Chapter 1
Technological Options for Implementing Central Bank Digital Currency and Its Potential Impacts on Financial Economy:
A Prospective Analysis

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ABSTRACT

This chapter reviews the main technical and regulatory issues that would need to be faced in the event of a Central Bank's decision to operate a public digital currency scheme, also called a 'central bank digital currency' (CBDC). It reviews in particular the conditions and motivations that might warrant such monetary innovation; its modalities of implementation; the effects of the CBDC issue on the financial stability and its consequences for monetary policy. In so doing, it addresses a gap in digital currency literature, thus far overly focused on private schemes, whilst neglecting the opportunities and challenges involved in a central bank-issued scheme.

INTRODUCTION

> 'Because we are a successful and large enough company, we are now able to build systems without precedent ... more sophisticated than many governments have done'
> (Maquet, 2020).

These were the words of Meta (Facebook) CEO, Mark Zuckerberg, on the eve of launching the Libra virtual currency project in 2019. These words capture the potential that virtual currencies have opened, for different societal actors (and particularly large corporations) to transcend central bank monopoly over currency issue, Governments have been slow to register the idea—which Zuckerberg's words appear to

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imply—that a private company could exert a comparable degree of control over monetary flows, and thereby take on some aspects of the role traditionally ascribed to central banks.

Over the course of history, Means of payment have continued to evolve and technical developments continue to change their form, and with it the uses of money. After the appearance of the check in the 19th century, credit cards and the first ATMs in the mid-20th century, it is the turn of digital and contactless payment to emerge at the beginning of this millennium.

While central banks have so far played a secondary role in these developments, many of them are now exploring the possibility of creating a Central Bank Digital Currency (CBDC). This would mean making central bank money accessible to the general public, whereas today it is only usable by commercial banks during "wholesale" transactions, particularly on the interbank market (Sadok & El Maknouzi, 2020). With the issuance of a CBDC, the central bank could also play a role as a "retail" currency, which would considerably transform the role of the Central Bank in this area: from a simple settlement institution for financial intermediaries, it would become the operator of a payment system accessible to all (Mahboub & Sadok, 2024; Hossain, 2021).

According to the latest survey conducted by the Bank for International Settlements, 44 central banks have started exploratory work on CBDCs, nine of which are exploring the subject at varying stages and half of these nine are already in the development, experimentation or deployment phase[1].Their motivations vary depending on the context: financial stability, implementation of monetary policy, financial inclusion, improving the efficiency and security of payment systems (Barontini & Holden, 2019). There are now five officially launched CBDCs: the Sand dollar in the Bahamas, DCash in the Eastern Caribbean Currency Union, eNaira in Nigeria and jam-Dex in Jamaica and the Chinese e-CNY (digital yuan).

While there is much interest in how such a CBDC monetary system might work in practice, there is less interest in how this public digital currency might be used by the actors it is supposed to bypass in their quest to reduce reliance on the traditional banking system, and in particular private banks, following the financial crisis of 2008. However, such public digital currencies also have the potential to resurrect public monetary power, and thus begin to address some of the reasons underlying distrust in traditional banking institutions.

To this end, it will be interesting to examine in more detail what CBDCs—as hybrids between crypto-currency and sovereign currency—might look and work like. This horizon of inquiry yields such questions as: what could their effects on monetary policy and financial stability be? How could they be practically implemented, and how might their uptake be incentivised?

Questions such as these provide the focus for a growing group of researchers, and of financial and monetary actors and institutions. This chapter is an attempt to begin mapping and unpacking those questions in an organic way, and thereby contribute to an understanding of the effects of CBDC issue. In particular, this study addresses the issues arising along the following four dimensions: (i) the motivations and modalities of implementation that might warrant such monetary innovation; (ii) the effects of CBDC issue on financial stability; (iv) and its consequences for monetary policy. The following sections address each of these issues in turn, and are followed by a conclusion.