

COVID-19 PANDEMİK VE MERKEZ BANKA DİJİTAL PARA BİRİMİ OLARAK GELECEĞİN PARA BİRİMİ OLARAK MERKEZ BANKASI DİJİTAL PARA BİRİMİ

Çiğdem YILMAZ ÖZSOY¹

Abstract

Coronavirus disease, which was first detected in Wuhan, has spread globally, causing coronavirus pandemic in 2019-2020. Coronavirus disease has caused concerns about viral transmission through cash, reducing the use of banknotes and coins and causing changes in the way of people's payment system. This brought the introduction of the "Central Bank Digital Currency" as a new digital payment system, which is thought to be resistant to a wide range of threats. This article provides a comprehensive overview of Finance and Investment readers about the Central Bank Digital Currencies (CBDC). The interest in Central Bank Digital Currencies' arises from the developments that started with the 2008 crisis, such as the emergence of cryptocurrencies and the rise of digital transactions and reduced cash use. Some large Central Banks are actively investigating the introduction of sovereign digital currencies. In this study, how the Central Bank Digital Currency can transform all aspects of the monetary system and facilitate the systematic and transparent execution of monetary policy is examined through the examples of E-Peso and E-Krona.

Keywords: COVID-19, Central Bank, Digital Currency, E-PESO, E-KRONA

JEL Codes: A120, E58, E59


COVID-19 PANDEMİSİ VE GELECEĞİN PARA BİRİMİ OLARAK MERKEZ BANKASI DİJİTAL PARA BİRİMİ

Öz

Çin'in Hubei eyaletinin başkenti Wuhan'da Aralık 2019'da tespit edilen ve küresel olarak yayılarak 2019-2020 koronavirüs pandemisine neden olan Coronavirus hastalığı 2019 (COVID-19) nakit yoluyla viral bulaşma konusunda endişelere yol açarak, banknot ve madeni para kullanımını azaltmış ve insanların ödeme yapma şekillerinde değişikliklere neden olmuştur. Bu durum, çok çeşitli tehditlere karşı dirençli olması gerektiği düşünülen yeni bir dijital ödeme sistemi olarak "Merkez Bankası Dijital Para Biriminin" devreye sokulmasını gündeme getirmiştir. Bu makale, Merkez Bankası Dijital Para Birimleri (CBDC) hakkında Finans ve Yatırım okuyucularına kapsamlı bir genel bakış sunmaktadır. CBDC'lere olan ilgi kripto para birimlerinin ortaya çıkışı ve dijital işlemlerin yükselişi, nakit para kullanımının azalması gibi 2008 krizi ile başlayan gelişmelerden kaynaklanır. Bazı büyük Merkez Bankaları, egemen dijital para birimlerinin kullanılmaya başlanmasını aktif olarak araştırmaktadır. Bu çalışmada, Merkez Bankası Dijital Para Biriminin para sisteminin tüm yönlerini nasıl dönüştürebileceği ve para politikasının sistematik ve şeffaf yürütülmesini nasıl kolaylaştırabileceği E-Peso ve E-Krona örnekleri üzerinden incelenmiştir.

Anahtar kelimeler: COVID-19, Merkez Bankası, Dijital Para, E-PESO, E-KRONA

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¹ Ph.D., Istanbul University, cigdemyilmazozsoy@gmail.com, 

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Introduction

Coronavirus disease 2019 (COVID-19), which was detected in Wuhan, is an infectious disease that is caused by Severe Acute Respiratory Syndrome (SARS-CoV-2). Common main symptoms caused by COVID-19 are fever, cough, and shortness of breath. However, symptoms such as fatigue, muscle pain, diarrhea, sore throat, loss of smell, and abdominal pain can also be seen. These symptoms caused by COVID-19 can occur between two and fourteen days. Most of the cases result in mild symptoms, while some cause viral pneumonia and multiple organ failure (European Centre for Disease Prevention and Control, 2020). On the 17th of April 2020, more than 2.15 million COVID-19 cases, more than 145,000 deaths were reported and more than 550,000 people recovered in 210 countries and regions. (<https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>).

While the COVID-19 public health emergency continues to emerge, it is clear that this virus will have economic and human effects. Because of the COVID-19 outbreak, many people have started to work from home, and people have become more cautious about shopping in public places. This has led to changes in the way consumers shop and retail payments. Researches in the field of microbiology have started to investigate whether viruses, bacteria, fungi, and parasites can survive on banknotes and coins (Angelakis et al., 2014). In the study of Thomas et al. (2008), it is found that some viruses such as human flu, may last for hours or days on banknotes, especially when diluted in mucus. As a result of Lopez et al. (2011), it is also found that nonporous surfaces have higher transfer efficiency, and they can transmit viruses and bacteria more easily. Van Doremalen et al. (2020) found that COVID-19 can survive on surfaces, stay for three hours in the air, 24 hours in cardboard, and even longer on other hard surfaces. Regardless of whether concerns are justified or not, the perception that money can spread pathogens and alter payment behavior by users and firms; while circulating cash growth decreases over time, digital payments may come to the fore. However, not all digital payments protect people from COVID-19. For example, bank and credit card transactions often require a signature or PIN entry on a vendor's device for larger transactions. Therefore, recently, authorities in Austria, Germany, Hungary, Ireland, the Netherlands, the UK have set higher transaction limits for contactless payments. (Auer et al., 2020).

As a result of all these developments, if cash is not generally accepted as a payment instrument during and after the COVID-19 outbreak, a “payment split” may occur between those who have access to digital payments and those who do not. In the context of the current crisis, the Central Bank needs to understand the security and effectiveness of payment systems and their impact on financial stability policy by designing the Central Bank Digital Currency to allow access options for non-bank and (non-contact) technical interfaces that are particularly suitable for the entire population (Fung and Halaburda, 2017).

The term CBDC is a digital tool for payments and agreements that central banks lend. There are two types of central bank money issued by the central bank: (a) banknote and (b) central bank deposit, including a reserve deposit. Paper-based banknotes can be used by anyone for daily transactions 365 days in a year and 24 hours in a day. On the other hand, central bank deposits have been digitized in most countries, are mainly used by banks for major appreciation, and their availability is under the constraints of the working hours of central bank clearing systems and their direct relevance to central bank accounts. Parallel to these two central bank currency categories, CBDCs can be divided into two types:

- (a) CBDCs used by the general public for daily transactions instead of banknotes.
- (b) CBDCs for large-value placements based on central bank deposits and adopting new technologies such as distributed ledger technology (DLT) (Yanagawa and Yamaoka, 2019).

The central bank aims to increase the effectiveness of CBDC as an exchange tool in performing the basic functions of any public currency, its security as a store of value, and its stability as an accounting unit for economic and financial transactions. Using these criteria, the characteristics of the well-designed CBDC are as follows.

- ✓ An account-based CBDC can serve as a practically inexpensive exchange tool. Such accounts can be held directly in the central bank or made accessible through public-private partnerships with commercial banks.
- ✓ CBDC with an interest rate can provide a secure value store with a rate of return parallel to other risk-free assets such as short-term government securities. CBDC interest rate can be the main tool in the execution of monetary policy.
- ✓ To facilitate the gradual aging of the paper currency; CBDC can be made widely available to the public with a gradual fee tariff for transfers between cash and CBDC. As a result, changes in the CBDC interest rate will not be effectively limited.
- ✓ The monetary policy framework can support real price stability; that is, the actual value of CBDC will remain stable over time in terms of a broad consumer price index. Such a framework will facilitate the systematic and transparent execution of monetary policy (Bordo et al., 2017).

The 2018 report, prepared by the Payments and Market Infrastructures Committee and the Market Committee, identifies CBDCs as new types of central bank money, unlike physical cash or central bank reserve/clearing accounts. Accordingly, the four main features of money are:

- ✓ Institution (central bank or not);
- ✓ Form (digital or physical);
- ✓ Accessibility (wide or limited); and
- ✓ Technology

In terms of technology, the report distinguishes between a coin or an account-based money. The key distinction between a coin (or value) and the account-based currency in the form of verification required when exchanged. Coin-based money largely relies on the ability of the buyer to verify the validity of the payment object. When it comes to cash, the concern over money is a fraud, while the concern in the digital world is whether the coin or "coin" is original, that is, electronic fraud and whether the money has already been spent.

In the case of coin-based currency, the value is directly represented by the coin. Cash is a good example of money based money, as it is the reality of cash that is critical to the buyer, not the identity of the money maker. Paying with coin-based money requires checking that the money received to the creditor is original. Any electronic alternative should include security mechanisms that prevent multiple payments at the same time (without double-spending). Types of coin-based systems:

- ✓ Storage on physical devices often requires money to be stored locally on a physical device (a card, mobile phone, or other mobile devices with internet access).
- ✓ Registry-based solutions protect the integrity of money through an underlying registry, which means that money does not need to be connected to a particular physical device.

In contrast, account-based systems depend on the ability of the account holder to verify their identity. The issue of concern in this system is identity theft, which allows perpetrators to transfer or withdraw money from unauthorized accounts. ID is needed to properly associate payers and creditors and to identify account histories. In the case of account-based money, the value is associated with the credit balance of an account owned by an identifiable account holder. When payments are made with account-based money, the owner must be identified and verified that the payment will be used (collateral) and has money to be transferred to the creditor. Account-based system types:

- ✓ *Open Account Solution* that offers direct payment to private bank accounts of buyers, corresponding to payment accounts offered by private banks.
- ✓ *Closed Account Solution* requiring the payer to have an account with Norges Bank.

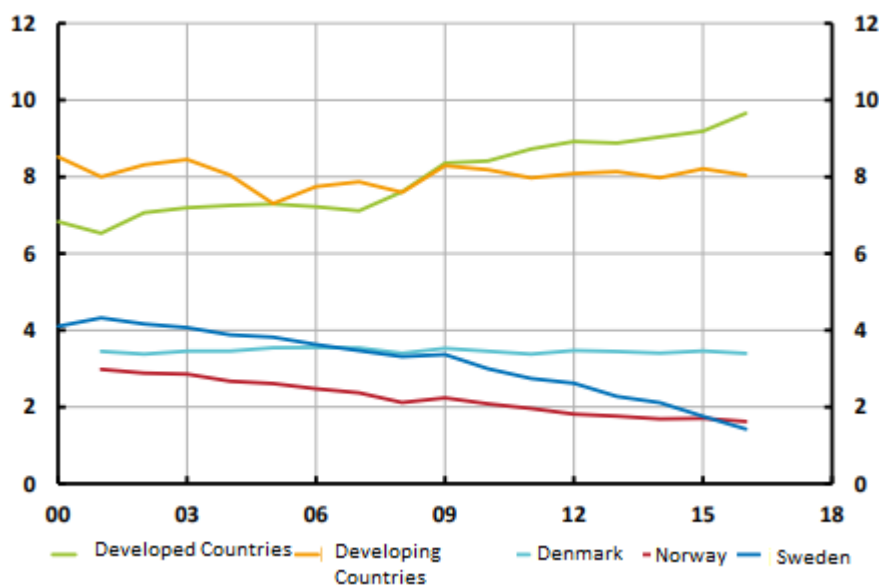
1. Central Bank Digital Currency Designs

There are two general-purpose CBDC projects currently on the agenda, called E-Krona and E-Peso (Barontini and Holden, 2019).

1.1. E-Krona

The demand for electronic payments is increasing abroad, but also the demand for cash is either steady or increasing. Betch et al. (2018) published an analysis of the use of cash and electronic payments. According to the results of the analysis, the continuation of cash demand in many parts of the world after the financial crisis in 2008 functions as a safe value store. However, as shown in Figure 1 in Sweden and Norway, the share of circulating cash in GDP continued to decline even after the financial crisis.

Figure 1: *The Share of Cash in Circulation in GDP*



Source: Betch et al., (2018). https://www.bis.org/publ/qtrpdf/r_qt1803g.pdf

Electronic payments outside the cards (in particular, a mobile payment system called “Swish”) have recently increased significantly in Sweden. However, its use is significantly lower among the elderly. Riksbank stated that it may need a simpler and more user-friendly offer to prevent exclusion, including the elderly and more vulnerable groups who can only access cash. E-krona is a digital central bank currency issued by Riksbank. Its value is stated in the Swedish currency SEK. E-krona is generally

open to the public 24/7 and 365 days and can be used to make instant payments at any time. It is initially interest-free. E-krona can be a value-based unit that can be stored in an account with Riksbank or locally, for example, on a card or in an app. (Sveriges Riksbank, 2018).

1.2. E-Peso

The central Bank of Uruguay, to better fulfill and expand its financial targets, E-Peso has launched a pilot program to publish, distribute, and test in December 2017. The platform acted as the registration of the ownership of digital banknotes. A total of 20 million e-Pesos were given; 7 million of them were distributed to a third party with equivalent pesos value in a central bank account. In electronic wallets, individual users and companies are entitled to receive a maximum of 30.00 e-Pesos (approximately \$ 1,000) and 200,000 e-Pesos respectively. Transfers; It was carried out instantly and as a peer-to-peer (P2P), using mobile phones via text message or e-Peso application. The legal duty of the Central Bank of Uruguay was sufficient to publish electronic e-Peso as a complement to physical cash. The pilot study was considered successful and closed in April 2018. After the pilot study, all e-Pesos were canceled. The program is now under evaluation (Barontini and Holden, 2019).

In addition to these examples, According to the 2020 Presidential Annual Program, Blockchain-based Central Bank Digital Currency will be applied, the design and software development stages of the Instant Payment System will be completed, and test studies will begin in Turkey. (http://www.sbb.gov.tr/wp-content/uploads/2019/11/2020_Yili_Cumhurbaskanligi_Yillik_Programi.pdf).

When the above examples are examined, the issues that policymakers should pay attention in Turkey to are listed below.

- *Policymakers and technologists should come together to switch to the CBDC:* Combining the expertise and perspectives of policymakers, technologists, public and private sectors will be critical to addressing values that support not only the technology but also the digital economy.
- *Not all digital currencies have the same system as Bitcoin:* Without a central authority, Bitcoin and other cryptocurrencies, which guarantee the value of money over time, should not be viewed as the future of money. Instead, it not only provides stable value but also widely accessible through mobile applications, integration with social media, point of sale terminals, etc. Facebook Libra or Chinese Digital Yuan samples controlled by a state or company should be investigated. In March 2020, the People's Bank of China (PBoC) became the only major economy with a CBDC in circulation today, implementing a sovereign digital currency known as digital yuan. The digital yuan is centrally issued by PBoC, fully supported by fiat reserves, and replaces circulating cash. Digital yuan is based on a two-tier system: PBoC publishes its currency to select commercial banks and payment providers; these institutions distribute it to individuals and businesses. The currency is stored in digital wallets and payments can be made using several applications, including AliPay, WeChat, and mobile banking applications. Digital yuan is easily adopted by retail customers due to its ease of use and low fees. Currently, 95% of all domestic payments in China are made with Digital Yuan.
- *Transfer Mechanism:* The CBDC can be transferred using the peer-to-peer system, a commercial, or a Central Bank as an intermediary.
- *Interest Bearing:* Like other digital central bank obligations, it is technically possible to pay positive or negative interest to both the coin, and the account - based CBDCs. The CBDC interest rate can be set equal to an existing policy interest rate or adjusted to a different level to encourage or deter CBDC demand. Both interest-free and interest-bearing accounts can be used for retail or wholesale payments. Paying (positive) interest will likely increase the

attractiveness of an instrument that also serves as a store of value (BIS, 2018; <https://www.belfercenter.org/sites/default/files/2020-01/DCW%20Simulation%20Recap.pdf>)

2. Pros and Cons of the Central Bank Digital Currency

Although the effects of the digital fiat currency can be vaguely evaluated at this point, the effects of monetary policy and financial stability will be both positive and negative.

2.1. Pros of the Central Bank Digital Currency

- *Low transaction costs:* CBDC's can result in lower transaction costs for retail and corporate payments.

- *Economic growth and digital innovation:* Becoming a viable digital currency jurisdiction and building an attractive crypto ecosystem not only leads to advanced economic activities, but it can have spillovers to other technology sectors.

- *Include funding:* It can increase access to digital payments for non-bank households. Given that some consumers do not have a bank account, CBDC can enable them to access these tools at minimum or no cost.

- *Trailblazer position:* Rapid transition to CBDC can position a country as a pioneer in defining monetary policy on CBDCs and setting standards that are applicable for the coming years.

- *Inexpensive, secure valuable storage:* CBDC is cheaper than cash because it does not have production and storage costs such as transportation and disposal.

- *Technology efficiency:* It can increase swap speed and allow payments in real-time.

- *Encouraging competition:* It can increase competition in payment systems and require private institutions to innovate. It can also increase competition among banks.

- *Monetary policy transfer:* CBDC can be used as an interest-generating direct monetary policy tool that will allow more direct control of the money supply.

- *Liquidity:* This engages Central Banks to provide short-term liquidity assistance, even on public holidays; this effectively reduces the risk of individual institutions triggering chain reactions systematically.

- *Increased privacy:* A traditional digital currency can offer more anonymity than existing commercial debit card payments.

2.2. Cons of the Central Bank Digital Currency

- Cryptocurrencies that do not have a connection to a conventional currency show a high level of price fluctuation. Therefore, they open to speculation.

- *Competition for commercial banks:* The introduction of a close substitution tool for bank deposits can lead banks to increase their deposit rates and shift from deposit funds to wholesale funds.

- *Geographical restrictions:* CBDCs are accepted only in the country that issued them.

- *Lack of trust:* CBDCs are vulnerable to power outages and poor internet connections.

- *Low economic growth:* Banks can lose their revenues because Central Banks are direct competitors to payment service providers. Likewise, a new investment opportunity can reduce consumer deposit demand. In turn, this can reduce the bank economy to the general economy and thus to economic growth. (PwC, 2019).

3. Conclusion

In addition to the technological revolution, the COVID-19 pandemic pushes us towards the digital representation of many objects in our daily life. On a global scale, payment instruments have changed drastically over the past decade. While making payments with the use of mobile money in Africa, there is a movement to decrease the number of cash payments in Asia. In Europe and the USA, cash usage has declined through increasing use of online transactions and card payments. As central banks play an important role in payment systems, they have begun to explore the financial and economic effects of presenting their digital currencies, both due to reduced cash use and related developments in the private sector. E-PESO and E-KRONA trials have been successful pilot studies and have used to evaluate many aspects of the Central bank business models. At this stage, the COVID-19 pandemic has made calls for CBDCs to be activated by the Central bank, emphasizing the value of access to various payment instruments and that any payment method must be resistant to a wide variety of threats.

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