Central Banks and money: an everchanging interplay

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Keynote address by M. Jan Smets, Governor of the National Bank of Belgium

Ladies and gentlemen

It is my great pleasure to welcome you today in the premises of the National Bank of Belgium and to have the opportunity to address this interesting colloquium on the vast topic of money and currencies.

Money is subject to a constant evolution and central banks must carefully take these evolutions into account when conducting the tasks they are entrusted with. The issuance of euro banknotes is one of the best known and most visible activities of the Eurosystem central banks[1] but, as will become clear hereafter, it is by no means the most important of their tasks. Instead, central banks will take a broad interest in the many different appearances and functions of money. Evolutions like the rise of local currencies or the emergence of digital money such as privately issued cryptocurrencies will certainly not go unnoticed.

First, I will briefly touch upon the concept of money, before shedding some light on the difference between commercial bank money and central bank money. I will then clarify the process through which central banks create central bank money, and position central bank money against alternative forms of money such as local currencies and cryptocurrencies. In this process we will examine the impact alternative forms of money have on the central banks' basic tasks to formulate and implement monetary policy and to contribute to financial stability. Finally, I will talk a little about the promises that the technology underpinning the rise of cryptocurrencies may hold for central banks, especially in view of the possible issuance of a central bank digital currency.

1 WHAT IS MONEY?

What is money? It is not easy to give a clear definition. Doctor David Mann, in his standard work on the legal aspect of money, spends no less than fifty pages to clarify the concept of money[2]. Not only does money exist in the form of banknotes and coins, it can also take many other forms such as a cheque, a scriptural form (i.e. units in an account) or nowadays even some lines of computer code.

Furthermore, money traditionally serves three main functions. First, as a means of exchange, it prevents that we would have to exchange goods and services directly for other goods and services. Secondly, as a unit of account, money enables us to compare the value of different goods and services. It is the standard used to express their prices. In this function, money may be equated with currency, which in the common language is defined as the money or a system of money that is used in a particular country at a particular time. And finally, money acts as a store of value, it is used to accumulate savings which can be quickly and easily converted into any type of good or service.

The law, too, does not hail a single and uniform definition of 'money'. To just give an example, found in EU law: both the Payment Services Directive and the Payment Accounts Directive explicitly define 'funds' as banknotes and coins, scriptural money, and electronic money in the sense of the electronic

1 In this contribution the notion of 'Eurosystem' is also used to refer to the 'European System of Central Banks'.

2 CH. PROCTOR, *Mann on the legal aspect of money*, Oxford University Press, Oxford 2005, 5 – 55.

money directive[3]. The Settlement Finality Directive, on the other hand,[4] does not define the notions of 'funds' and 'money', but from the objectives of this Directive it is clear that only money and funds by means of a book entry are envisaged and not banknotes and coins. So, from a legal perspective, 'money' is usually defined with reference to the context in and the objectives for which the concept is being used.

2 CENTRAL BANK MONEY VERSUS COMMERCIAL BANK MONEY

Let us now turn to the instances that issue money, and to the money creation process. In modern day society, the most familiar issuers of money are on the one hand central banks which provide central bank money in the form of both banknotes and deposit liabilities, and on the other hand commercial banks, which generally issue private or commercial bank money in the form of deposit liabilities[5].

Economic activity can in principle take place without the coexistence of central and commercial bank money. Both solutions - on the one hand, narrow or mono-banking where there was only central bank money and, on the other hand, free banking where there was only commercial bank money - have existed in the past. But neither has proved sufficiently stable or efficient to survive on its own. There has been an evolution towards intermediate solutions in which both types of money play an important part in facilitating economic activity. Up till today, it is believed that the most effective and efficient financial system is one in which commercial bank money and central bank money coexist.

2.1 MONEY CREATION BY CENTRAL BANKS

How then do central banks create money and influence the quantity of money in the market? In the first place, central banks provide central bank money in the form of banknotes. The issuance of banknotes entails a reduction in the liquidity of credit institutions, since credit institutions must deposit liquid means with the central bank against the withdrawal of the banknotes. Banknotes and coins in euro are the only ones to have legal tender status in the euro area.

Secondly, central banks provide central bank money in the form of deposit liabilities. Deposit liabilities are created through the monetary policy that central banks conduct, which aims at maintaining price stability. Central banks maintain price stability through influencing the availability and growth of money in the economy which is operationally implemented through the transmission mechanism of the monetary policy instruments. The quantity of money in euro depends on the liquidity needs of commercial banks and eventually of the market participants like households, companies and the government. The Eurosystem can influence the quantity of money in the economy in three ways.

First, the Eurosystem central banks conduct open market operations on the basis of Article 18.1, first indent of the Statute of the ESCB[6]. The most important tools are the main refinancing operations, which are regular liquidity-providing reverse transactions conducted with a frequency and maturity of normally one week[7]. Since 16 March 2016, the interest rate on main refinancing operations has been pegged at 0.00 percent.

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3 Article 4, (25) of Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, and Article 2, (22) of Directive 2014/92/EU of the European Parliament and of the Council of 23 July 2014 on the comparability of fees related to payment accounts, payment account switching and access to payment accounts with basic features.

4 Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems.

5 COMMITTEE ON PAYMENT AND SETTLEMENT SYSTEMS, *The role of central bank money in payment systems*, Bank for International Settlements, August 2003, 7.

6 Protocol (No 4) on the Statute of the European System of Central Banks and of the European Central Bank.

7 Other types of open market operations are longer term refinancing operations, fine-tuning operations and structural operations. For more information, see EUROPEAN CENTRAL BANK, *The Monetary Policy of the ECB*, 2011, 104-108.

Secondly, the Eurosystem implements monetary policy by setting the interest rates on its standing facilities on the basis of Article 18.1, second indent of the Statute of the ESCB. Standing facilities provide or absorb liquidity with an overnight maturity on the initiative of counterparties. Two standing facilities are available to commercial banks: the marginal lending facility (to obtain intraday credit to cover shortages in liquidity) and the deposit facility (to make overnight deposits of excess liquidity).

Thirdly, according to Article 19.1 of the Statute of the ESCB, the ECB may require commercial banks to hold minimum reserves (or compulsory deposits) on accounts with the Eurosystem central banks. The intent of the minimum reserve system is to create (or enlarge) a structural liquidity shortage: an increase of minimum reserves entails a reduction of liquidity in the market and *vice versa*. The reserve requirement of each institution is determined in relation to elements of its balance sheet.

2.2 MONEY CREATION AND FRACTIONAL RESERVE BANKING

So how, then, is money created in practice? Let me clarify this process through the monetary policy instrument of the minimum reserves. Commercial banks are limited in the total amount they can loan to customers by, among others, their required minimum reserve ratios which oblige a commercial bank to keep a minimum, predetermined percentage of its deposits in an account with the central bank. This is called the system of fractional reserve banking because commercial banks are required to only hold a fraction of their total deposits in a central bank account. In practice, if the central bank imposes a required minimum reserve ratio of, say, 0.10, then each commercial bank is obliged to keep at least 10% of its total deposits as reserves, i.e. in the account it has with the central bank.

The process of money creation can be illustrated with the following simplified example: when a person deposits 100 EUR in a commercial bank, this bank will keep 10 EUR as reserves in the central bank. To make a profit, the commercial bank loans the remaining 90 EUR to another customer. This customer spends the 90 EUR by buying something from a merchant. The merchant deposits the 90 EUR with his bank. The merchant's bank keeps 9 EUR as reserves in the central bank, and then lends the remaining 81 EUR to another customer. If this chain continues indefinitely then, in the end, an amount close to 1000 EUR has gone into circulation and has therefore become part of the total money supply[8].

The system of fractional reserve banking is being criticised by certain scholars since bank deposits are only partially backed by central bank deposits, the difference being used to finance investments in the economy. Short-term deposits fund long-term loans, which renders the banking system inherently vulnerable to bank runs even if prudential regulation and the deposit guarantee system are making banks less prone to such risks[9]. It is also deemed to contribute to an enormous build-up of debt, which forms the Achilles' heel of the financial system. Some therefore propose to move from fractional banking to a so-called "sovereign money system" or to "narrow banking", where every commercial bank deposit would be fully backed by central bank money. Proponents of a sovereign money system argue that commercial banks would lose their capacity to create money in the form of demand deposits, becoming simple intermediaries between savers and borrowers. Private money creation would be eliminated and replaced exclusively by money creation through the central bank, on behalf of the public interest. Instead of encouraging or discouraging the accumulation of private sector debt by manipulating interest rates, the central bank would moderate the pace of economic activity by directly controlling the rate at which additional money would be created, or, in rare cases, destroyed[10].

No matter how tempting a sovereign money system sounds, many issues remain to be examined before considering a move towards narrow banking. For example, such a move could greatly impact

8 This process is known as the money multiplier effect.

9 J. SMETS, "Fintech and Central Banks", *Rev. banc. fin*., 2017/1, 11.

10 B. DYSON, G. HODGSON and F. VAN LERVEN, *Sovereign money. An introduction*, Positive Money, December 2016, 4.

the funding structure of commercial banks, something they are not indifferent to. Some opponents also point to the need to maintain a sufficient degree of credit growth in order to stimulate economic growth[11]. Earlier this year Switzerland organised a referendum on the introduction of a sovereign money system called *Vollgeld*, which requires that every credit granted by a commercial bank is entirely covered by deposits. The proposal was eventually rejected. This does not mean that central banks are entirely indifferent to sovereign money systems, as will become clear in a little while when I talk about central bank digital currencies.

3 ALTERNATIVES TO MONEY IN THE FORM OF EURO BANKNOTES AND DEPOSIT LIABILITIES AT CENTRAL BANKS AND COMMERCIAL BANKS

So far, I have been talking about central bank money which is being provided in the form of banknotes and deposit liabilities in euro. But any type of money can potentially be created and issued by for example private entities, as long as it allows in one way or another to fulfil the main functions of money. Let us call these types of money alternative money (in the sense that they are an alternative for both central bank money and for deposits in euro at commercial banks' accounts).

Central banks also take an interest in alternative types of money, even though they would at first sight fall outside the ambit of the central bank's usual competences. Central banks may have more than one reason for this. For starters, a considerable increase in the quantity and use of alternative money may undermine the efficacy of the central bank's monetary policy. If the market players were to massively move away from the use of banknotes and deposits in euro, a central bank could find it more difficult to attain its objective of price stability. Indeed, by substitution for regular money such as banknotes and deposits in euro, widely adopted types of alternative money could significantly reduce a central bank's control over monetary conditions, such as its ability to steer interest rates[12].

Furthermore, many central banks, among which the Eurosystem central banks, are entrusted with the task of contributing to the stability of the financial system[13]. Financial stability may be impacted by sudden or considerable changes in the quantity and use of alternative types of money[14].

3.1 LOCAL CURRENCIES

A local or complementary currency is a currency that can be spent in a particular and usually limited geographical locality, which differs from an official currency (like the euro) and about which a group of private persons, companies or government instances have agreed to accept it as a means of exchange. A local currency therefore acts as a complementary currency to an official currency, rather than replacing it, and aims to encourage spending within a local community or to support the local or social economy.

European law does not directly deal with the issue of local or complementary currencies but Article 178*bis* of the Belgian Penal Code stipulates that whosoever issues a monetary sign which is meant to circulate in public without being authorised by the competent authority, is subject to imprisonment or the payment of a fine. This Article does not clarify which is the competent authority to authorise the issuance of a local or complementary currency, but without a doubt the National Bank of Belgium will have its say, and its opinion is in practice regularly sought by prospective issuers. Article 178*bis*

11 See J. VEKEMAN, "Het systeem is het probleem, niet de banken", *Trends*, 11 October 2018.

12 See A. STEVENS, "Digital Currencies: Threats and Opportunities for Monetary Policy", *NBB Economic Review*, June 2017, 89.

13 See Article 127.5 TFEU.

14 See for example FINANCIAL STABILITY BOARD, *Crypto-assets: Report to the G20 on the work of the FSB and standard-setting bodies*, 16 July 2018. See http://www.fsb.org/wp-content/uploads/P160718-1.pdf. The FSB has published a report setting out the metrics that the FSB will use to monitor crypto-asset markets as part of its ongoing assessment of vulnerabilities in the financial system.

does not apply if a monetary sign is exclusively issued to serve a particular and well-defined purpose or to circulate locally only[15].

It should be noted that the prohibition of Article 178*bis* only applies to the issuance of monetary signs in a material and tangible form, meaning that purely digital representations of an alternative currency are not prohibited by this Article. This does not mean that a local or complementary currency in digital form can be issued without observing any law. If the issuer of a local or complementary currency offers payment services in the sense of the Payment Services Directive[16], for example, the issuer should examine beforehand if he or she must obtain a licence as a payment institution. But even under the Payment Services Directive, the issuer of a local currency that can only be used within a limited network may be exempt from many of its provisions[17].

In Belgium the National Bank of Belgium is designated as the competent authority for grating licenses to payment institutions and to assess the compliance with the grounds of exclusion for limited networks. This is a part of the Bank's tasks of prudential supervision. In case of doubt, prospective issuers of local or complementary currencies in digital form would do well to consult the National Bank on this matter.

3.2 CRYPTOCURRENCIES

Let us turn then to this other infamous type of alternative money, known as virtual or cryptocurrencies such as Bitcoin, Litecoin, Ether and many others. The main characteristic of cryptocurrencies is that they are issued, kept and exchanged in a decentralized way (usually based on Distributed Ledger Technology or DLT), removing the need for intermediate players and systems like commercial banks, payment institutions and clearing and settlement systems. Cryptocurrencies can be used only as contractual money, when there is an agreement between buyer and seller in order to accept a given cryptocurrency as a means of payment. In the EU, cryptocurrency is at present not regulated and cannot be regarded as being subject to the Payment Services Directive or the E-money Directive[18].

From an economic perspective, most of the cryptocurrencies currently known do not fully meet all the three functions of money that I mentioned before. Cryptocurrencies have a limited function as a medium of exchange because they have a very low level of acceptance among the general public. In addition, the high volatility of their exchange rates to official currencies renders cryptocurrency useless as a store of value even for short-time purposes, let alone for the purpose of being a longer-term savings instrument. Finally, both the low level of acceptance and the high volatility of their exchange rates and thus purchasing power make them unsuitable as a unit of account. Therefore, cryptocurrencies cannot be regarded as full forms of money at the moment[19].

Cryptocurrencies are actually fraught with many issues. From a central bank perspective, cryptocurrencies pose a risk for the conduct of monetary policy or for the stability of the financial system. Studies show that cryptocurrencies should not pose a significant threat if they are merely

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15 Preparatory works to Article 4 of the Law of 23 December 1988, Senate, 499-1, 1988-89.

16 Transposed in Belgium by the Law of 11 March 2018 on the statute and supervision of payment institutions and institutions for electronic money.

17 See Article 3, (k) of the Payment Services Directive. This Article excludes services based on specific payment instruments that can be used only in a limited way when (i) the payment instruments allow the holder to acquire goods or services only in the premises of the issuer or within a limited network of service providers, or (ii) when these instruments can be used only to acquire a very limited range of goods or services. A third exclusion ground exists when the payment instruments are only valid in a single Member State and are provided at the request of an undertaking or a public-sector entity and regulated by a national or regional public authority for specific social or tax purposes to acquire specific goods or services from suppliers having a commercial agreement with the issuer.

18 EUROPEAN CENTRAL BANK, *Virtual Currency Schemes – A Further Analysis*, February 2015, 24.

19 *Idem*, 24. The crypto-community is, however, looking for solutions to this problem, e.g. through the creation of stablecoins. See https://medium.com/fintech-weekly-magazine/stablecoins-what-are-they-actually-for-a1bc0732e472.

used as a medium of exchange, since in this case cryptocurrencies would usually be converted back to regular money as soon as the transaction is settled[20]. Financial stability risks may, on the other hand, appear if cryptocurrencies were to be widely perceived as a proper store of value, which they are not. This is because unlike commodities such as oil and gold, cryptocurrencies have no intrinsic value. They are nothing more than lines of computer code. Neither do they carry any legal value, in that they are not backed by a sovereign entity as is the case for regular money. The value of cryptocurrencies therefore depends on self-fulfilling expectations, which renders them conducive to speculation and to bubbles[21]. Finally, cryptocurrencies could pose a considerable risk for monetary policy and financial stability if they were to be generally accepted and used as units of account. In this case cryptocurrencies would substitute for the bulk of regular money, including central bank money. There is doubt, however, that cryptocurrencies would ever become trusted units of account, among others given their lack of either legal tender or regulatory status[22]. In any case, it is not surprising that many national and international authorities have issued warnings against the investment in and use of cryptocurrencies.

3.3 WILL THE PROMISES OF DLT LEAD TO THE ISSUANCE OF CENTRAL BANK DIGITAL CURRENCIES?

So, let me wrap up my thoughts. I have thus far briefly explained the process through which central banks create central bank money, as a result of the implementation of the monetary policy. The creation of alternative types of money by private players, such as cryptocurrencies, carries the risk of impairing monetary policy transmission or affecting financial stability. But the advent and rise of cryptocurrencies and its underlying technology also offer opportunities to central banks[23].

First, DLT has the potential to improve efficiency and security of existing payment systems. These benefits suggest that DLT could help to further underpin trust in the monetary system. Central banks may, for example, choose to permit interbank payment systems to run on a DLT network[24].

Secondly, some central banks have taken interest in DLT to serve as a platform for the issuance of a so-called "central bank digital currency" or "CBDC"[25]. A CBDC can be defined as a central bank liability, denominated in an existing unit of account, which serves both as a medium of exchange and a store of value. This would be an innovation for the public at large and for use in retail payments, but not for certain wholesale entities. Indeed, as we have seen, central banks already provide digital money to commercial banks in the form of deposit liabilities[26]. Some central banks have completed proofs of concept, for example to simulate if central bank-operated wholesale payment systems could run on DLT-based applications[27]. These projects usually show that DLT is not yet mature enough for current adoption, and that the legacy systems are outperforming DLT-based applications.

Unlike commercial banks, the public at large is only provided central bank money in the form of banknotes and coins. A general purpose CBDC, open to the public at large, would be a substitute or

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20 A. STEVENS, *o.c.*, 81.

21 *Idem*, 82.

22 *Idem*, 82.

23 For some other recent documents that take either positive or negative views on the crypto-revolution, see among others: FINANCIAL STABILITY BOARD, *Crypto-asset markets. Potential channels for future financial stability implications*, 10 October 2018; EUROPEAN PARLIAMENT, *Resolution on distributed ledger technologies and blockchains: building trust with disintermediation*, 2017/2772(RSP), 3 October 2018.

24 A. STEVENS, *o.c.* 83.

25 The best-known example today is the Swedish Riksbank's e-krona project. See https://www.riksbank.se/en-gb/financial-stability/payments/e-krona/.

26 COMMITTEE ON PAYMENTS AND MARKET INFRASTRUCTURES, "Central Bank Digital Currencies", Bank for International Settlements, March 2018, 3. See https://www.bis.org/cpmi/publ/d174.pdf. For a taxonomy of CBDCs and the money flower concept, see M. BECH and R. GARRATT, "Central bank cryptocurrencies", *BIS Quarterly Review*, September 2017, 55-70.

27 Like the National Bank of Belgium, which has been involved in a research project simulating DLT-based payments in central bank money in Target2.

a complement to cash. Whether the introduction of a CBDC is desirable depends on many different considerations. More research should therefore be devoted to the benefits, drawbacks and implications of the issue of a CBDC. Many questions remain, also of a legal nature. Central banks must, for example, take into account legal considerations when contemplating the issuance of general purpose or retail CBDCs. Issuance may require legislative changes which might not be feasible in the short term. One question is whether CBDCs would have legal tender status just like euro banknotes and coins. It may be necessary to extend the ECB's monopoly to issue legal tender banknotes to CBDCs. Central banks would also have to take account of Anti Money Laundering (AML) concerns and requirements. Issuing a CBDC that does not adequately comply with these and other supervisory and tax regimes would not be advisable[28]. It is currently not clear how AML requirements can be implemented practically for anonymous forms of CBDC.

4 CONCLUSION

To conclude, it is no understatement to say that there is an everchanging interplay between money and the central banks' mandate to implement monetary policy and to safeguard financial stability. The future of money is currently being shaped at an unprecedented pace, thanks to the digital revolution. One of the many emerging trends is the rise of so-called asset-backed cryptocurrencies. This is a cryptocurrency that represents an underlying traditionally valuable, real-world asset to which it is pegged. This trend, called tokenisation, shows similarities with the old gold standard where banknotes issued by central banks were exchangeable for the corresponding value in gold. Tokenisation shows a lot of promise for traditional assets such as gold and diamonds, but is it conceivable that other assets are tokenised and find their way to the financial system and maybe into new forms of money? Many questions to which presently few answers can be offered... So, let me assure you that a lot of challenging work remains to be done in this area, also with respect to the legal issues surrounding them. I wish you all an insightful day!

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[28] COMMITTEE ON PAYMENTS AND MARKET INFRASTRUCTURES, "Central Bank Digital Currencies", *o.c.*, 9. On the issue of anonymity of CBDCs, see M. BECH and R. GARRATT, *o.c.*, 65.