Chapter 7
DLT-Based Central Bank Digital Currency Wholesale Countries: Research and Strategies

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ABSTRACT

This chapter aims to analyze the use of distributed ledger technology (DTL) for interbank payments by investigating the research that central banks are doing to propose DLT-based wholesale central bank digital currency (W-CDBC). The findings reveal that countries are researching W-CBDC using mostly experiment research methods publishing their research through study papers, experiment papers, and projects. The DLT-based W-CBDC is being tested by countries to implement use cases such as the decentralized real time gross settlement system, the tokenized syndicated loan, the tokenization of bonds, the tokenization of assets, the securities settlement, the delivery versus payment, and the implementation of liquidity-saving mechanism. Central bank research is commonly focused on the technological dimension of W-CBDC implementation. This chapter contributes to a better understanding of the trends in implementing W-CBDC and gives researchers, central banks, and IT developers more knowledge to further the research in their countries.

I. INTRODUCTION

Central Bank Digital Currency (CBDC) is defined by Bech and Garratt (Bech, Morten L. and Garratt, Rodney 2017) as an electronic form of central bank money that can be exchanged in a decentralized manner, known as the peer-to-peer. These authors emphasize four types of digital central bank money: Two forms are token-based (retail and wholesale), and the other two are system-based account or account-based (retail and wholesale). CBDC is a central bank-issued digital money denominated in the

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national unit of account, representing the central bank liability in a digital form unlike physical coins and banknotes (Boar and Wehrli 2021).

Money is defined as a store of value (helpful in holding wealth), a unit of account (prices are set in it) and a medium of exchange (useful for payments), in this context, CBDC is mentioned as digital money issued by a central bank that represents a legal claim on that central bank (Reserve Bank of New Zealand 2021).

The Covid-19 pandemic motivated several central banks to accelerate research and implement their own Central Bank Digital Currency (CBDC). According to a survey published by the Bank for International Settlements (BIS)1 in 2020, 80% of central banks revealed that they were researching CBDC, where 40% of central banks had progressed from conceptual research to experiments (proofs-of-concept), and 10% had developed pilot projects (Boar, Codruta, Holden, Henry, and Wadsworth, Amber 2020).

The Central Bank can issue digital currency in two variants: wholesale and retail. Bech and Garratt (Bech, Morten L. and Garratt, Rodney 2017) differentiates them from other forms of central bank money, such as reserves (wholesale) and cash (retail). In the context of the CBDC, the central bank issues wholesale CBDC in the form of account deposits for commercial banks, which could be available to non-bank companies and individuals in the central bank through retail CBDC (Ben, Dyson and Graham, Hodgson 2016). The wholesale CBDC is available to financial institutions (Bech, Morten L. and Garratt, Rodney 2017) while the retail CBDC is available for firms and individuals (Bank for International Settlements 2018).

A wholesale payment system deals with inter-bank, inter-country large value, large volume real-time payments and related clearing and settlement systems governed by central banks integrating various globally accepted standards. The Real-Time Gross Settlement (RTGS) systems (In some jurisdictions, TARGET services) are typically used for high-value transactions requiring immediate settlement. The Wholesale Central Bank Digital Currency (W-CBDC) can be implemented on Distributed Ledger Technology (DLT) or on Centralized Ledger Technology (CLT).Today most RTGS systems worldwide are operated on a centralized infrastructure, subject to risks such as a single point of failure (Monetary Authority of Singapore 2017). In this context, we understand that exploring the research that central banks are doing on Wholesale CBDC is needed to help researchers and countries that didn't start their research project to better understand the several paradigms of development strategies of wholesale CBDC.

Several institutions such as CBDC Tracker2 and Atlantic Council3 are publishing statistics of CBDC research made by countries but they don't specify how countries are conducting their research. Otherwise, the BIS publish the reports of countries that are experimenting the DLT to implement CBDC, but without detailing how they are doing their system implementation.

The main aim of this chapter is to survey the use of DLT for inter-bank payments by analyzing the strategies that central banks made to research and experiment the Wholesale Central Bank Digital Currency (W-CDBC). It is structured into six sections: Here, in section I, we introduce the research context, the objective and the structure. In section II we present a theoretical background wholesale CBDC. The research methodology is explained in Section III. The results of the research question are presented in section IV. The discussion is done in section V. Finally, the concluding remarks are made in section VI.