

# CHAPTER 1

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## Money

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Money is traditionally defined on the basis of its functions. Yet money is more than just what it does: it is also an institution, built on confidence. It is therefore important to consider the nature of money (Section 1). Money comes in various forms and, over time, has evolved towards dematerialisation (Section 2). Lastly, money creation, which is endogenous, relies on the sharing of roles and functions between a central bank and commercial banks working through a hierarchical structure (Section 3).

## 1. The nature of money

### 1.1. “Money is what money does”: the instrumental approach to money as defined by its functions

Economic approaches to money tend to be largely instrumental: they define money by the services it provides, echoing Francis Walker’s saying, “*Money is what money does*”. In other words, money is often seen as a way to eliminate trade frictions that would arise if it didn’t exist, i.e. in a non-monetary economy. This thinking dates back to ancient times – Aristotle, for one, defined money in terms of its functions – but has always been a subject of debate (by economists, but not only). The issues surrounding the concept of money remain entirely topical today and continue to be addressed in countless research studies.

#### The first function traditionally assigned to money is that of a unit of account.

Money can be used to measure and compare the value of dissimilar goods, providing a common standard or yardstick against which they can be priced for trading. This function’s usefulness is traditionally captured by comparing it with a non-monetary barter economy, in which each commodity or service has a relative price expressed in terms of the other commodities and services in the economy. The introduction of money can then be seen as a technical simplification to facilitate comparisons between goods and reduce the cost of trading. According to Arrow and Debreu,

this was the approach adopted by Walras in his general equilibrium theory.

Beyond such technical simplification, the introduction of money is also the result of a collective choice. Looking at it from this angle, the unit of account is an institution to which people refer in order to trade. It is not only a calculation aid, but also a social relationship (based on collective acceptance).

Money’s purpose, however, is not limited to measurement: money can also buy any goods or services available in an economy.

#### It is a medium of exchange. This is the second function traditionally assigned to money.

Here again, the function’s usefulness is often defined (by Adam Smith, for example) in comparison with a barter economy, in which an agent wanting to trade one commodity for another will not necessarily find a counterparty who owns the commodity sought and is willing to accept the commodity offered in exchange. Using a medium of exchange solves this classic problem referred to as a “double coincidence of wants”, which can limit trading opportunities. According to Irving Fisher, “Any property right which is generally acceptable in exchange may be called money”. Classical economists considered this to be the primary function of money. For them, within the hierarchy of money’s functions, the unit of account merely derives from this function. In neo-classical thinking, the emergence of money out of a barter economy is described in the works of Menger, who said that a commodity comes to be used as money following a selection process to find the most convenient instrument for exchange. A commodity could be chosen because, on the one hand, it has the properties of a “good” medium of exchange,<sup>1</sup> and on the other, it benefits from network effects relating to its acceptability.<sup>2</sup> Therefore, the decision by a community of users to adopt one form of money rather than another is partly the result of self-fulfilling expectations.

**The third function traditionally assigned to money is that of a store of value:** money makes it possible to hold purchasing power

1 In view, in particular, of criteria of availability, standardisation, ease of transport and divisibility. However, these criteria are associated with material goods and are less relevant in a situation where the money in circulation is largely in dematerialised form.

2 The greater the number of agents using the commodity as a medium of exchange, the more apt the commodity becomes as a medium of exchange for an extensive network of counterparties, and the more likely people are to use it as such.

over time. Historically, this function has been a source of disagreement among economists. For instance, it was omitted from the analysis made by classical economists (for whom using money as a store of value meant holding idle cash, which defied common sense – there was no hoarding). Moreover, as John Hicks pointed out, using money as a store of value is a questionable practice if there are other assets available that generate better returns (such as real estate), since money is not remunerated. For others, however, this function is absolutely crucial, especially for Keynes,<sup>3</sup> who held that “The importance of money flows from it being a link between the present and the future.” Keynes bases part of his analysis of a monetary economy on the fact that agents may want to store money as a precaution (to provide a buffer against future risks) or for speculative reasons (in hope that further investment opportunities will arise). When comparing money to other assets that could also be held as a store of value, Keynes stresses on its liquidity, being immediately available for trading without risk.

## 1.2. Money is more than what it does: money as an institution and the role of confidence

The different approaches that view money in terms of its functions all tend to qualify its properties using contrasts with theoretical non-monetary economies, principally barter economies, in which the economy and its equilibrium are defined assuming that money does not exist. Money, however, is more than the sum of its functions and can be studied more comprehensively using complementary approaches.<sup>4</sup> These approaches suggest that barter systems existed only in a few specific cases, that “non-monetary” societies had an alternative form of currency whereby trades were arranged using a kind of debt contract, and that money’s use as a measure of value was not a natural consequence of the quest to eliminate trade frictions.

The historical validity of the assumption that barter was used as a trading system before money emerged in “primitive” societies

is thus hotly contested. In fact, a number of works point out that the dominant method of exchange in “primitive” societies cannot be likened to a “non-monetary” trading system<sup>5</sup> like barter, as presented in instrumental monetary theory.<sup>6</sup> In these societies, the role of trade was first and foremost to resolve issues of social relations, redistribution and reciprocity. Money can thus be seen primarily as a social convention (not only in the legal sense of the term) or even a social technology.<sup>7</sup>

In this respect, it can be said that money is primarily the result of sovereign acts, including, but not limited to the designation of legal tender (see Box 1). For instance, Georg Friedrich Knapp defines money as anything that the state decides to accept in payment of tax, whether or not it has legal tender status. So money is seen not so much as a means to reduce trade frictions that emerged independently of any political intervention from above, but rather as a unit of account in which debts to the “palace” (tax obligations) are measured. By accepting it in repayment of debt, the state lays down the conditions for demand for what it considers to be money, which can subsequently be used in private transactions between agents. Or as Keynes put it, the state writes the dictionary and enforces it at the same time. **The state’s role in the acceptance of money as a common benchmark in transactions is thus crucial.**

That said, the state does not have absolute control over monetary practices, as shown by the simple fact that monetary crises exist. If the state declares an instrument to be money by decree, there is no guarantee that the instrument will be unanimously accepted. In France, for example, between 1789 and 1796, the over-issuance of several billion assignats secured by property confiscated from the clergy<sup>8</sup> ended in failure, despite the state declaring the assignats fiat money in 1790 and introducing the death penalty for refusal to accept them in 1793. During the period in question, the assignats’ value depreciated continuously against metallic money.

3 Keynes believed that money was more than a simple instrument and thus did not share this instrumental approach.

4 Namely approaches based on historical and anthropological material. In the economics sphere, the works of Heinsohn and Steiger in the 1980s comes to mind, as well as that of Larry Randall Wray – see, for example, his “Introduction to an Alternative History of Money”, L. R. Wray, *Levy Economics Institute Working Paper*, 2012 – and David Andolfatto.

5 Which served to allocate resources in a mutually beneficial manner to the counterparties to a trade.

6 For example, Marcel Mauss points out in *The Gift* (1923) that the dominant system of exchange in many primitive societies is not barter, but gifting. Bronislaw Malinowski, in *Argonauts of the Western Pacific*, 1922, describes the circulation of items with no practical use in the Trobriand Islands, which he puts down to the sole aim of building relationships.

7 This term is used by Geoffrey Ingham in *The Nature of Money*, 2004, and was recently taken up by Felix Martin in *Money: the unauthorised biography*, 2013.

8 In 1796, the total amount of assignats in circulation was around 45 billion livres, while the estimated worth of the clergy’s property was between 2 and 3 billion.

Demonetised first by general rejection, then by law in 1796, the assignat contributed to discrediting the revolutionary political regime. So although the State can help to secure an instrument's acceptance as currency, doubts as to the quality of the assets used to back the instrument and justify its value (such as a country's economy) can cause it to be shunned in favour of other ways of holding purchasing power that are deemed safer. This shows that confidence is crucial when it comes to money: there must be confidence in the quality of the monetary network<sup>9</sup> and the guarantees it provides. With a currency like the euro, for example, these guarantees are reflected in its legal tender status (see Box 2) and help to cement its effectiveness as a unit of account.

**Ensuring that conditions are in place to preserve public confidence in its currency is the main role of a central bank and all its activities derived from it.** This role is reflected in the central bank's aim to provide banknote issuance technology of the utmost security to prevent forgery. In the case of Banque de France (as a member of the Eurosystem), it forms part of the duties assigned to it under the French Monetary and Financial Code<sup>10</sup> ensuring that cashless payment instruments are secure and that all payment systems function safely and efficiently. It also explains the regulatory requirements applicable to the activities of credit institutions, which are responsible for the bulk of money creation (see Section 3 of this chapter). Lastly, it is the reason for the price stability objective set for the Eurosystem's monetary policy, which aims to preserve the euro's purchasing power over time (thus constituting a stable store of value).

## 2. Forms of money

### 2.1. From commodity money to metallic money

From ancient times until the 19th century, some regions of the world used commodity

money for trading: the item used as currency (shells, livestock, wheat, tea, beans, etc.) may have been sought in its own right to meet non-trading needs. Over time, these "currencies" gave way to metallic money, which took its value from the metal it contained (gold or silver). The metals used tended to be fungible, divisible and scarce, with a high market value. Metallic money was historically exchanged on the basis of its weight (such as in Egypt, two thousand years before our era), amount (around 800 BC, ingots were divided into coins, which would become widely used in ancient times in Greece then Rome, as well as in China, India and the Islamic world) or stamp (which indicated the coin's weight; the first modern coins date back to the 6th century BC in Lydia<sup>11</sup> then Greece). Gradually, the metal's value as a precious material ceased to be linked to the numerical value stamped onto the coin. However, during the 19th century, from the end of the Napoleonic wars to the outbreak of World War I, the world adopted the gold standard system, whereby national currencies were defined by their weight in gold (and/or silver). In France, the last coin based on gold was the "Poincaré" franc in 1926. The over-issue of currency to finance the war effort from 1914 to 1918, together with the 1929 crash and its fallout, forced all countries to abandon the convertibility of their banknotes into gold. That said, under the gold exchange standard brought in by the Bretton Woods agreements in 1944, gold continued to play a role internationally until 1976, the year of its total demonetisation. Now, coins bear only their value in units of account and the stamp of the issuing authority, and are known as coins. This form of money constitutes the first kind of fiduciary money (from the Latin word *fiducia*, meaning confidence or trust), the face value of which is completely unrelated to its intrinsic value (as measured by the weight of the metal). Coins now represents around 1% of the stock of money circulating in the French economy (the M1 aggregate, see 2.4).

### 2.2. The development of paper money

The emergence of paper money was a major milestone on the path to the dematerialisation of monetary instruments,

<sup>9</sup> Understood to mean all the stakeholders and institutions involved in issuing and circulating money.

<sup>10</sup> For further information, see <https://www.banque-france.fr/en/page-sommaire/market-infrastructure-and-payment-systems>

<sup>11</sup> Lydians were an Indo-European people living in the centre of what is now Turkey.

since, from the outset, a note's face value bore no relation to the intrinsic value of the paper it was printed on. While paper money was initially secured by an underlying asset which had intrinsic value, this practice was gradually phased out. The first banknotes took the form of "certificates of deposit" that could be exchanged for precious metals deposited in banks' vaults, then for coins. They first appeared in the 10th century in China, then in the 16th and 17th centuries in Europe, where they were used by merchants in places like Venice and Amsterdam. The value of these notes was not intrinsic, but laid in the credibility of the issuer's promise to convert them.<sup>12</sup> Gradually, however, the

volume of notes came to be higher than the stock of coins held by banks, which, not expecting all holders of notes to request their conversion simultaneously, issued a portion of their notes "uncovered", thus exposing themselves to the risk of bankruptcy. In France, in 1848, Banque de France gained a monopoly over note issuance. **Thus, notes, after coins, constitute the second form of fiduciary money** (currently making up around 12% of the stock of money circulating in the French economy): paper money is an acknowledgment of the central bank's debt (and as such is included on the liabilities side of the central bank's balance sheet).

<sup>12</sup> In this context, the bearer's confidence in the quality and quantity of precious metal that the issuer has in its vaults.

### Box 1: The concept of legal tender

Fiduciary money is made up of banknotes and coins. Generally, notes are issued by the central bank while coins are issued by the Treasury (before being physically put into circulation by the central bank).

Fiduciary money often also has legal tender status (as is the case in France).

Legally, the term "legal tender" refers to a means of payment which, in the territory concerned, nobody can refuse to accept in payment of a debt denominated in a given currency. It is a way for the governing authority to enforce the obligation to accept such means of payment to discharge a debt.

The concept of legal tender therefore differs from that of fiat money (which was not convertible into the underlying asset when money was defined by its weight in metal). However, it can be considered to follow on from it, since, once an instrument had been declared non-convertible, it was given legal tender status to ensure that holders' payments would not be refused (the basic condition for its acceptability).

The concept of legal tender is not, however, interpreted in the same way across all jurisdictions and situations.<sup>1</sup> In the Eurosystem, the regulatory texts<sup>2</sup> state that "The Union shall establish an economic and monetary union whose currency is the euro" and that "the banknotes issued by the ECB and the national central banks shall be the only such notes to have the status of legal tender within the Community". To clarify this concept, on 22 March 2010 the European Commission adopted a recommendation on the scope and effects of the legal tender of euro banknotes and coins. However, Member States do not all give the same legal force to the notion of legal tender.

Under French law, new Article 1343-3 of the French Civil Code stipulates that "payment in France of a sum of money due shall be made in euro" and Article R. 642-3 of the French Penal Code makes it a punishable offence to refuse payment in banknotes and coins that are legal tender: legal tender is thus effectively used to support the unit of account. In addition, Article 442-4 of the Penal Code provides for a five-year prison sentence and a fine of EUR 75,000 for "putting into circulation any unauthorised monetary instrument intended to replace coins and banknotes that are legal tender in France". It should also be noted that the legal weight of legal tender status is mitigated by provisions obliging creditors to make payments above and beyond a given amount using cashless means. Moreover, the creditor's obligation to accept payments in currency with legal tender status does not prevent them from requiring debtors to pay the exact amount.

<sup>1</sup> For a more general overview of the differences between the various approaches, the topic is addressed in the appendix of the CPSS report, *The role of central bank money in payment systems*, August 2003: <https://www.bis.org/cpmi/publ/d55.pdf>

<sup>2</sup> Article 3.4. of the Treaty on the functioning of the European Union, transposed into French law in Article L. 111-1 of the French Monetary and Financial Code.



### 2.3. The expanding role of scriptural money

**Scriptural money, which takes its name from the bank scripts that determine its value (accounting entries on the issuing institution's books), is an acknowledgement of the issuing entity's debt.**

Scriptural money emerged before banknotes and coins, first coming into evidence in 1800 BC on tablets found in Mesopotamia. The Greeks and Romans were familiar with transfers between accounts, as were the Arabs, who used them in the 9th century. Such transfers became more widely used from the 12th to the 14th century in Europe's trade fairs, where transactions could be made using bills of exchange (IOUs between merchants, the forerunners of today's bank cheques). As these practices spread, vast multilateral clearing systems developed, with specialised intermediaries — bankers — stepping in to centralise bills of exchange, assess their quality and execute exchange transactions for those denominated in different currencies. This is how the first centralised payment systems developed, the precursors of the modern payment systems in use today.

Only in more recent times, with the emergence in the Middle Ages of discounting (credit transactions whereby a bank makes an advance to its customer, equal to the price of the goods represented by the bills of exchange that the customer endorses to the bank), did scriptural money come to circulate among the public, in the form of transfers from one account to another. Scriptural money includes customers' bank account balances and commercial banks' assets held with the central bank (reserves). Chapter 2 addresses how scriptural money circulates in more detail.

### 2.4. Accounting currency and statistical currency

Although scriptural money is sometimes referred to as credit money,<sup>13</sup> from an

accounting viewpoint, credit money is not only scriptural money but includes **all money in any current form that represents a claim on its issuer**, or, from the issuer's point of view, a debt: this can be a claim on the central bank recorded as a liability by the latter, in the case of fiduciary money<sup>14</sup> or banks' reserves, or a claim on commercial banks, in the case of commercial scriptural money. This form of debt differs from other forms in that it circulates in the economy and is accepted as a means of payment.

In statistical terms, the Eurosystem defines money using a set of indicators covering all assets that can be used to buy goods and services or repay debt in a given territory, or are readily convertible into means of payment with a low risk of loss of capital.

The Eurosystem has defined three broad, intertwined statistical aggregates, ranging from the most liquid to the least liquid, linking the "money-issuing sector", the monetary financial institutions sector<sup>15</sup> and the other sectors of the economy:

- (1) **M1**, the most liquid aggregate, includes notes and coins in circulation and overnight deposits: it is the narrow definition of money supply, representing the intuitive view of money and the most liquid and readily mobilised assets.

Sometimes the M0 aggregate is used, also known as the "monetary base", comprising notes and coins in circulation and scriptural money held with the central bank. The M0 aggregate sheds light on the central bank's role in the money creation process, but is not considered to be an integral part of the money supply (as defined for statistical purposes) because some of its components (banks' reserves) do not circulate among all economic agents, but only among banks;

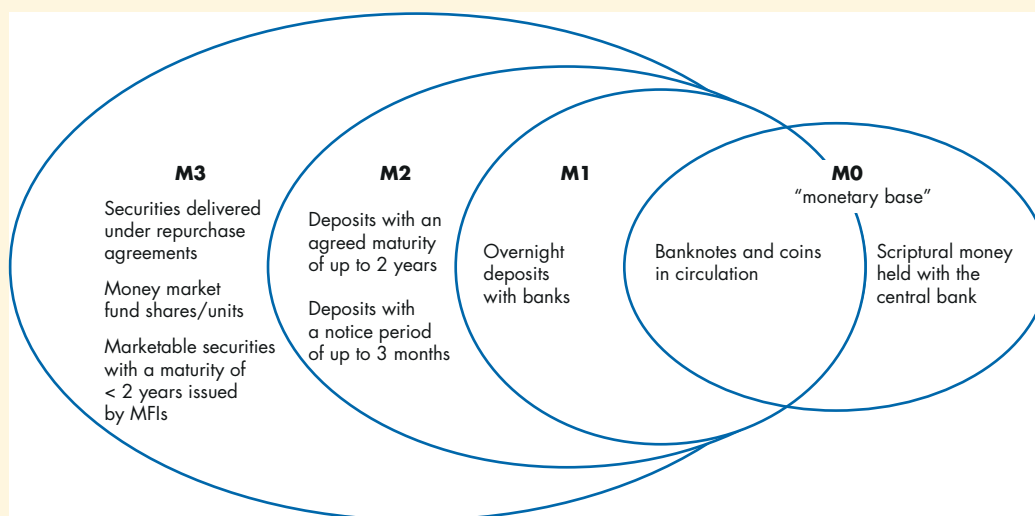
- (1) **M2** includes the M1 aggregate, together with deposits redeemable at notice of up to three months and fixed-term deposits with maturities of up to two years;

<sup>13</sup> Because it is largely created by credit transactions by commercial banks. More details are provided on this topic in 3.1.

<sup>14</sup> As a rule, only **banknotes** are recorded as liabilities by the central bank, not coins (which are issued by the Treasury, even though the central bank physically puts them into circulation). One exception worth noting is the CFP Franc ("Pacific Franc"): both coins and banknotes in CFP are issued by the *Institut d'émission d'outre-mer* (IEOM – the French overseas departments currency-issuing bank) and are recorded as liabilities on the issuer's balance sheet (under "Currency in CFP francs in circulation").

<sup>15</sup> Including resident credit institutions as defined by European legislation and all resident financial institutions whose business is to take deposits and/or close substitutes for deposits from entities other than MFIs and, for their own account, to grant credit and/or invest in securities.

### The monetary base and the instruments constituting the monetary aggregates



(1) **M3** includes M2, together with transferable money market instruments issued by monetary financial institutions, representing assets with a high level of liquidity and a low risk of loss of capital in the event of liquidation (e.g. money market UCIs,<sup>16</sup> certificates of deposit). M3 is the broadest monetary aggregate.

Long-term investments (homebuyer savings plans, investments in bonds) and higher-risk investments are excluded from the money supply definition.

#### 2.5. Electronic money: a specific form of money used for transactions

Under Article L. 315-1 of the French Monetary and Financial Code,<sup>17</sup> electronic money is defined as “a monetary amount which is specific in that it is stored in electronic form, and which represents a claim on its issuer.” It must also fulfil a number of conditions, such as being issued against receipt of funds,<sup>18</sup> and being accepted for a payment transaction by a legal entity or individual other than the issuer. A holder of electronic money must therefore previously have put money into an electronic money account held with either an electronic money institution or a credit institution.

Originally designed to define the monetary units stored on physical media, such as prepaid cards, the concept of electronic money was then extended to online accounts also operating on a prepaid basis. In both cases, electronic money services are primarily intended for transactional purposes:

- prepaid cards can be used as an alternative to conventional payment cards, cheques and cash in point-of-sale payment transactions. In some cases, they serve a specific purpose, such as with e-gift vouchers;
- in the form of an online account, electronic money allows payments to be made directly between clients of a given issuer, without the need for the usual interbank payment methods (cards, transfers, direct debits, cheques). This generally means that payments are credited almost immediately to the beneficiary’s account and are billed only once by the issuer. In addition, prepaid accounts effectively prevent fraud, since electronic money accounts cannot be overdrawn should the payer fall victim to identity theft. Thanks to these factors and the rise in online transactions between individuals, electronic money

16 Undertakings that use clients’ funds to make short-term investments. French SICAVs (investment companies with variable capital) and FCPs (investment funds) are undertakings for collective instruments (UCIs). Shares or units in money market UCIs can be redeemed on demand without incurring a material risk of loss of capital, which makes them similar to liquid investments such as “livrets” (passbook saving accounts).

17 Transposition into French law of the 2nd European Directive on Electronic Money (EMD2).

18 Because of this, a monetary sphere of electronic money cannot be created autonomously and spontaneously, since the issue is systematically secured by a deposit of funds in official currency. This is a fundamental difference between electronic money and crypto-assets (see 2.7 and Chapter 20).

in this form has been quite a success, as highlighted by the major role played by PayPal in this type of exchange. So electronic money is considered more as a vehicle for making transactions than as a form of money.

## 2.6. Complementary local currencies

Complementary local currencies were introduced in the French Monetary and Financial Code by Law 2014-856 of 31 July 2014. They can be defined as unofficial currencies that can only be used within a limited geographical region and that were created to provide a medium of exchange to complement the currency designated as legal tender. These currencies are often issued as part of a political or charitable initiative to promote social inclusion and local development. As such, in accordance with Article L. 311-5 of the French Monetary and Financial Code, these currencies can only be issued by companies that comply with the principles of the social and solidarity economy.

The status of these local currencies is, however, complex and varies depending on which of the three possible formats of issue is used: paper securities, scriptural money or electronic money. The format directly affects the local currency's legal status, as well as the manner in which its issuing company is authorised by the *Autorité de contrôle prudentiel et de résolution* (ACPR, French Prudential Supervision and Resolution Authority) and monitored by Banque de France (see Chapter 3). Since they are not denominated in euro, these local currencies do not have legal tender status and can thus be rejected as a means of payment, including in the region of issue. However, as they are recognised by the Monetary and Financial Code and are issued – strictly pegged to the euro – by specific, supervised companies, they can be considered a means of payment in the legal sense, provided that they meet specific conditions attached to their format.<sup>19</sup> If the complementary currencies do not comply with these conditions, they

are not considered a means of payment and fall outside the regulatory scope.

In France, sixty or more complementary local currency schemes are in place or have been launched. They are based on longstanding systems in other countries, such as Canada's "Local Exchange Trading Systems" (LETS) – which were launched in the early 1980s and promote regional business and commerce using complementary local currencies – or Switzerland's *Wir*, a complementary currency managed by the WIR bank since 1934 as a facility to promote mutual assistance and, potentially, credit between cooperative companies in the network (of which there are currently almost 60,000).

## 2.7. Crypto-assets: the pseudo currency that is not money at all

Crypto-assets like bitcoin and ether emerged at the start of the 2010s, following the global rise of "virtual" communities, where internet users interact through digital media, such as chat rooms, forums, etc. Often mistakenly termed "virtual currencies" or "cryptocurrencies", these assets are legally defined in France as "any instrument containing non-monetary units of value in digital form that can be held or transferred for the purpose of acquiring an item or service, but do not represent a claim on the issuer".<sup>20</sup>

Crypto-assets do not meet, or only partially satisfy, the three functions of money:

- firstly, their value fluctuates very significantly and is uncertain, so it cannot be used as a unit of account. Consequently, very few prices are expressed in these crypto-assets;
- secondly, as a means of exchange, crypto-assets are far less effective than currencies with legal tender status in that (i) their increasing price volatility makes it increasingly difficult to use them as a means of payment; and (ii) they generate transaction costs that are disproportionately high for simple retail payments;

19 See "Les monnaies locales", La revue de l'Autorité de contrôle prudentiel et de résolution, no.14, September-October 2013, p.14-15.

20 Article L. 561-2, 7° bis of the French Monetary and Financial Code.



### Box 2: From the inefficiency of metallic monetary systems to the inefficiency of bitcoin as a monetary system

Some proponents of currencies backed by precious metals such as gold say that the key advantage is that, in such systems, monetary policy depends entirely on the metal stock held by the central bank, so money available in the economy is limited by its “natural” supply and the public authorities are unlikely to create inflation on a significant scale in order, for example, to devalue public debt. The link between the quantity of metal held and the currency issued, it is argued, protects the currency from arbitrary measures by the authority in charge of it. In practice, however, in systems like the gold standard, an automatic link does not necessarily exist between the quantity of precious metal held and the currency issued, since the stability of such systems hinges on the credibility of the issuer’s promise to convert the currency (although coverage by stocks of gold does support this credibility). Moreover, history has shown that the state can sever the link between metal quantity and currency value, as seen in France with the devaluation of the Poincaré franc.<sup>1</sup>

Some of the rhetoric used to promote crypto-assets<sup>2</sup> like bitcoin draws parallels with metallic money systems: references to precious metals and gold permeate the arguments put forward, emphasising the scarcity programmed into the rules on the number of units in circulation (capped at 21 million in the case of bitcoin). For some of its proponents, bitcoin is “digital gold”; there to be “mined” until reserves run dry.

Arguments such as these disregard the cost of such mechanisms in terms of economic stability.<sup>3</sup> In practice, the functioning of metallic monetary systems suffered from the fact that gold stocks, and hence money supply, were dictated by disruptions in the discovery of new ore deposits (random, exogenous shocks affecting money supply) rather than by economic activity and trading volumes. In general, this system has a deflationary bias, which is problematic in debt-based economies, such as most modern economies.<sup>4</sup> It works in the opposite way to the monetary policies adopted in major developed economies today, which allow the money supply to fluctuate so as to maintain price stability. Moreover, the gold-standard period saw sharp fluctuations in production: within the restrictive framework laid down by this type of system, with money supply determined solely<sup>5</sup> by the balance of payments, macroeconomic adjustments had to rely partly on changes in prices and wages, generally for long periods (due to the system’s inflexibility). During this period, an adverse shock tended to send the economy into recession.

To an even greater extent than metallic monetary systems, bitcoin lacks “shock absorption” properties and offers no guarantee that its pace of issue can be adjusted in line with economic activity, from which it is totally decorrelated as it is not backed by a tangible underlying economic asset. If we consider that a monetary system’s efficiency depends on its ability to ensure economic stability, the system proposed by bitcoin’s promoters is not efficient.

Moreover, arguments in favour of metallic monetary systems or bitcoin-type systems overlook money’s function as a means to measure and circulate claims and debt, the value of which is wholly unrelated to that of its medium (whether material or immaterial, such as bitcoin).

<sup>1</sup> Paradoxically made possible by the considerable increase in precious metal stocks in the 19th century.

<sup>2</sup> See Chapter 20.

<sup>3</sup> For further details, see the Banque de France Focus “What is the Gold Standard?” published in 2010.

<sup>4</sup> This difficulty linked to deflation was less of an issue in the debt-free economies that existed during the times of metallic money systems. At that time, if a price decrease took hold, it was a decrease in all prices, proportionally. Deflation did not cause a relative price distortion, as in the case of debt-based economies.

<sup>5</sup> With an equal quantity of gold in the system.

- lastly, their lack of a tangible underlying asset,<sup>21</sup> coupled with their volatility, means that they cannot be used as a credible store of value. Crypto-assets are generally produced by computer processing power, with no consideration for economic and trading needs.

Legally, crypto-assets are not recognised as legal tender or a means of payment:

- according to Article L. 111-1 of the French Monetary and Financial Code, “The currency of France is the euro”. This is therefore the only currency with legal tender status in France. Thus, crypto-assets can be refused as payment without violating the provisions of Article R. 642-3 of the French Penal Code, under which it is an offence to refuse payment in banknotes and coins denominated in euro with legal tender status;
- crypto-assets also fail to meet the French Monetary and Financial Code’s definition of a means of payment, and more specifically its definition of electronic money, in that they are not issued against receipt of funds. Therefore, and contrary to electronic money, crypto-assets do not benefit from a legal guarantee in the European Union to be reimbursed at face value at any time in the event of an unauthorised payment.

Consequently, crypto-assets do not provide their holders with any guarantee in terms of security, convertibility or value, and carry a multitude of risks (see Chapter 20).

### 3. The hierarchical structure of money creation

#### 3.1. The role of commercial banks in the money creation process

The act of money creation entails converting claims on the issuer into means of payment. For a currency like the euro, the authority to do this lies exclusively with monetary institutions, i.e. commercial banks and the central bank.

**Firstly, money is created every time a monetary financial institution<sup>22</sup> grants credit to the economy (to a non-bank agent).** This type of money creation is driven by the financing needs of economic agents: money creation is therefore endogenous. In fact, it was long said that “deposits create loans”, i.e. commercial banks are mere intermediaries, lending out money deposited with them by savers. Although it may have held true in the past, this saying no longer (except in marginal cases) reflects the situation in modern economies, in which the relationship between deposits and loans is actually the opposite: loans, via a simple book entry, are the source of deposits (in other words, “loans create deposits” and, hence, money). The money thus created is credited to the borrower’s account and recorded on the liabilities side of the bank’s balance sheet, while the corresponding claim is recognised on the assets side.

Conversely, when a non-bank agent pays back part of all of a loan it has taken out, it helps to “destroy” money. The amount of money available in the economy depends on the net result of these processes of creation and destruction.

In theory, central banks can also create money by financing the public deficit directly, crediting the government’s account held on their books with the amount of the deficit.<sup>23</sup> A transaction such as this increases the amount of money in the economy and thus carries a very high risk of inflation. To prevent this risk, within the framework of the Eurosystem, direct advances to the Treasury are prohibited.

Contrary to popular belief, the central bank does not create money when it puts banknotes and coins into circulation. Fiduciary money is only put into circulation in the economy in exchange for scriptural money (in an ATM for example), so the money supply does not increase.

**Secondly, money is also created or destroyed each time a monetary financial institution buys or sells currencies or other assets from/to individuals, companies or the Treasury.** The sale or purchase of

21 Fiduciary and scriptural currencies represent claims on an issuer, which has assets on its balance sheet that help to guarantee the currency’s value. There is no such guarantee with crypto-assets, whose value is not backed by assets.

22 See footnote 22. MFIs create money each time they acquire securities issued by non-MFIs.

23 A belief popularised by the use of the expression “printing money” to describe situations in which a central bank financed the public deficit directly.

such assets by commercial banks in the private non-bank sector involves creating or destroying private scriptural money and thus increasing or decreasing the amount of money circulating in the economy (see 2.4).

However, when a central bank lends to banks, the scriptural money created does not increase the money supply (M1 definition), because these assets are not made available to non-banks, in the same way that interbank transactions do not affect money supply, because dealings between monetary financial institutions are consolidated when calculating monetary aggregates. Central bank purchases or sales of currencies in the banking system also affect the liquidity available to banks, without directly affecting the amount of money in circulation.

In recent times, only central bank purchases of public debt securities in the primary markets (during quantitative easing by the Fed and the Bank of England) or secondary markets (the case of the ECB) increase the money supply in statistical terms. When the ECB purchases securities in the secondary market, the statistical increase in the money supply depends on the commercial banks themselves acquiring the securities from non-banks. The money this provides to non-banks sustains their demand for goods and services, contributing to the monetary policy transmission mechanism.

### 3.2. Limitations on commercial banks' power to create money

Although commercial banks have the ability to create money through a simple book entry, their power to do so is not unlimited.

**The first limitation on commercial banks' ability to create money is that it is conditional upon demand (considered to be solvent demand) for credit by non-financial agents**, due to the endogenous nature of this form of money. Moreover, the prudential requirements applicable to credit institutions, requiring them to have own funds in proportion to the credit they extend, also limit their ability to create money.

### **The second limitation on the ability of commercial banks as a group to create money lies in their needs for scriptural assets from the central bank.**

Individual banks can lend money to each other: that is what the interbank market is for. Even so, as a group, they generally need central bank refinancing. This is firstly because commercial banks use this liquidity to acquire banknotes from the central bank to meet demand from non-financial agents. Hence, the more banknotes or currency non-financial agents request, the greater the commercial banks' need for central bank refinancing. Another source of "leakage" for banks relates to the fact that the Treasury holds an account at the central bank: when the Treasury collects tax, banks' balances at the central bank decrease and the Treasury's balance increases. Payments to the Treasury, together with demand for banknotes, constitute the "autonomous factors" in bank liquidity.

Lastly, banks' refinancing needs are increased because of a monetary policy instrument, the reserve requirement, whereby credit institutions must hold reserves on the central bank's books.<sup>24</sup>

Banks can meet this liquidity need by selling assets pledged as collateral or by obtaining funds, subject to interest payments, either directly from the central bank or in the interbank market, by borrowing from institutions with a surplus. The central bank does not, therefore, control money creation by fixing the amount of available reserves,<sup>25</sup> but steers it indirectly by accommodating all the refinancing requests it receives, for a set price (the key rate). So the central bank does not directly control the creation of money (and hence the amount of money circulating in the economy): money creation is endogenous, resulting from commercial banking activity. The central bank steers money creation indirectly by influencing interest rates (when it increases them, banks lend less and create less money; when it reduces them, the opposite occurs).

24 Under Article 19.1 of the Statute of the ESCB, credit institutions established in the euro area must hold minimum reserves (funds) in accounts held with the Eurosystem's national central banks, for a duration of around one month. This requirement has two key purposes: to help to stabilise interest rates in the money market, because the reserve requirement can be fulfilled on average, and to broaden demand for central bank money by creating or accentuating a structural liquidity shortage in the market.

25 Contrary to the argument sometimes put forward that the central bank determines the amount of loans and deposits in the economy by controlling the amount of central bank money available (the "money multiplier" theory, based on the assumption that there is a constant ratio between money supply and the monetary base), and thus implements monetary policy by setting a reserve amount.

