



The application and development of CBDC in the “Belt and Road”: Take Singapore Ubin Project and m-CBDC Bridge as examples

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Abstract. With the development of digital finance, some countries have begun to develop their own central bank digital currency (CBDC), hoping to maintain the legal status of sovereign currency and further promote the upgrade of trade while improving the level of digital financial services. As a national strategy led by China, “the Belt and Road” has promoted strategic cooperative relations with countries along the route from different aspects and provided various business application scenarios for the cooperative development of CBDC. Taking the Singapore Ubin Project and m-CBDC Bridge as examples, this article analyzes the CBDC projects and cooperation projects in the countries along the route. In terms of future challenges encountered in carrying out CBDC cooperation under “the Belt and Road”, it is necessary to pay attention to the coordinated development with different countries. Finally, China can also extend CBDC cooperation to the Western European market through the strategy, thereby promoting the internationalization of the e-CNY.

Keywords: CBDC, the Belt and Road, Ubin Project, m-CBDC Bridge

1 Introduction

In recent years, due to the emergence of more and more different virtual currencies in the world, such as Bitcoin, Libra, and so on, in order to comply with the development of digital finance, central banks of various countries have begun to study and issue CBDC, such as e-CNY and digital dollar, digital pounds, and so on. According to the data of Atlantic Council, as of June 2022, there are 45 retail CBDC projects, 7 wholesale CBDC projects globally [1]. At present, e-CNY adopts a two-tier operating system which includes the central bank, commercial banks, telecom operators, and so on [2]. The reason why countries have begun to develop CBDC is that, it can improve the inclusiveness, efficiency and convenience of digital financial services. As a composite national strategy initiated by China, “the Belt and Road” establish the production capacity cooperation with countries along the route through five aspects: policy, facilities, trade, capital, and national communication [3]. As a product of the digital economy era, CBDC will have different impacts on corresponding cross-border pro-

jects including trade cooperation between countries, financial services, investment projects, and so on. The research purpose and innovation of this article are to integrate and sort out the current research status of CBDC. And taking the Singapore Ubin Project and m-CBDC Bridge as examples, specifically explores the impact and development of CBDC on cross-border trade projects under “the Belt and Road” initiative.

2 Literature review

Firstly, in terms of the conceptual definition and classification of CBDC, Wang Qinggang and Zhao Ke (2021) summarized the functions of CBDC, which are to reduce the operation and maintenance costs of banks, improve payment efficiency, so as to effectively promote the financial inclusion [4]. Wu You, Chen Qianqian, and Ge Hongling (2022) firstly analyzed the reasons why central banks around the world accelerated the development of CBDC, including improving domestic payment and settlement systems, solving a series of payment problems, and stabilizing their own currencies status [5]. Wan Jieru and Wu You (2022) deeply analyzed the motivation of CBDC cross-border payment, including improving payment efficiency, and reducing the inherent friction of cross-border payment, which is also conducive to crackdown on illegal and criminal activities and reduce the monopoly of cross-border payments [6]. In terms of the construction of “the Belt and Road”, Wang Zhimin (2015) summarized the development background of “the Belt and Road”, and analyzed multiple interactions from four aspects, which include endogenous power and win-win cooperation, promotion and expansion of land and sea routes, official promotions [3]. In the analysis of currency cooperation in the region, Wang Tianqian and Zhu Xiaomei (2022) summarized the currency development trend of countries along “the Belt and Road” through game strategy analysis. Firstly, the success of currency cooperation depends on the costs and benefits of currency conversion, and for the object of currency conversion, traders will tend to choose a sovereign currency that has been formed and has more network externalities, which will also bring more benefits to economies across the region [7]. In general, the research on CBDC has gradually deepened in terms of background, motivation, and development trends, but there is still less research on the CBDC in specific application scenarios such as “the Belt and Road” cooperation. The innovation of this article is also in the analysis of the research and development cases of CBDC in countries along “the Belt and Road” route, which also includes the in-depth discussion on the specific application form and impact of CBDC.

3 Method

In terms of case analysis, this article mainly analyzes the specific application mode of CBDC from Singapore Ubin Project and m-CBDC Bridge.

3.1 Singapore Ubin Project

Singapore is the first ASEAN country to sign the comprehensive free trade agreement with China. And in the agreement, upgrades to economic cooperation, e-commerce are mentioned, which has laid a good foundation for the co-operation of CBDC [8]. Moreover, Singapore's research and development of CBDC is relatively advanced, providing a good reference for China. Ubin Project is a collaboration between the MAS and financial institutions to explore the use of blockchain and distributed ledger technology (DLT) for the clearing and settlement of payments and securities. The research of this project is progressing layer by layer and is mainly divided into 5 stages, which include exploring the digitization of legal tender, upgrading the real-time total settlement system, realizing domestic payment settlement, exploring the function of cross-border inter-bank payment and settlement, and finally realizing the application of blockchain technology in business scenarios [9]. In the fourth stage of assessing the feasibility of cross-border payment settlement, the designer analyzed the challenges faced by central banks, commercial banks and end users in cross-border payment and settlement, and proposed five possible future cross-border payment and settlement models. The 3b model allows central banks in different countries to sign agreements to allow participating banks in the two countries to hold and trade W-CBDC issued by the two central banks [10]. On this basis, peer-to-peer cross-border payments between banks can be realized.

3.2 m-CBDC Bridge Project

The predecessor of the m-CBDC Bridge Project is Inthanon-LionRock, a bilateral pilot project between the Hong Kong Monetary Authority and the Bank of Thailand, which aims to study the application of CBDC in cross-border payments. The first phase of the project focused on model development based on the concept of DLT. In the second stage, the two parties studied the application of the cross-border payment model in the business scenarios such as trade settlements or capital markets. In the third stage, the central bank of China and the central bank of the United Arab Emirates joined, and the project was officially renamed m-CBDC Bridge [11]. The core of this new project is a “corridor network” that connects the digital currency systems of multi-national central banks. CBDCs in different countries increase the liquidity of digital currency by issuing depository receipts on the “corridor network”. In addition, the corridor network is based on the blockchain platform called Corda, enabling a peer-to-peer transaction model, thereby reducing the complexity of asset transfers and improving the efficiency of cross-border payments [12].

4 Result & discussion

Summarizing the characteristics of Singapore Ubin Project and m-CBDC Bridge Project, the model design of the two projects both mentioned the use of blockchain technology to connect CBDCs in different countries to realize the function of cross-border payment. Combined with the development of CBDC in “the Belt and Road”, if this

transaction model can be established in the future with countries that have issued CBDC along the route, it will help to improve the settlement speed of bilateral trade and reduce the risk of investing out of control caused by information asymmetry [12]. In addition, the development of CBDC in “the Belt and Road” may also encounter many challenges, which includes the inertia of currency use, capital controls, what’s more, it also needs to be developed in coordination with countries along the route. In the future, CBDC cooperation can also penetrate the more developed markets of Western Europe. The reason is that, on the one hand, due to the basis of “the Belt and Road” which can connect the Western European market. The economic cooperation can create more economic needs and the CBDC application scenarios. On the other hand, the digital construction and development of Western European countries are relatively advanced, in this case, the cooperation of CBDC can be smoother and more in-depth.

5 Conclusions

This article sorts out the research and development purposes and functions of CBDC through a literature review. And it focuses on the analysis of the development and influence of CBDC under “the Belt and Road”. After the case analysis of the Ubin project and the m-CBDC Bridge Project, it came to the following conclusions, firstly, in terms of model design, both projects plan to use blockchain technology to connect CBDCs in different countries, so as to realize point-to-point cross-border payment functions. In addition, both designs have upgraded cross-border payment functions, including improving settlement efficiency, reducing payment costs, and reducing payment risks caused by information asymmetry through blockchain technology. Finally, on the future development path of the e-CNY, the article also puts forward suggestions for extending to the Western European market, thereby promoting the international development of e-CNY.

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