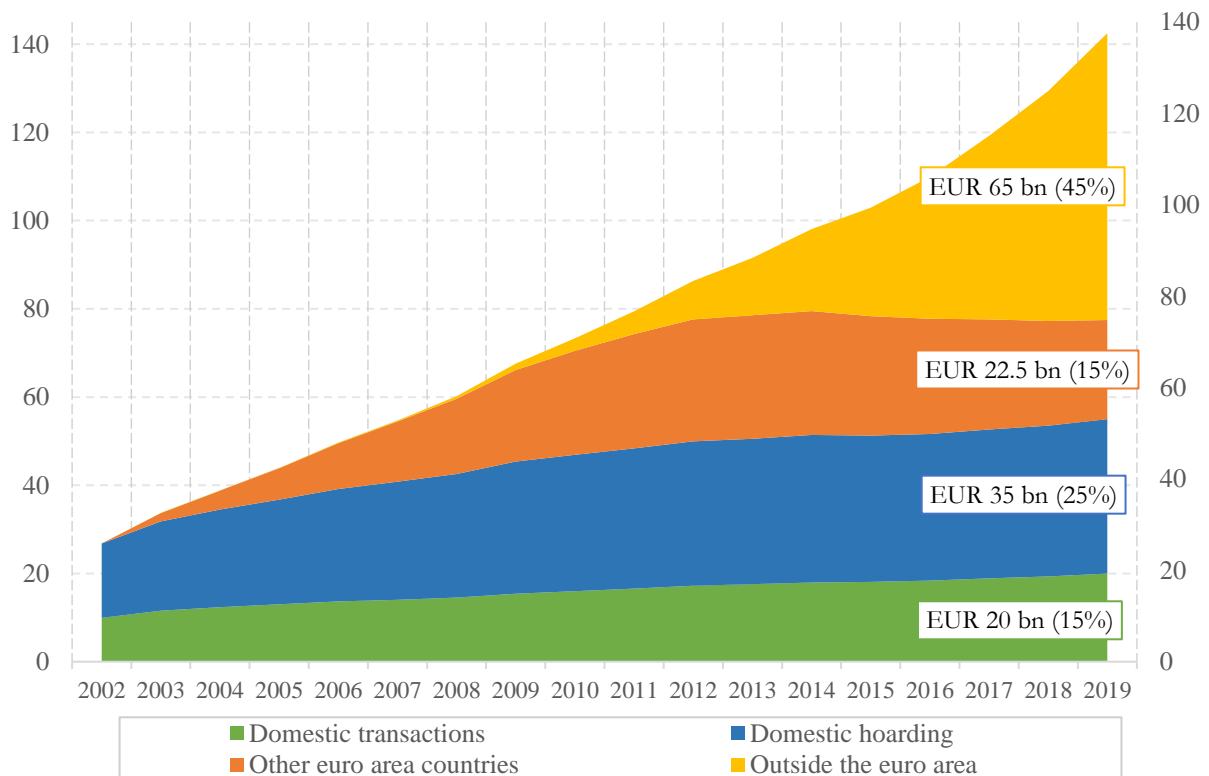


Banknote issuance is up while the velocity of their circulation is slowing

By Lucas Devigne, Laure Lalouette and Raymond de Pastor

The number of banknotes in circulation and the motives for holding them have evolved over the past 20 years. The increase in banknote issuance coincides with a significant rise in both domestic hoarding of cash reserves and foreign demand. The escalation in motives for hoarding, but not for transactional purposes, has slowed the velocity of banknote circulation.

Chart 1: Changes in the four motives for holding banknotes as estimated shares of total net issuance in value terms since 2002



Source: Authors' calculations based on [Seitz, Devigne and de Pastor \(2022\)](#).

Note: The figures show the amount in EUR billions (bn) and the percentage of total net cash issuance in value terms in 2002, 2011 and 2019.

Growing cash demand with evolving motives for holding cash reserves

Between 2002 and 2019 (see Chart 1), there was a steady rise in net cash issuance in France. This figure measures the difference between the number of banknotes issued by, and the number of banknotes returned to, the central bank. The flow of cash has increased since the creation of the euro area, where the single currency flows freely between 20 countries. While each central bank knows exactly how many banknotes have been issued in its jurisdiction, it cannot know where they go or who holds them and for which purposes.

In their paper, [Seitz, Devigne and de Pastor \(2022\)](#) apply an indirect approach, referred to as a “seasonal method”, to net cash issuance in France to estimate the respective shares of the different motives for holding cash (transaction, hoarding and foreign demand). The various shares can be determined on the basis of the degree of seasonality observed in the infra-annual flows of banknote issuances. For example, the seasonality associated with transactions is more pronounced. The authors found that in France: around 15% of net cash issuance in value terms were used at the end of 2019 for domestic transactions; 25% were used in domestic hoarding of cash reserves; and more than half (60%) of net issuance was held outside France, either in other euro area countries (15%) or outside the euro area (45%). Since 2002, the proportion used outside the euro area has steadily increased, while that used for domestic transactions has declined.

Net issuance increased in value terms for each of the holding motives (see Chart 1). Amounts used for transactional purposes have doubled since 2002 (from EUR 10 billion to EUR 20 billion), as have the amounts used for hoarding (up from EUR 17 billion to EUR 35 billion). As for foreign demand, flows to other euro area countries, which were almost non-existent at the beginning of the period, rose very sharply to EUR 28 billion in 2014, before tapering off to EUR 23 billion in 2019. Demand from outside the euro area only took off from 2010 onwards (EUR 5 billion in 2011) but then grew extremely rapidly to EUR 65 billion in 2019, overtaking demand from other euro area countries.

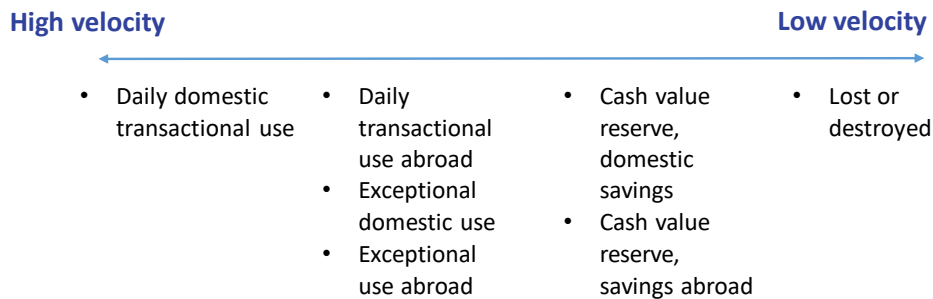
With declining cash demand for transactional motives, the velocity of banknote circulation is slowing

A banknote changes hands several times after it is issued, particularly when used to settle transactions, until an individual or a merchant deposits it in a commercial bank, crediting their bank account. The commercial bank then returns the banknote to the Banque de France, so that damaged notes can be withdrawn from circulation. Therefore, the velocity of banknote circulation is greater when it is used for transactional purposes than when it is hoarded or flows abroad (see Figure 1).

Therefore, changes in the motives for holding cash is likely to affect the average velocity of banknote circulation.

Figure 1: The velocity of banknote circulation depends on the motives for holding cash

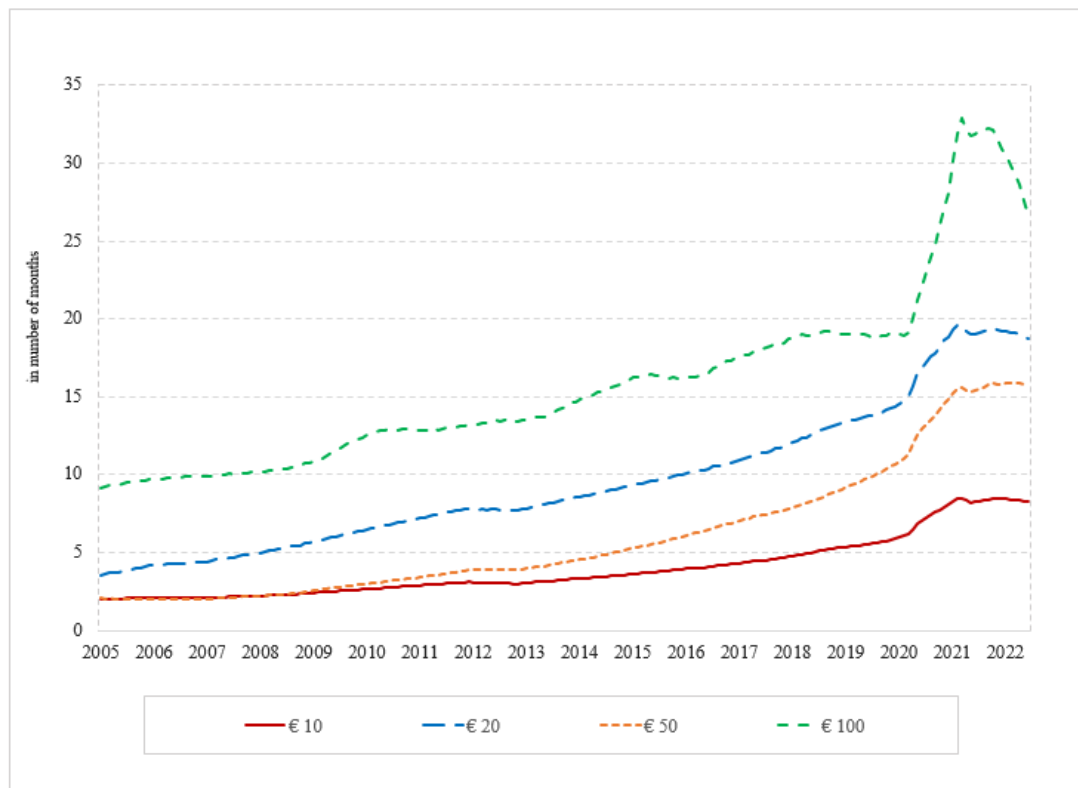
Banknotes circulate at different velocities



Source: Authors.

It is impossible to observe the number of times a banknote actually changes hands (i.e. the velocity of banknote circulation). In order to assess the velocity of its circulation, we measure the average number of months that elapse between a banknote being issued and being returned to the Banque de France or to authorised banknote sorting operatives in France (see Chart 2).

Chart 2: Banknote return time



Source: Banque de France and authors' calculations.

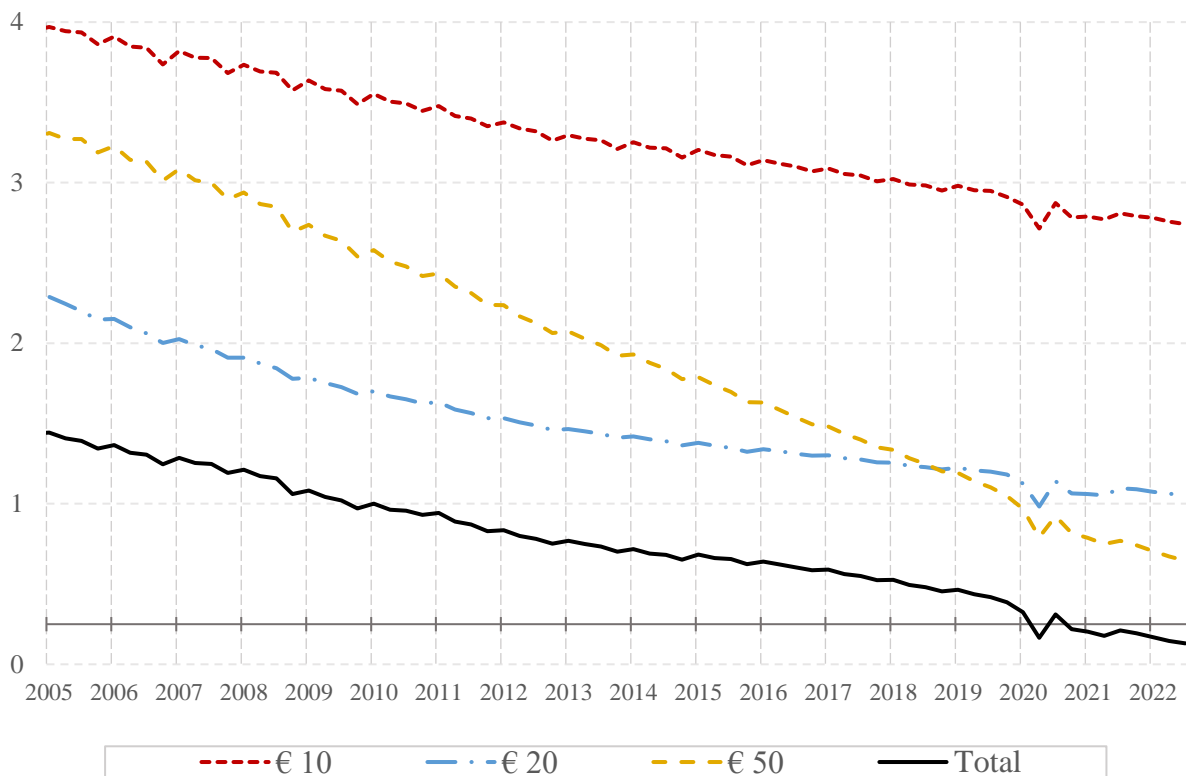
Notes: Changes in recirculation of banknotes by private operators are taken into account in the transfers. The €5, €200 and €500 denominations are not included as France is a net importer of these banknotes.

At the beginning of our time series in January 2005 (before that date, the introduction of the euro made calculating a relevant indicator impossible), €10 and €50 banknotes were returned to the Banque de France every two months on average, and €20 banknotes were returned every four months. In 2022, €20 and €50 banknotes were returned only every 16 and 19 months, respectively. The time taken to return these two denominations thus increased fivefold and more than sevenfold, respectively, between 2005 and 2022. The velocity of the €10 banknote, which is mainly used for transactional purposes, has also reduced and has a return time of eight months. This represents a fourfold increase in its return time between 2005 and 2022, but this is still less than for the other two common denominations (€20 and €50), which are more widely used.

For all denominations, the velocity slowed even more significantly during the health crisis in 2020, as free movement, and therefore transactions, was restricted. At the end of the study period, the greater opportunity cost of holding cash resulting from the increase in the ECB's key interest rates from mid-2022, contributed to the sudden drop in the return time, particularly for the €100 note, which saw a less than threefold increase between 2005 and 2022.

It is important to note that other factors, such as the streamlining of the cash logistics chain (sorting, transport and storage capacities, for example) can also impact the time taken to return banknotes.

Another measure of the velocity of banknote circulation, following a macroeconomic rather than a logistical approach, is household consumption payable in cash as a proportion of net cash issuance (see Chart 3).

Chart 3: Indicator of the velocity of banknote circulation

Source: INSEE and Banque de France; authors' calculations.

Note: Quarterly ratio of private household consumption payable in cash (consumption excluding spending on housing, energy, communication, etc.) to net issuance of banknotes, in value terms (in log form).

For each banknote denomination, there is a downward trend in velocity: the growth in household consumption payable in cash is slower than that of net issuance of banknotes. These findings confirm the conclusions drawn from the increase in the time taken to return banknotes: a sharp fall in velocity for the €50 banknote, a pronounced but more limited decline for the €20 banknote and a more modest reduction for the €10 banknote.

The Banque de France's response to the slowdown in the velocity of banknote circulation

For the Banque de France, understanding the dynamics of banknote circulation is crucial, as one of its missions is to maintain public confidence in cash. Seen from this perspective, the increase in return time is a point of attention. Banknote supply (manufacture and delivery) must adapt to the demand of stakeholders, such as banks, cash-in-transit companies and retailers, which in turn respond to the demand of their customers. For example, the €50 banknote, which accounted for 16% of Banque de France issuance in 2010, has become a sought-after denomination (accounting for 30% of issuance in early 2023), for both transactional and hoarding purposes.

Furthermore, banknotes deteriorate with use. In order to maintain their high quality and to take appropriate action, a sound understanding of the changes in the velocity of banknote

circulation is essential as it reflects the various motives for holding cash and therefore the different ways in which banknotes are used.

Overall, it is worth taking these developments into account in the [national strategy](#) for cash (the so-called National Cash Management Policy).