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EUROSYSTÈME

Monetary policy and inflation

Money and its counterparts: instruments and reflections of monetary policy

Crisis periods, such as the Covid-19 pandemic, represent major shocks to growth and inflation and are characterised by a high degree of uncertainty. In the face of such events, it is essential to draw on a broad set of indicators to guide monetary policy decisions. Although it is not assigned a key role, the analysis of monetary aggregates and the central bank's balance sheet is probably the oldest component. This article therefore recalls the definition of monetary aggregates and the main factors influencing their developments. It then provides the main empirical regularities on money and the central bank's balance sheet. Lastly, it shows that while analysing the relationship between money and its counterparts is not intended to directly guide central banks' decisions, it does help to make the many different analytical approaches more consistent.

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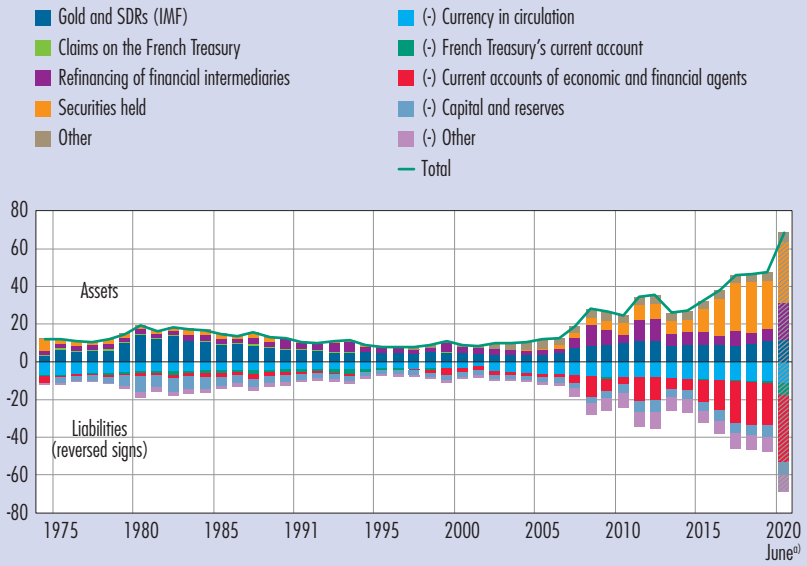
JEL codes:
E40, E50,
E52

EUR 2.994 trillion
value of M3 for France in June 2020

130%
France's share of M3 in GDP in June 2020

53%
France's share of M3 in GDP in 1970

Simplified balance sheet of the Banque de France between 1974 and June 2020
(% of GDP)



a) Based on GDP estimated in June.
Sources: Banque de France, INSEE.

1 Monetary aggregates reflect financial innovation and financial cycles

Since 1970, the development of money aggregates, from the franc to the euro, has reflected the inflation cycle, monetary stability and financial innovation

While the nature of money, and what distinguishes it from other forms of wealth, is universal, its precise definition is very much linked to the characteristics of the countries that issue it. For instance, in order to establish the euro area, the European Monetary Institute (EMI),[1] in cooperation with the national central banks, defined a common framework for the implementation of monetary policy based on a harmonised definition of the sectors issuing and holding money (see box). The money supply is measured by restating and consolidating the balance sheets of money issuers (monetary financial institutions – MFIs).

There are two forms of money (see Chart 1).

- The **monetary aggregates** M1, M2 and M3 which describe and rank, in descending order of liquidity, the money held by the public. More precisely, money is held by all economic agents (households, companies, general government, the rest of the world), while commercial banks are the issuers of money. The monetary policy measures taken by central banks since the 2008 crisis have resulted in faster money creation by commercial banks, and thus an acceleration in the growth of the money supply (M3)/GDP ratio (see Table 1).
- The **monetary base**, also known as the central bank money, is the primary form of money into which other forms of money can be converted. It has a privileged

T1 M3 monetary aggregate and GDP in France

(Amounts in EUR billions, M3/GDP ratio as a %)

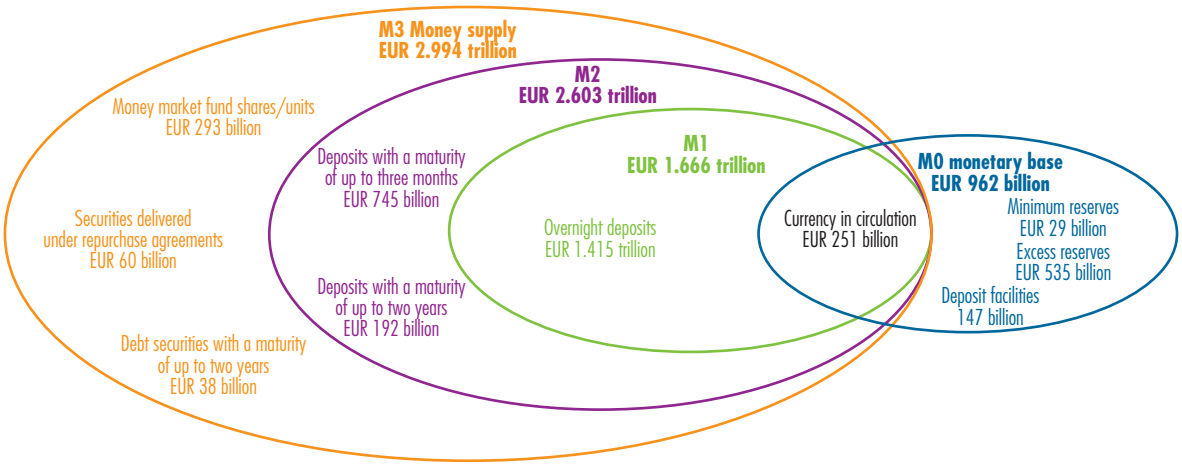
	M3[a)]	Nominal GDP[b)]	M3/GDP
1970	67	126	53
1974	123	209	59
1980	297	452	66
1999	933	1,400	67
2019	2,691	2,427	111
2020 (June)	2,994	2,310	130

a) M3 (domestic resources) does not include the balance of gross monetary liabilities and assets vis-à-vis the rest of the euro area
b) INSEE data.
Sources: Banque de France, INSEE.

1 The European Monetary Institute was set up in 1994 to prepare for monetary union and the euro. This institution was the forerunner of the European Central Bank (ECB), which succeeded it in 1999.

C1 France's monetary base and money supply in June 2020

(EUR billions)



Sources: Banque de France, ECB.

status in the monetary system, since it not only contributes to the money supply with cash (banknotes and coins), but also allows commercial banks to easily create cashless money on their customers' accounts, in accordance with the adage that "loans make deposits".[2]

The rapidly evolving technology of payment systems does not call into question the fundamental principles of aggregates, or even the monetary principle. Traditional means of payment (cheques, payment cards, credit transfers, etc.) allow cashless money to circulate. Electronic money institutions (EMIs), considered to be MFIs, and electronic money issuers,[3] contribute to overnight deposits and hence to the money supply.

Monetary aggregates have shown to be robust in the face of changing payment patterns. In particular, the framework for monetary statistics is revised every five years by the ECB, without calling into question the stability of the underlying concepts, to reflect changes in economic conditions and recent financial and technological innovations. This results, for example, in the inclusion in the aggregates of new forms of money such as electronic money and central bank digital currency.[4] The forthcoming regulation on MFI balance sheet statistics, to be implemented in 2022, will ensure that financial practices that have emerged in recent years, such as the collection of data on cash pooling, are taken into account in the calculation of the aggregates.[5] This will make it possible to adjust the monetary aggregates for the centralisation of cash flow management.[6] Similarly, the measurement of the counterparts of the money supply has been refined to include financing or holding of commercial real estate, which are necessary for financial stability analysis.

BOX

Who creates money, who holds it?

In the euro area, defining a common framework for the implementation of monetary policy requires a harmonised definition of the money-issuing and money-holding sectors.

The money-issuing sector consists of the monetary financial institutions (MFIs) resident in the euro area: the ECB, national central banks, including the Banque de France, credit institutions, money market funds (MMFs) and all resident financial institutions whose business is to take deposits and/or close substitutes for deposits from non-financial agents. The money-holding sector includes euro area resident agents excluding MFIs and central government[1] (considered to be money-neutral), mainly households, non-financial corporations, insurance companies and non-MFI financial intermediaries.

.../...

1 Central government includes the state and various state-controlled bodies with national jurisdiction.

2 The concepts of cash and cashless money are explained in detail in the box.

3 A form of money stored on an electronic medium.

4 CBDC: proposed central bank digital currency, also known as virtual currency, which could take two forms: a "wholesale" central bank currency for transactions between central banks, commercial banks and financial institutions (through distributed ledger technology, such as blockchain); and a "retail" central bank currency for the general public (through e-money or a digital central bank account) – see Landau, 2018, and Banque de France, 2020.

5 A cash pooling service for a group of entities, provided by a bank. The participants in the pool each maintain separate accounts, and the interest receivable or payable is calculated on the basis of a notional net position of all accounts. These pool participants may be overdrawn, and the amount is covered by the funds of the other entities (without transferring funds between accounts).

6 The centralisation of cash flow thus enables companies established in several countries in the area to organise their cash flow management in a single location, to pool their expertise and rationalise their flows and interactions with banks. This is an example of the practical benefits of the euro area.

.../...

The money supply is measured by restating and consolidating the balance sheets of money issuers. It is also within this framework that the ECB has defined three main monetary aggregates harmonised at the European level, which describe and rank, in decreasing order of liquidity, the money held by economic agents.

- M1 represents money in the strict sense and includes assets that can be used immediately as means of payment, i.e. currency in circulation (fiduciary money) and overnight deposits;
- M2 includes M1 as well as deposits that can be converted quickly and without cost into a means of payment with a notice period of less than or equal to three months (for France: Livret A and Livret Bleu, home savings accounts, sustainable development passbooks *livrets de développement durable et solidaire* [LDDS], etc.) and deposits with an agreed maturity of up to two years;
- M3 or the broad aggregate covers, in addition to M2, short-term negotiable instruments issued by MFIs that have a high degree of liquidity with little risk of loss of capital in the event of liquidation (money market fund shares/units, debt securities with a maturity of up to two years, repos).

The monetary base, also known as central bank money, includes cashless money as well as cash deposited by banks under the deposit facility, reserve requirements and excess reserves. Banknotes and coins are different from cashless money.

Cashless money is also known as "**scriptural**" money, from the Latin root meaning "to be written", and is created by bookkeeping entries. Whereas the term "**fiduciary**" money, i.e. banknotes and coins, stems from the Latin root meaning "of trust". For example, a payment by bank card involves only cashless money.

When a credit institution grants a loan to a company or household, the amount of the loan is added to the customer's bank account. A new loan therefore corresponds to a new deposit, which is added to the existing cashless money. This accounting procedure is summarised by the adage "loans make deposits".[2]

The bank's customer can then use this cashless money to make payments, for example by bank transfer, credit card or cheque. The money created by banks, which stems from the financing needs of economic agents, then circulates in the economy.

Depending on the behaviour of their customers, some commercial banks find themselves in a surplus situation (deposits exceeding loans) and others in a deficit situation (loans exceeding deposits). An asymmetry is created, for example, when a household with an account at bank A makes a payment to a merchant with an account at bank B. To ensure their liquidity balance, commercial banks can go to the interbank market or use their own account at the Banque de France, where central bank money is deposited.

2 See Banque de France (2019), "Who creates money?", *Economics in brief*, January.

The structure of the monetary balance sheet reflects the financing levels of the economy and the high degree of confidence in the euro

The creation of cashless money is recorded in the balance sheets of commercial banks (see box). To measure money creation, the Banque de France compiles the balance sheet of all banks each month to produce the "monetary balance sheet". This provides a synthetic representation of the way in which money finances the economy: on the liabilities side, the monetary aggregates, and on the assets side, the loans that finance the economy.

Between 1999, when the euro area was created, and 2020, the structure of France's monetary balance sheet – i.e. the proportion of the different balance sheet instruments relative to its overall size – did not change significantly (see Chart 2). On the assets side, lending to the economy is the main counterpart of money, which is recorded on the liabilities side, illustrating the fact that the central bank's action is geared towards providing the financing that the economy needs. Foreign currency assets, which represent the external counterpart of money, only account for a small share of the monetary balance sheet. Indeed, economic agents do not feel the need to hold a large amount of foreign currency, which reflects the high degree of confidence in the euro.

The composition of monetary aggregates varies according to financial innovation and financial cycles

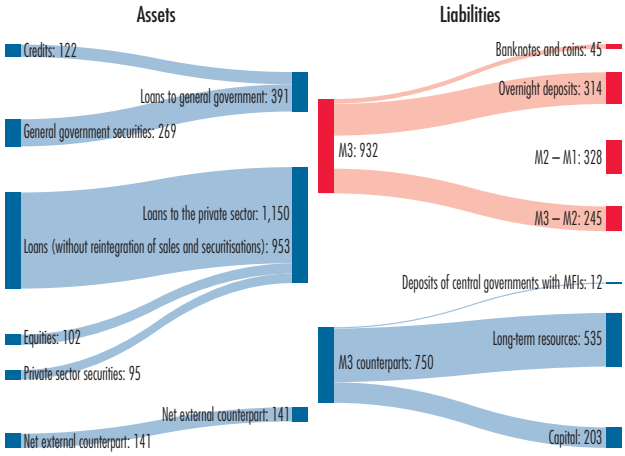
Prior to the creation of the Eurosystem, in France the M3 – M2 aggregate expanded gradually in the mid-1980s to the detriment of the more liquid M2 – M1 aggregate (see Chart 3): this was largely due to the development of a market for short-term negotiable debt securities and marked the completion of financial liberalisation. In particular, the latter allowed non-residents to finance the French economy, and helped France to join the wave of globalisation that followed. The main features of this liberalisation were the modernisation of the regulatory framework – with the 1984 banking law in particular – the lifting of the state control of credit and the liberalisation of capital movements.

The 2008 crisis brought a halt to the expansion of the M3 – M2 aggregate, which was the result of the development of short-term securities and, more generally, of a shift towards financial disintermediation. This return to bank deposits stemmed from the crisis in money market

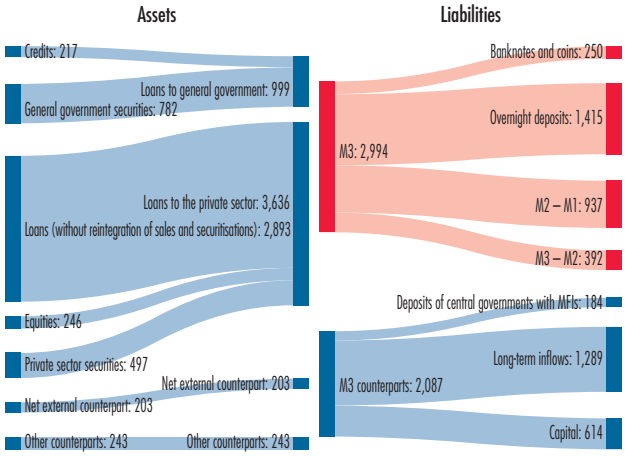
C2 France's monetary balance sheet

(EUR billions)

a) At end-December 1999



b) At end-June 2020



Sources: Banque de France, ECB.
Note: MFIs: monetary financial institutions.

funds and other disintermediated investments, which suddenly became illiquid. The choice to turn to the more intermediated forms of interest-bearing monetary investments (fixed-term deposits, etc.) resulted in an expansion of the M2 – M1 aggregate.

Then, in the wake of the 2011 sovereign debt crisis in the euro area, and its impact on access to credit in some economies, the ECB deployed measures to ensure a low interest rate regime, with a marked intensification of this policy as of 2014. As a result, the yield spread between the most liquid assets in the M1 aggregate and those in the M2 – M1 aggregate became so narrow that agents switched to M1 (see Chart 3). Another factor contributing to this adjustment towards the core component of money was the "flight to quality". Risk aversion towards certain quasi-money market investments, exacerbated by the US subprime crisis, may have led to a preference for deposit investments managed by the most highly regulated financial players, namely banks.

Thus, in 1980, the share of M3 – M2 was 0.1% of M3, rising to 26.3% at the time of the creation of the Eurosystem, and finally falling to 13.1% in June 2020. At that date, the M1 component accounted for more than half of the broad aggregate in France (55.6%); this share reached 70% at the Eurosystem aggregate level (see Table 2). It is this core component that makes the money.

T2 Monetary aggregates in the euro area and France

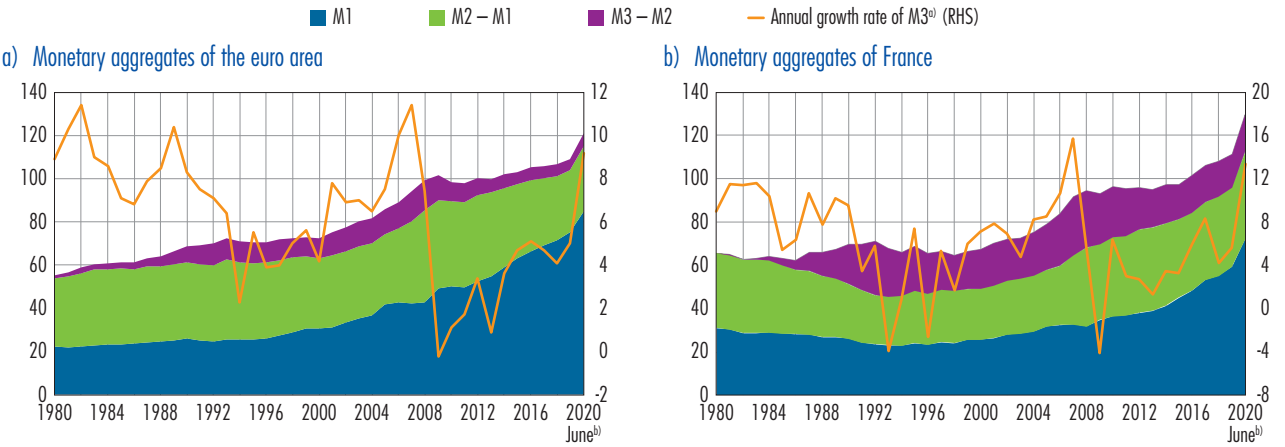
(% of M3)

	Euro area			France		
	Dec. 1980	Dec. 1999	June 2020	Dec. 1980	Dec. 1999	June 2020
M1 (overnight deposits, banknotes and coins)	40.0	41.9	70.1	47.2	38.5	55.6
M2 – M1 (other money market deposits)	57.3	46.1	24.9	52.7	35.2	31.3
M3 – M2 (marketable instruments)	2.6	12.0	4.9	0.1	26.3	13.1
M3[a)]	100	100	100	100	100	100

a) For France, domestic resources.
Sources: ECB, Banque de France.

C3 Monetary aggregates of the euro area and France, January 1980 to June 2020

(% of GDP, not seasonally adjusted; annual % growth rate of M3)



a) For France, domestic resources.
b) Based on GDP estimated in June.
Sources: ECB, Banque de France, INSEE.

2 The central bank's balance sheet, an instrument and reflection of monetary policy

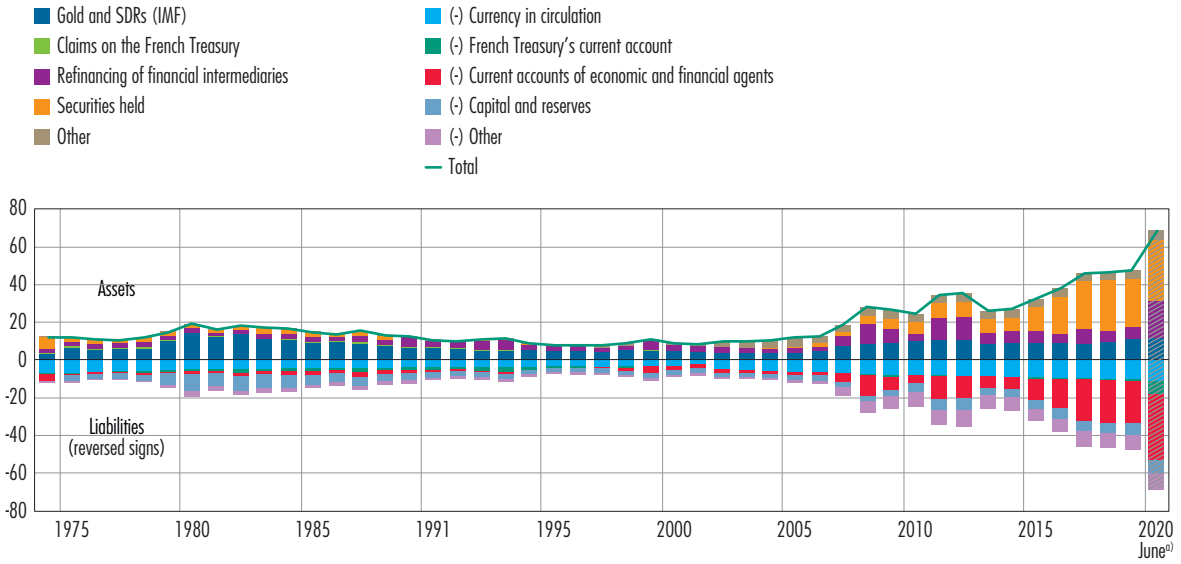
Refinancing operations and asset purchases contribute to balance sheet growth and affect interest rates

Central banks have a balance sheet with a very specific structure (see items mentioned in Chart 4). Assets consist mainly of the central bank's loans to credit institutions, known as refinancing operations, the central bank's securities portfolio, and the gold and foreign currency holdings that make up the nation's foreign reserves. Liabilities consist mainly of currency in circulation and banks' current accounts with the central bank. These current accounts consist of several instruments: minimum reserves,[7] excess reserves, and deposit facilities.[8]

Through its monetary policy, the central bank influences the creation of money by credit institutions.[9] Before the introduction of unconventional monetary policy measures, the Banque de France's refinancing operations for banks (see Chart 4, item "Refinancing of financial intermediaries") were the main instrument for steering interest rates. By lowering the refinancing rate, the central bank allows banks to balance their liquidity needs at a lower cost, thus helping the distribution of new loans. As the latter correspond to new deposits, monetary policy affects the money supply and its aggregates – which is reflected in the symmetry of the relationship between money and its counterparts. Under quantitative easing (QE) with excess reserves, however, the money multiplier falls (and there is a disconnect between the size of the central bank's balance sheet and monetary aggregates).

With the introduction of unconventional monetary policy measures, aimed at preventing deflationary risks and a contraction of credit supply, asset purchase programmes developed (see Chart 4, item "Securities held").

C4 Simplified balance sheet of the Banque de France between 1974 and June 2020
(% of GDP)



a) Based on GDP estimated in June.
Sources: Banque de France, INSEE.

7 Mandatory deposits by financial institutions with the central bank, representing a fixed proportion of their customers' deposits.
8 Standing facility, granted at the request of institutions, to withdraw liquidity through overnight deposits.
9 For a recent study of the relationship between unconventional monetary policies, money creation and inflation, see Bussière, Pfister and Sahuc (2020).

Representing an increasing share of the central bank's balance sheet since 2007, these purchases lower long-term interest rates in the financial markets. Asset purchase programmes have supplemented traditional refinancing operations, which primarily affect very short-term rates. These programmes have resulted in a net expansion of the balance sheet – from the years of the financial crisis, 2007 and 2008, and the euro area sovereign debt crisis, in 2011. From less than EUR 50 billion in 2007 (2.5% of GDP), the portfolio resulting from asset purchases increased steadily to around EUR 150 billion at the end of 2014 (7% of GDP) and then accelerated sharply to almost EUR 740 billion in June 2020, or 32% of GDP (see Chart 4). In contrast, the volumes of refinancing operations for credit institutions remained stable at around EUR 200 billion from 2008 until the beginning of 2020, before increasing during the Covid-19 crisis. On the liabilities side, bank and government deposits have risen from nearly EUR 220 billion in 2008 to around EUR 970 billion in early 2020, or 40% of GDP.

The expansion of the central bank's balance sheet following the implementation of exceptional monetary policy measures is proportionate to the prevailing circumstances

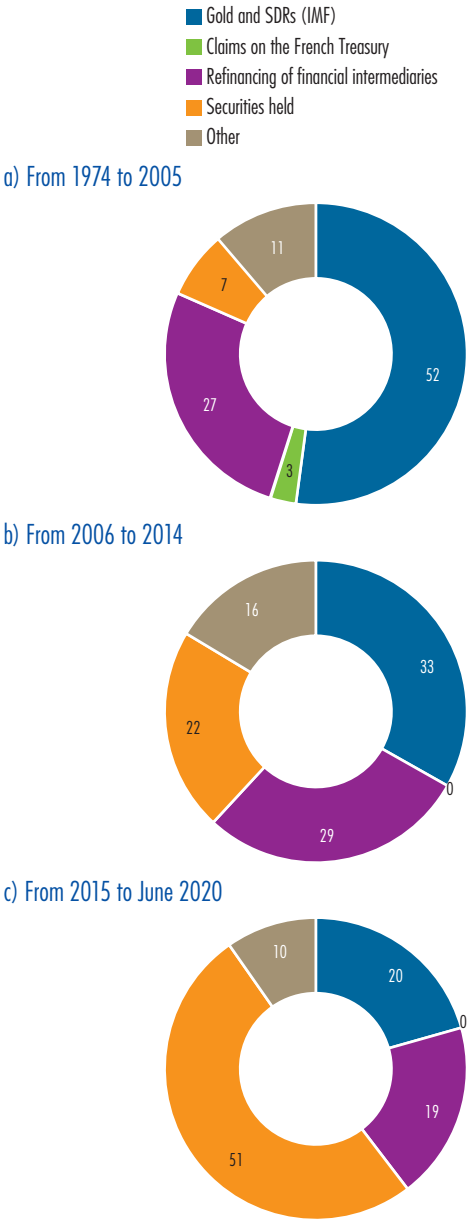
From a long-term perspective, and as illustrated in the previous charts, the extensive use by central banks of their monetary policy tools has had clear consequences for the size of their balance sheets.

The expansion of the Eurosystem's balance sheet has thus been much faster than GDP growth: its share of GDP increased by 36 percentage points between 2008 and 2018. However, when put in perspective with the development of the financial sector as a whole, the increase in size of the Eurosystem balance sheet seems relatively secondary in importance over the past decade, (Levy-Garboua, Mouriaux and Sabatini, 2020). Indeed, financial sector growth since 2007 has been driven mainly by the non-bank financial sector.[10]

Although a central bank's balance sheet shows phases of sustained growth and structural change, this reflects above all the unique ability of central banks to respond to economic and financial shocks, very quickly and massively when necessary, by implementing stabilising

C5 Simplified structure of the Banque de France's assets

(% of the total balance sheet, average over the period)



Source: Banque de France.

10 The non-bank financial sector includes non-monetary collective investment undertakings, other financial intermediaries, captive institutions and non-institutional lenders, financial auxiliaries, insurance companies and pension funds.

actions. For instance, after the end of the monetary system established by the Bretton Woods agreements, the balance sheet of the Banque de France rose from EUR 28 billion in 1975 to EUR 117 billion in 1984. This expansion was primarily due to the increase in reserve assets, a precautionary buffer that had to be built up and mobilised due to the monetary instability that France was facing as a medium-sized advanced economy that was increasingly open to the world. Changes in the value of currencies – notably the FRF-USD and FRF-DEM pairs – also determined the changes in balance sheet size. The decision to anchor the currency in a European structure in the mid-1980s opened up a period of balance sheet stability (at an average of EUR 115 billion between 1984 and 1999), leading to the creation of the euro. This was followed by a gradual increase until the crisis of 2007 – largely reflecting the growth in the economy's need for financing – at which point the overall balance sheet total expanded significantly, at an average annual rate of 11%, from around 350 billion to almost 1.6 trillion in June 2020 (see Chart 5). This time it was not to support the demand for financing, but to prevent the risks of a credit crunch.

Measured against the size of the economy, the expansion of the Banque de France's balance sheet occurred in ever shorter increments; the balance sheet now stands at 68.2% of GDP, compared with an average of 13.2% over the very long period from 1949 to 2006. During these 57 years, fluctuations around the mean are mainly attributable to the different inflation regimes, with the balance sheet growing less quickly than GDP.

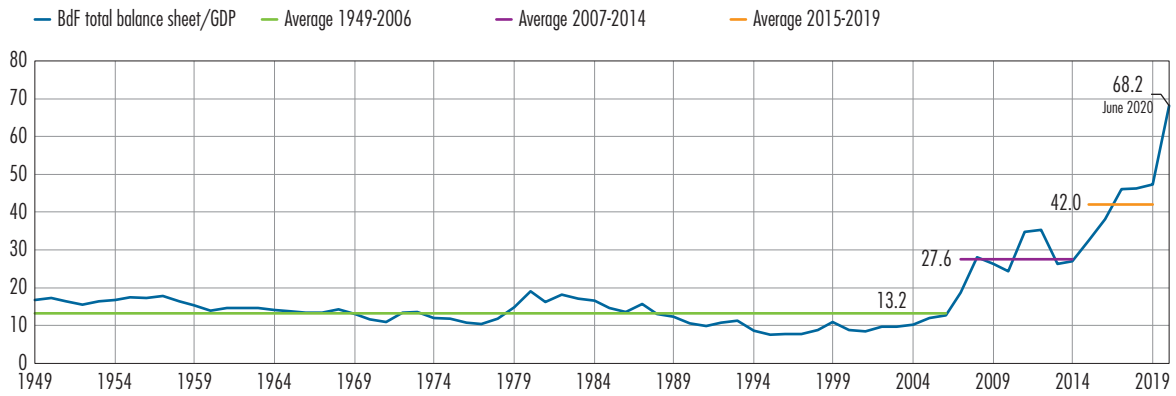
Over the period 2007-14, characterised by contained inflation and the implementation of a post-crisis recovery plan in 2008, the size of the Banque de France's balance sheet relative to GDP reached 27.6%. It increased to 42.0% over the period 2015-19, driven by the implementation of the asset purchase programmes (see Chart 6).

The Eurosystem's balance sheet has developed in a qualitatively similar way to that of the Banque de France since 2008 (see Chart 7).

The unconventional monetary policy measures implemented in 2015 (we do not consider here earlier operations, such as the VLTROs[12] of 2011, the launch of the OMT[13] in 2012 and the TLTROs[14] in 2014) led to a near doubling of the size of the Banque de France's balance sheet, to 42% of GDP on average by 2019. The Covid-19 crisis caused it to rise to 68% in 2020. The expansion of the Eurosystem's balance sheet and, within it, that of the Banque de France since 2007, reflects the implementation of an active monetary policy.

C6 Ratio of the Banque de France's total balance sheet to nominal GDP, since 1949

(%)

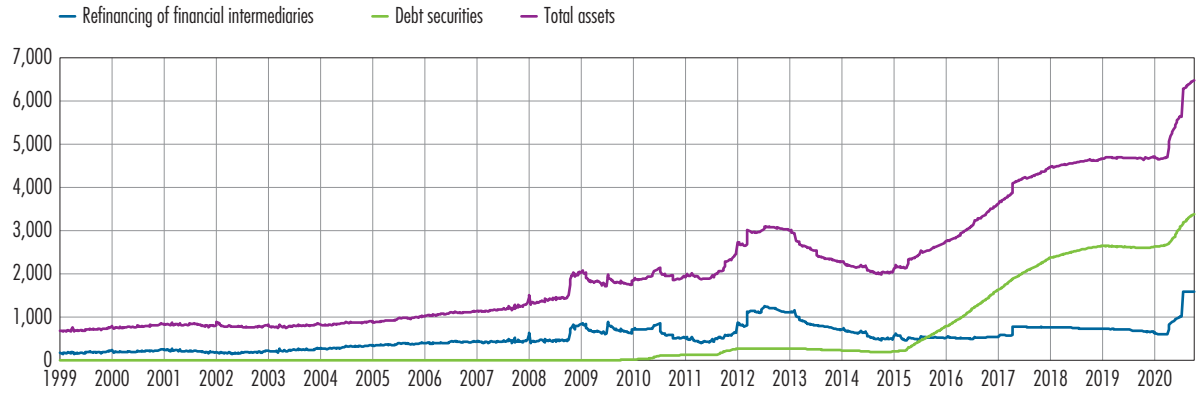


Sources: Banque de France, INSEE and author's calculations.

11 Based on INSEE's estimate of second quarter GDP in October 2020.
12 Very long-term refinancing operations.
13 Outright monetary transactions.
14 Targeted longer-term refinancing operations.

C7 Eurosystem balance sheet assets between 1999 and 2020

(EUR billions)



Source: ECB.

The Eurosystem decided to launch a large-scale asset purchase programme (APP) in 2015, buying securities initially held by credit institutions. The change in the magnitude of the volume of debt securities held by the Eurosystem illustrates the scale of the programme. The asset purchases are accompanied by targeted long-term refinancing operations: these are Eurosystem loans, with a maturity of 4 years for the TLTRO II and 3 years for the TLTRO III, offered to banks granting loans to companies. The interest rate of the TLTROs and their allocation rules are determined in such a way as to maximise the incentive for banks to lend to companies and households. Borrowing banks therefore have an incentive to lend in order to obtain the most favourable interest rates from the TLTROs. These refinancing operations for credit institutions foster lending to businesses and households with favourable terms.

3 The counterparts of money provide information on changes in the aggregates

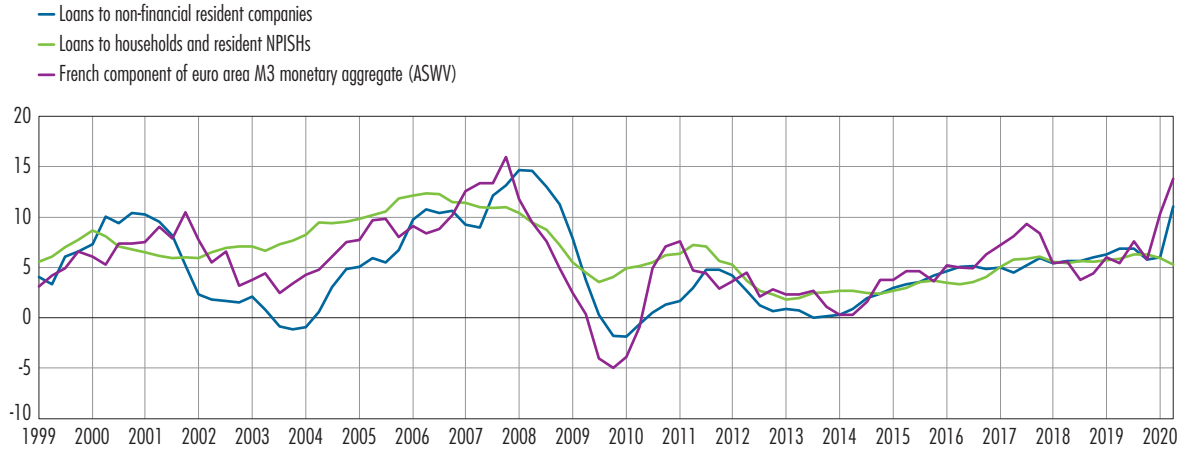
While the analysis of the difference between changes in money aggregates and an "ideal" rule – which is deemed to correspond to the price stability objective – is no longer used today, the complete analysis of the monetary balance sheet, i.e. money on the one hand and its counterparts, i.e. lending and the external counterpart on the other (see Chart 2), makes it possible to address other questions.

Firstly, developments in money and credit make it possible, in particular, to assess transitory shocks in a long-term perspective and to avoid over-reactions that could be caused by relying solely on the analysis of short-term economic and financial indicators taken in isolation. The correlation between the growth of M3 and the growth of lending to companies and households in France is therefore particularly visible over the medium term (see Chart 8). The deviations that occur within a short period indicate the timing and magnitude of the shocks.

Second, the transmission of monetary policy can be observed by regularly analysing how monetary instruments within aggregates substitute each other (from overnight deposits to time accounts, short-term negotiable debt securities, etc.) – see Chart 9. A shift from non-interest-bearing overnight deposits to "quasi-money" investments may reflect, as a weak signal, a return of confidence in economic growth and the revival of inflation expectations. Indeed, since overnight deposits offer lower returns and are less risky, substitutions between monetary instruments by households and businesses can provide information on the degree of risk aversion of economic agents and corroborate assessments based on market indicators or surveys. Naturally, this analysis should always be placed in the broader context provided by other indicators. For example, the strong acceleration in aggregates such as M3 in the wake of the Covid crisis is not solely due to monetary policy: it is to a great extent the result of factors that are not directly monetary and are at least partly temporary (the effect of the lockdown on household spending, and of state-guaranteed loans on the cash position of companies, etc.). In this case,

C8 Growth rate of the French component of M3 and of loans to the private sector in France between 1999 and 2020

(%)



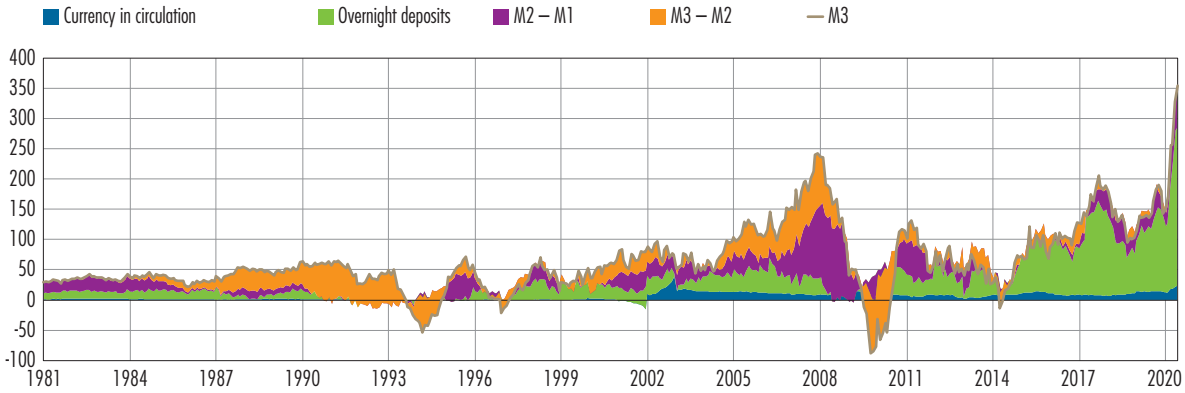
Source: Banque de France.
Notes: ASWV, adjusted for seasonal and working-day variations; NPISHs, non-profit institutions serving households. The French component of the monetary aggregate M3 excludes from the broad aggregate M3 the coins and banknotes that are allocated according to the share of each national central bank of the Eurosystem in the capital key of the ECB, but includes the balance of gross monetary liabilities and assets vis-à-vis the rest of the euro area.

without other data explaining the nature of the "Covid shock", changes in M3 cannot be interpreted correctly. But once put into context, it enables us to place the magnitude of the shock and its implications for the holding of money, in a long-term perspective.

The analysis of the counterparts of money can help in the analysis of credit developments when, for example, the issue of monetary policy transmission arises (see Drumetz, Pfister and Sahuc, 2015). The bank lending channel is a key transmission channel that relies on (i) information asymmetries in financial markets as well as the specific role banks play in the financial system and (ii) financial frictions, including imperfect substitutability between bank loans and securities, as a source of financing for both banks and the private sector as a whole. But the assessment of the role of the "bank lending channel" in the increase of investment and consumption cannot be based on monetary statistics alone. Indeed, monetary policy, via bank credit, will have a greater impact on the spending of small firms and households, which are more dependent on financial intermediaries, than on large firms, which

C9 Components of France's M3 aggregate

(EUR billions, 12M cumulative flows)



Source: Banque de France.

have direct access to capital markets, without having to rely on banks. Here too, a combination of monetary analysis and use of other data sources is needed.

Ultimately, taken in isolation, money aggregates appear less responsive and forward-looking than signals derived from market prices, and less targeted than granular statistics or surveys specific to the behaviour of economic agents. They also appear to be less effective than models in assessing turnarounds or contagion phenomena. Nevertheless, they offer the advantages of a stable conceptual framework, a high degree of consistency, the existence of long series and the possibility of international comparisons between major currency areas. Consequently, while they are not intended to directly guide the decisions of central banks, they do help to ensure the consistency of the different analyses taken into account in the deliberations of the Governing Council. The conclusions of the review of the Eurosystem's monetary policy strategy should clarify their role with regard to monetary policy and financial stability issues in the medium term.

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