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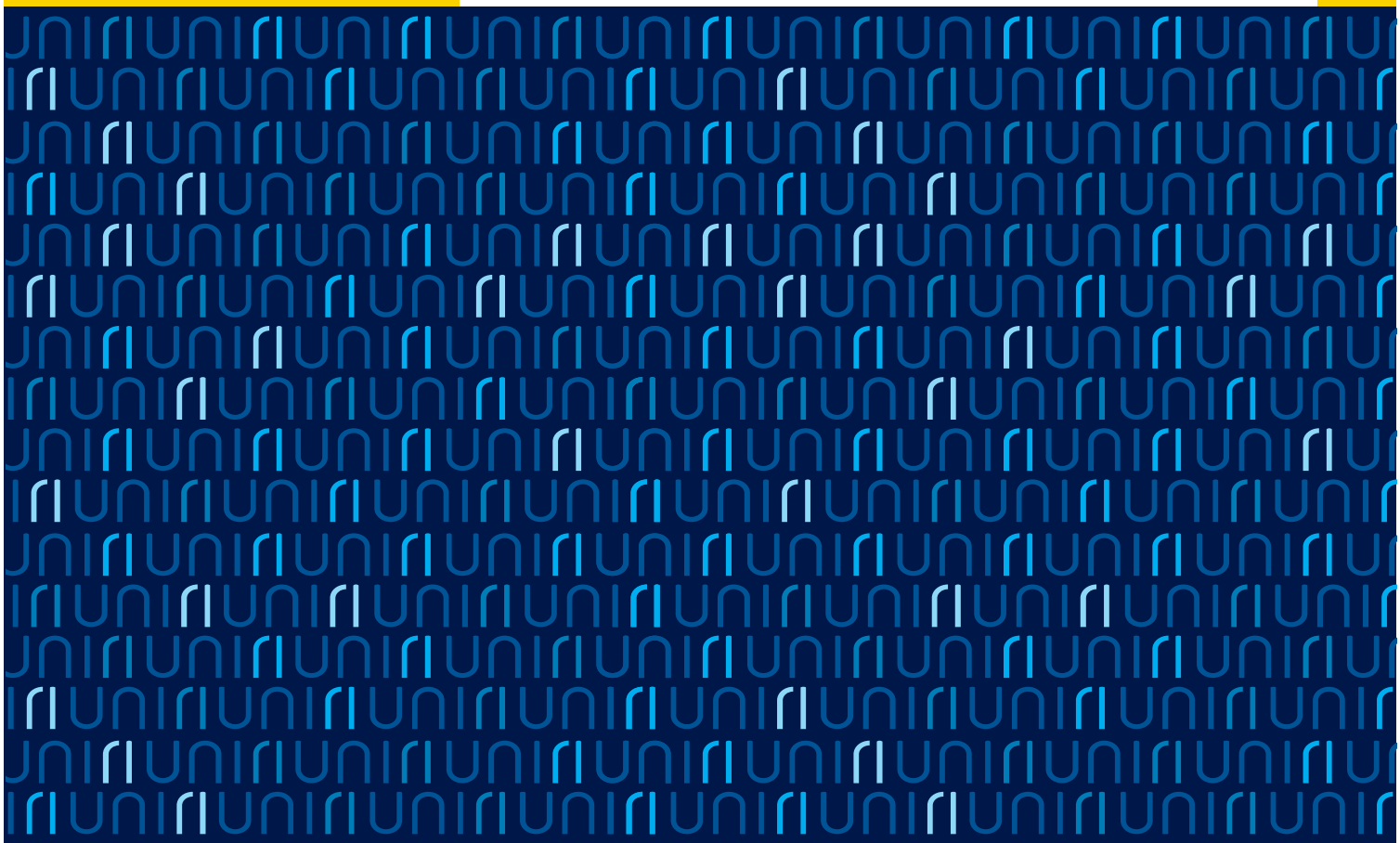

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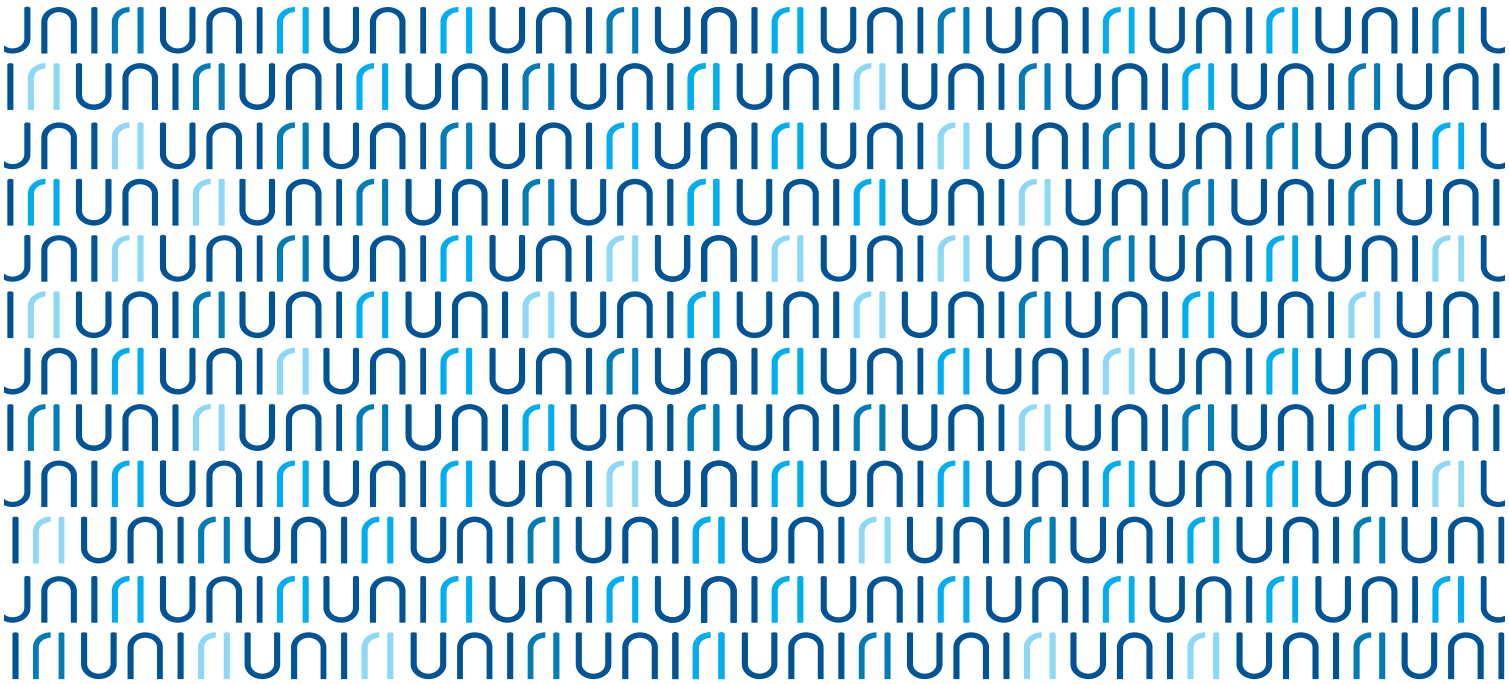

Rijeka, 2021.

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FOREWORD

Dear authors, reviewers and readers,

With the research monograph Contemporary Economic and Business Issues, we present to you the third series in the context of digital transformation. We have been fortunate to enjoy presentations from more than 50 researchers, mainly from the region of Southeast Europe. From the very beginning, the main objective of the research effort has been to provide scientific evidence of the dramatic changes in the current and future economic reality caused by the increasing digitalization processes. In 2020, we have experienced unprecedented challenges related to the COVID19 pandemics, which has dramatically intensified the compexities within the economic and business spheres. Therefore, the organization of the conference has adapted to these circumstances and for the first time was held entirely online, using virtual platforms. This is a very practical manifestation of the rapid digitalization of our regular activities.

The conference was organized from 24 to 26 June 2020 (www.edt-conference.com). Since the main theme of the conference was the interplay between fiscal and monetary policy, we were honored to host the keynote speeches and panel discussion delivered by Eric Leeper (Paul Goodloe Mcintire Professor in Economics, University of Virginia, Department of Economics, Charlottesville, USA), Corrado Macchiarelli (Principal Economist at National Institute of Economic and Social Research, NIESR) and Cristian Popa (Senior Advisor to Vienna Initiative Steering Committee). There was also an amazing panel discussion on Smart Cities, introduced by a keynote address from Ben Green, Harvard School of Engineering and Applied Sciences, Cambridge, USA. The last panel sponsored by the Unger Family Foundation on “Cities, Campaigns and Civic Engagement” chaired by Andrej Kričković (Higher School of Economics (HSE), Moscow, Russia) initiated a transdisciplinary discussion on the current issues.

We are immensely grateful to all our participants, sponsors, supporting institutions, partners and all members of the program and organizing team. Our special thanks go to the President of the Republic of Croatia, Zoran Milanović, for his support and opening of the conference with his introductory speech. We are also grateful to Boris Vujčić, Governor of Croatian National Bank, for his continuous support. We also thank Nicholas C. Zingale (Maxine Goodman Levin School of Urban Affairs, Cleveland State University), whose support enabled the organization of the panel discussion on Smart Cities. Many thanks to Dorothy Baunach (DigitalC, Cleveland, Ohio, USA), Kenneth Loparo (Case Western Reserve University, Cleveland, Ohio, USA), and Brian Edward Ray (Clevelend-Marshall College of Law, Cleveland, Ohio, USA). Our special thanks goes to Andrej Kričković, who moderated the Unger Family Foundation panel, and to all panelists, Predrag Pale (University of Zagreb, Faculty of Electrical Engineering and Computer Science, Zagreb),

Vjeran Pavlaković (University of Rijeka, Faculty of Humanities and Social Sciences, Rijeka), Dražen Hoffman (GONG, Zagreb, Republic of Croatia), Kurt Bassuener (University of St. Andrews), and Velibor Mačkić (Special Advisor to the President of the Republic of Croatia for Economics).

We sincerely hope that the papers published in this monograph will be a valuable contribution to students and researchers in the field of business and economics.

Rijeka, April 2021

Editors

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CHAPTER 4

CENTRAL BANK DIGITAL CURRENCIES – AN INNOVATION IN THE REALM OF MONEY

Jovan Zafiroski[1]

Abstract

Payment services are one of the core central banking activities. Payment related innovations promote safe and sound payment systems that are allowing faster transactions. Central bank digital currencies (CBDCs) have potential to revolutionize the payment system while having effects on the monetary policy and financial stability. Currently, many of the leading central banks in the world are considering the possibility for launch of CBDCs. The paper analyses the phenomenon of the CBDCs. It aims to examine the role of the central banks in the realm of digital money while exploring their design as an alternative for cash. The legal basis for issue of the CBDCs, the relation with the legal tender in the country and other legal issues are particularly examined.

Key words: Central bank digital currencies, Payment system, Money, Legal tender

JEL classification: E42, K24

1. Introduction

The entire monetary system lays on trust. The status of *money* in a society is achieved only if there is a confidence among members of the society that those money can be easily accepted in future payments. Thus, money might perform its functions of store of value, medium of exchange and a unit of account. The trust is strongly connected to the fundamental characteristic of money i.e. their acceptance. As Hyman Minsky (1986, p.79) put it *everyone can "create" money-the only problem for the creator being to get it "accepted"*. The status of money is lost when there is a credibility problem related to some characteristics of money (related to the issuer, for instance) or when there is a technological breakthrough which makes a new form of money more trusted and convenient to be used as a means of exchange. Usually, the shift from one to another monetary system is done during or in the aftermath of severe economic and financial crises.

In the last fifteen years we live in a period of intense economic tensions marked with financial crises, sovereign debt crisis, trade wars etc. The world is multi-polar while there are multiple players such as the USA, China, the EU, Japan, India, Russia etc. This new reality is not reflected in the monetary order which continues to function within the framework of its old Bretton Woods design.

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However, the existing monetary framework is challenged from different sides as never before. On one hand, since 2008 there is an aggressive monetary policy which at certain point may undermine the value of the sovereign currencies and on the other hand the technological advancements in the realm of money are offering different possibilities that were unimaginable in the past. The need for a change is recognized at highest level among central bankers while some of them are looking beyond the traditional understanding of money and currencies. Thus, in his last days in office the governor of Bank of England Mark Carney said in his speech that in order to realise its full potential the multi-polar global economy requires a new international monetary and financial system which on the long run will use the benefits of the technological developments by creating a network of central bank digital currencies (Carney M., 2019).

The question is how that change will happen. Will it take the revolutionary step where a new form of *money* (cryptocurrencies, for example) will dominate or evolutionary path by gradually accepting the technological innovations in the monetary structure? Cryprocurrencies are pointed as an alternative for traditional money that has great potential to make fundamental changes in the monetary sphere. The principle idea behind them is to create a monetary system that will be neutral and outside the state powers. The *blockchain* technology offers a possibility for bridging the double spending problem. This makes the third or trusted party in charge of centralized ledger which by definition is the central bank obsolete. At least for now, the cryptocurrencies are not widely used by the broader public and they do not fulfil the criteria for *moneyness* simply because they are not trusted to be a better means of exchange or store of value in comparison to the dominant world currencies (Carney M., 2018).

Many thought that the cryptocurrencies will bring a revolution that in times of severe economic crisis will alter the trust from the state sovereign money to the crypto assets making a revolution in the payment system and in the monetary system in general. However, in the monetary sphere, the recent crisis caused by COVID 19 pandemic has shown two important things. Firstly, at least for now, the *cryptocurrencies* are not safe haven assets as some people claimed that they will be, as it is the case with the gold, for example. The value of Bitcoin has dropped at the beginning of the pandemic, and secondly, as far as the money creation is concerned only the sky is the limit for the central bankers. Trillions of dollars Euros pounds yens etc. were pumped into the economy for simulating the demand. This is nothing new[2]. At least on a short run, this massive liquidity is not a problem, people are still spending less, the velocity of money is low and the inflation is nonexistent. But the things might change overnight and inflation and even hyperinflation might destroy the economies and savings. Even today there is a strong discrepancy between the real economy that is shrinking and the financial markets that are surging. For example, in august 2020 the US market capitalisation to GDP ratio was more than 170%.

2 As Douglas E. French has said *history shows that central bankers have but one strategy to cure all things especially their past mistakes: print more money, with their plans for stabilization resulting just in opposite* Foreword in Carl Menger, The Origins of Money, Ludvig Von Mises Institute, 2009

On one hand, in terms of low and even negative interest rates the cash is attractive and provides anonymity but on the other hand central banks are keen to reducing the cash in the economy in order to make their monetary policies more efficient. The pandemic will foster the efforts and arguments for cashless economy because the cash as a medium for exchange is perceived as a factor that contributes to the spread of COVID 19. The real question is how to use the modern technology in a way that even in a cashless economy the people are able to hold risk-free central bank money. The issuance of a new form of central bank money CBDCs alongside the traditional cash and central bank deposits might be a good solution.

The problem is that there are multiple ways of how to do it, and the present paper is a modest attempt to contribute to the debate on the legal questions arising from the introduction of this new form of money. The paper analyses the phenomenon of the CBDCs. It aims to examine the role of the central banks in the realm of digital money while exploring their design as an alternative for cash (2). The legal basis for issue of the CBDCs, the relation with the legal tender in the country and other legal issues are particularly examined (3). The topic is novel which means that the paper will open more question than it will answer.

2. Design and key characteristics of CBDCs

Cryptocurrencies are changing the traditional understanding about money and offer new possibilities for using the technology in the realm of money. Even if at present they are not widely used and with limited effects on the monetary system, their use has potential to distress the entire economy and to influence the monetary and financial stability (Ali R. et al., 2014). The initial idea behind the creation of the cyptocurrencies was to bypass the intermediary i.e. the state in the payment system by offering direct transfer of money. Moreover, there is a strong incentive for using the blockchain technology for creation of public virtual currencies that are issued by the central banks.

There are different motivations for introduction of the CBDCs. On one hand developed countries where the use of cash is diminishing are trying to find an alternative for cash that will provide peer-to-peer transactions, on the other hand the countries where cash is the principle means of payment are trying to provide an option for opening accounts by the public that will facilitate the transfer of funds and will provide more control and make the monetary policy much more efficient. Currently, many of the leading central banks in the world are considering the possibility for launch of CBDCs but there are no concrete results yet. Recent survey by the BIS shows that most of the central banks are conducting research into the CBDCs but their issuance is unlikely on short or medium term (BIS, 2020). The recent crisis will have dramatic impact on the global monetary and the financial system and will possibly foster the process of creation of CBDC.

Payment services are one of the core central banking activities. Payment related innovations promote safe and sound payment systems that are allowing faster transactions. Central bank digital currencies have potential to revolutionize the payment system while having effects on the monetary policy and financial stability. The idea is to add a new form of digital central bank money that will be different from the existing, reserves or settlement balances held by commercial banks at the central bank and also different from the only central bank money available to the public i.e. the cash. Depending on the various characteristics the CBDC might have different place in the taxonomy of money.

In relation to the taxonomy based on four key properties: *issuer* (central bank or other), *form* (electronic or physical), *accessibility* (universal or limited) and *transfer mechanism* (centralized or decentralized) the CBDCs might be defined *as an electronic form of central bank money that can be exchanged in a decentralized manner known as peer-to-peer, meaning that transactions occur directly between payer and payee without the need for a central intermediary.* (Bech M. and Garratt R., 2017, pp. 55-56). However, this definition largely depends on the design of the CBDCs which is crucial for their role end effects on the monetary and financial system. Here the key question is who can have access to the CBSC' and a decision on *wholesale* or *retail* CBDC's has to be made. The introduction of the former that are restricted to a limited group basically financial institutions will not change things dramatically because these institutions are already using central bank's digital money. Conversely, the adoption of the latter might be a game changer that will open series of legal and economic questions bringing not only advantages but also risks for the monetary and financial system (BIS, 2018, pp. 7-9).

There are many *pros* and *cons* for introduction of the CBDCs. The advantages of the introduction of CBDCs are basically related to the new options for the monetary policy makers and above all the option for a substitution of the cash that will keep the anonymity of the transactions. Introduction of CBDCs opens possibilities for using new policy tools for implementing non standard monetary policies such as negatives interest rates and *helicopter* money (Dyson B. and Hodgson G., 2016). The disadvantages are related to the risks for the stability of the financial system. There are certain risks associated with use of retail the CBDCs, namely (i) risk of structural disintermediation of banks and centralization of the credit allocation process within the central bank and (ii) risk of facilitation systemic runs on banks in crisis situations (Bindseil U., 2020). The problem of disintermediation of the banking sector is of great concern for the consequences it may have for the current financial system (Bank of England, 2020, pp. 35-36). Broad access to CBDCs might endanger the functioning of the current two-tier banking system. The central bank will act as a commercial bank taking the role of the banks in the private sector. Also, there will be increased risk for bank runs in periods of crisis when the broad public may decide to switch over from bank deposits to CBDCs which will be much easier that changing the bank deposits to physical cash (Jordan J.T., 2019, p.6).

However, the idea for disintermediation the banking sector has deep roots in the monetary theory. Today, the breakthrough in the technology provides conditions for realization of the ideas of the so-called Chicago plans whose proponents foresee separation of the monetary and credit functions of the banking system which included the obligation for 100 percent reserve backing for deposits (Gleeson S., 2018, p.153).

However, the theoretical debate about the usefulness and design on the CBDC should be focused on finding a proper solution for creation of an instrument that will be an alternative for cash. Besides all theoretical appeals (Rogoff K., 2016) and different experiences in some developed countries the cash as a means of payment is still largely used. This is even more accentuated in times of financial insecurity when people are more confident to keep central bank issued money, the only available to them, instead of holding bank deposits that include risk of bank failure and risk of government policies (negative interest rates, bail-in of banks, for example) that will melt their deposited amount. The coronavirus pandemic crisis caused spike in demand for cash that reached the historical peak in mid-March. The weekly increase in the value of banknotes in circulation was almost at historic high of €19 billion (Panetta F., 2020). And it is not only during the crisis when the cash is attractive. A survey shows that in 2016 cash was the dominant payment instrument in Euroarea. Around 79% of all transactions were carried out using cash, amounting to 54% of the total value of all payments. Moreover, in some Member States such as Germany, Austria and Slovenia 80% or more of POS transactions were conducted with cash (Esselink, H. and Hernández, L., 2017). All this suggests that the future design of CBDC should include the key characteristic of the cash. They should provide anonymity in the transactions or peer-to-peer transactions that are using distributed ledger and are available to broader public i.e. retail CBDCs.

The proposal for new central bank money alongside with cash and reserves opens various legal questions that will be examined next.

3. Legal issues related to the CBDCs

Central banks do have experience in issuing digital money. Namely, currently digital money are issued through wholesale credit operation with different financial and non financial institutions participating in those operations. Thus, a CBDC that will be for the wholesale purposes or in form of deposits that are held at the accounts in the central banks that are used for settling large-scale transactions between financial institutions will not have a dramatic impact. However, an introduction of a new retail CBDC will open a new chapter in central banking and there should be a solid legal basis for doing it. Different scenarios for introduction of the CBDC open different set of legal questions that should address numbers of concerns about the introduction and the use of this new form of central bank money. For this reason central banks are developing different stylized models. (See for example: Bank of Japan, 2019).

The creation of a new form of central banks money alongside with banknotes and coins and the reserves challenges the traditional legal framework and posses dilemmas about the legal basis for the introduction of this new form of CB money, the question should they have the same legal tender status as banknotes and coins and on the relations between the various forms of central bank money.

As far as the *legal basis* is concerned a recent survey made by the Bank of International Settlements (2020, p.6) shows that only a quarter of central banks have or soon will have authority to issue CBDC. A third of the central banks do not have such authority while there is a considerable part that is not sure about their mandate in this respect. This is completely understandable considering the fact that the legal framework regulating the central bank and its operation predates the electronic, digital, crypto money and all the technology accompanying them. So, the central banks will either have to ask the legislature for change in legislation providing a new mandate in the field of digital money or they have to use the current provision on the banknotes and coins and adopting them on the new circumstances. In some cases, as in the Eurozone for example, it is a difficult task. In the Eurozone, it is the ECB that may authorize the issue of the euro while the banknotes are issued by national central banks (Siekmann H., 2018, p.7). ECB's price stability mandate might be a solid legal basis for issuing CBDCs by the ECB, its basic tasks of the definition and implementation of monetary policy, and promotion of the smooth operation of payment systems. Thus, in order to achieve its principal objective i.e. the price stability and to define and implement monetary policy, the ECB is given the exclusive right to issue banknotes and coins, which have the *legal tender* status within the Union. A possible interpretation of the primary EU law would be that the exclusive right to issue banknotes and coins also includes the issuance of the CBDCs (Nabilou H., 2019). This is, however, one of the possible interpretation and a weak argument when it comes to the legal basis in the European legal framework relating the CBDCs. That the ECB is the ultimate responsible for issuing money in the Eurozone became clear after Estonia's failed attempt to issue a cryptocurrency called Estcoin. The president of the ECB at that time, Mario Draghi has clearly stated that *no member state can introduce its own currency; the currency of the eurozone is the euro* (Financial times, 2017). At European level, at least for now, the cryptocurrency issued by a central bank of Lithuania is the digital collector coin LBCOIN as the first digital coin issued by a central bank not only in the euro area, but also across the world. LBCOIN is dedicated to Lithuania's 1918 Act of Independence and its 20 signatories (Bank of Lithuania, 2020).

Another question arising from the creation of the CBDCs is the question of *legal tender status*. When the broader public has access and uses the CBDCs they should have the status of legal tender for discharging all obligations in the currency unit in which they are issued. Same legal tender status as banknotes and coins implies that CBDCs should be accepted and usable at any location

and under any condition by economic operators. This should be the case even when the operators are offline (Mersch Y., 2020).

The introduction of a new form of central bank money opens the discussion about the relationship between the existing forms of money i.e. cash banknotes and coins and bank deposits and the CBDC. The convertibility of one form of money to another is an important element that will determine the attractiveness of the means of payment. Also, there is a possibility for different interest rates that will be applied to different forms of money. In this respect, the bank deposit should bear higher interest rates for the reason that the risk of bank default is present. The convertibility of one form of central bank money should be particularly regulated for the periods of crises when bank runs are probable and people are expected to convert their bank deposits into central banks money.

The country that decides to introduce CBDCs should adopt a proper legislation on crimes of counterfeiting of CBDCs. Currently, there are many provisions in the penal codes in the countries that are regulating the crimes of counterfeiting or duplicating banknotes and coins but due to the electronic design of the CBDCs they will be unable to cover the situation of counterfeiting or duplicating this new form of central bank money. Also, depending on the design of the CBDCs and the anonymity of the transactions a new set of rules should be included on the question of taxation and prevention of tax evasion in the cases of the use of this new form of central bank money.

4. Conclusion

The recent turbulences in the economic and financial sphere caused by COVID 19 pandemic showed that in times of financial uncertainty the cash is still very attractive. That will probably foster the efforts of the private and the public sector in their quest for finding an alternative for cash that will include the technological innovations.

The creation of a new form of central bank money CBDCs alongside the traditional cash and central bank deposits offers a solution that provides a use of the modern technology in a way that even in a cashless economy the people are able to hold risk-free central bank money. A key decision in this respect is the design of the CBDCs. A wholesale CBDC accessible to financial institutions that already use central bank digital money will not introduce a major innovation. However, retail CBDCs available to a broad public will be a game changer and will open a new chapter in the monetary sphere. Here, decentralization of the ledger is an important pillar for providing anonymity of the transactions with CBDCs that will make it very close to the cash.

Depending on the choice of their design the CBDCs will bring not only benefits for the entire economy but will also open the door for unavoidable disintermediation of the financial system.

The creation of the CBDCs needs a proper legal basis and raises several legal questions relating to the legal basis for their issuance, the status of legal tender, relation with other forms of money and on the rules on duplicating and counterfeiting.

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