tracked financial flows could be implemented by using cutting-edge technologies such as CBDCs contained in comprehensive, least modification, and secure technology-based digital ledgers. The section demonstrates the benefits of using CBDCs in domestic and cross-border finance, by describing the ability of technology to enhance transparency, improve compliance, and support increased oversight.

1. Enhanced Transaction Transparency

CBDCs give the central bank and all authorized users visibility into transaction activity in real-time and from the perspective of digital records. With CBDCs, risk assessments, fraud detection, and reporting compliance with regulations can be achieved in a more meaningful way by allowing monitoring to occur in real-time, and all transaction activity is recorded as extensive digital records.

2. Traceability and Compliance

CBDCs provide the mechanism to fully trace all transactions which will not only facilitate and enhance the audit process but will also aid in combating money laundering and the financing of terrorism (AML) (CTF). Also, compliance reporting can be automated which will reduce any intervening human error, and allow for timely compliance to fulfill regulatory requirements.

3. Reducing Illicit Activities

CBDCs deter illegal activity such as money laundering, tax evasion, and fraud, etc. because their transactions are conducted on an immutable and traceable basis. The aspect of enhanced traceability allows law enforcement to enhance its capabilities ultimately enhancing financial integrity.

4. Enhancing Trust in the Financial System

Transparent and traceable operations in finance would be trusted by all actors, i.e. businesses, consumers, and regulators, all of whom are involved in financial transactions. Improved trust in the security of the transaction would lead to wider acceptance of digital financial services, hence facilitating the emergence of digital economies.

Central Bank Digital Currencies (CBDCs) greatly improve transparency and traceability of financial flows, resulting in enhanced auditability, compliance, and oversight over financial operations and substantial reductions in risks of illicit activities. In addition, CBDCs allow for secure and observable transactions, creating a system that is not only more difficult to defraud, but also encourages both business and consumer participation - a win-win situation. In doing so, they establish the foundation for greater accountability, efficiency, and overall 'revolt' of domestic and international financial flows.

VII. STRATEGIC OPPORTUNITIES FOR GLOBAL ECONOMIES

The adoption of Central Bank Digital Currencies (CBDCs) offers countries the ability to reframe their global strategies to bolster economic power, improve their monetary systems, and foster global cooperation. CBDCs can alter international finance dramatically by reducing transaction and operating costs; in addition to saving money by speeding up cross-border payments with greater safety, CBDCs enable a greater range of economically active players to operate across borders. The present part is dealing with the main strategic advantages of CBDCs for global economies and with how the countries can realize these advantages in order to create favourable trade, investment and financial stability scenarios.

1. Trade Internationalisation

The use of CBDCs makes the process of the trade transactions between different countries easier. Consequently, the duration of settlements and costs of transactions, produced by importing and exporting, are kept to a minimum. Reduced and eradicated payments are the best friend of international commerce, which, in turn, increases opportunities for trade and economic relations between countries.

2. Increase in the Number of People Financially Included

Digital money can provide a secure channel for people who have limited or no access to the world financial services market, especially in developing countries. The full financial inclusion can prove a great engine for economic growth, because it improves economic participation, and, in turn, higher domestic consumption, which in itself contributes to sustainable development.

3. Deepening Monetary Policy and Financial Stability

CBDCs (Central Bank Digital Currencies) enable central banks to make more informed decisions because they will be able to watch liquidity and money supply more precisely. This technique of increased supervision restricts the opportunities for systemic risks to emerge, allows for implementation of policies, and creates stability in both domestic financial systems and international financial systems.

4. Building Brand on Global Innovative and Technological Advancement.

The advent of CBDCs brings new apps and technologies to the fin tech community, and on the whole new digital payment mechanisms. Economies that rolled the dice on their current CBDC infrastructure are essentially betting on themselves to lead the charge of fintech innovation and gain interest from investors and cultivate a competitive and vibrant digital economy.

CBDCs could really change the game for economies around the world, especially when it comes to facilitating trade, which is crucial for any economy. They can also promote financial inclusion, leading to improved monetary policies and even spark technological innovations. By implementing and integrating CBDCs into their financial systems, nations won't just

benefit individually; they'll be more prepared for the evolving landscape of the global economy, enhancing their participation, resilience, and competitiveness.

VIII. CONCLUSION

Central Bank Digital Currencies (CBDCs) represent a significant shift in the global financial landscape. They offer a unique chance to make transactions faster, cut down on costs, and boost transparency. With their real-time settlement and ledger systems, CBDCs can tackle the long-standing inefficiencies in both local and international payment methods. By reducing the need for middlemen and automating reconciliation processes, these digital currencies not only lower transaction fees but also streamline liquidity management, creating a more stable financial market.

CBDCs also enhance transparency and traceability in how money flows. This added clarity helps regulators keep things in check and reduces the risk of illegal activities. Every transaction can be tracked in real time, which strengthens auditing processes, while regulators gain better oversight. This level of transparency fosters trust among market participants and encourages them to engage with a digital financial system that's more accountable and efficient than traditional models.

From a strategic standpoint, CBDCs offer various advantages to global markets such as strengthening trade relations, improving access to finance, and supporting technology advancements. Faster, cheaper cross-border transactions can simplify international trade, and digital access to financial services can empower those without bank accounts, making growth more inclusive. Plus, countries that adopt and integrate CBDC infrastructure are likely to lead in fintech innovation, attracting investments and enhancing their global competitiveness.

Despite the significant advantages, successfully implementing CBDCs will require careful evaluation of technology readiness, compatibility, and regulatory agreement. Governments and financial institutions need to collaborate in creating robust, affordable, and inclusive frameworks for this technology. So, when the time comes for CBDCs to reshape global financial flows, we can expect them to be not just quicker and less expensive, but also more transparent, making the international financial system more resilient, connected, and fair.

REFERENCES

- [1]. Adrian, T. (2023, November 28). *CBDCs and multilateral payment platforms*. International Monetary Fund. <https://www.imf.org/en/News/Articles/2023/11/28/sp112823-cbdcs-and-multilateral-payment-platforms>
- [2]. Aurazo, J. (2024). *Central bank digital currencies and fast payment systems*. Bank for International Settlements. <https://www.bis.org/publ/bppdf/bispap151.pdf>

- [3]. Di Iorio, A., & Kuehnlenz, S. (2024). *Results of the 2023 BIS survey on central bank digital currencies*. Bank for International Settlements. <https://www.bis.org/publ/bppdf/bispap147.htm>
- [4]. Fleming, J. (2024, February 16). *Implications of a U.S. CBDC for international payments and the role of the dollar*. Federal Reserve. <https://www.federalreserve.gov/econres/notes/feds-notes/implications-of-a-u-s-cbdc-for-international-payments-and-the-role-of-the-dollar-20240216.html>
- [5]. Gafsi, N. (2025). *The impact of central bank digital currencies (CBDCs) on global financial systems in the G20 country GVAR approach*. FinTech, 4(3), 35. <https://doi.org/10.3390/fintech4030035>
- [6]. Kosse, A., & Mattei, I. (2022). *The potential of central bank digital currencies for cross-border payments*. SUEF Policy Brief, No 439. <https://www.suerf.org/policynotes/54533/the-potential-of-central-bank-digital-currencies-for-cross-border-payments>
- [7]. Kuehnlenz, S. (2023). *Central bank digital currencies and the international monetary system*. Journal of International Money and Finance, 115, 102391. <https://doi.org/10.1016/j.jimonfin.2023.102391>
- [8]. Quaglia, L. (2025). *The geoeconomics of central bank digital currencies*. Review of International Political Economy. <https://www.tandfonline.com/doi/full/10.1080/13563467.2025.2504390>
- [9]. World Bank. (2021). *Central bank digital currencies for cross-border payments: A review of current experiments and ideas*. <https://documents1.worldbank.org/curated/en/369001638871862939/pdf/Central-Bank-Digital-Currencies-for-Cross-border-Payments-A-Review-of-Current-Experiments-and-Ideas.pdf>
- [10]. World Economic Forum. (2024). *Central bank digital currencies: A survey*. <https://arxiv.org/html/2507.08880v1>
- [11]. International Monetary Fund. (2025). *Estimating the impact of digital money on cross-border flows*. IMF FinTech Notes, 2025(2). <https://www.elibrary.imf.org/view/journals/063/2025/002/article-A001-en.xml>
- [12]. International Monetary Fund. (2024). *Digital money, cross-border payments, international reserves, and the global financial safety net—Preliminary considerations*. IMF Note 2024/001. <https://www.imf.org/-/media/Files/Publications/IMF-Notes/2024/English/INSEA2024001.ashx>

