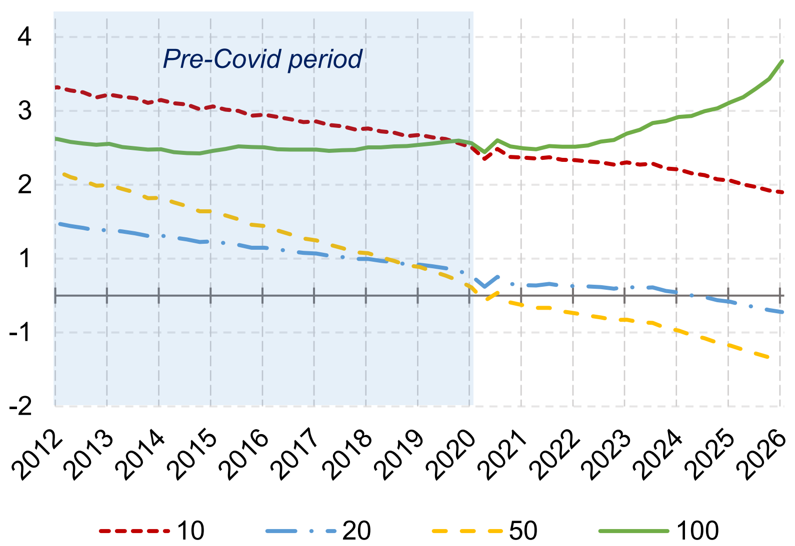
The impact of recent shocks on banknote circulation in France

By Raymond de Pastor, Victor Frangin, Etienne Gruner, Rémi Odry Habab

Despite rapid growth in digital payments, demand for banknotes remains strong in France and Europe. It is being driven by three factors: transactional use, which is declining, precautionary holdings and demand from outside the euro area. Recent shocks may have altered the respective contributions of these factors to total demand. Examining the velocity of circulation of individual banknote denominations provides insights into these effects.

Chart 1: Macroeconomic indicator of banknote velocity in France, by denomination



Sources: INSEE, Banque de France.

Note: The values on the y-axis are logarithms of the ratio between the value of consumer purchases paid for in cash – all denominations combined – and the value of cumulative net banknote issuance for each denomination. The values should be interpreted as changes.

Banknote velocity, defined as the number of times a banknote changes hands or is used in payments over a given period, is a useful indicator of shifts in the nature of banknote demand. Velocity is low for hoarded banknotes (those kept as savings), high for those used in everyday transactions, and intermediate for those circulating outside the euro area (Devigne, De Pastor and Lalouette, 2023). In the absence of direct data, velocities for each denomination are proxied using alternative indicators. The analysis reveals contrasting trends over the past five years, which have had practical implications for the Banque de France’s cash activities, leading it to adapt its approach.

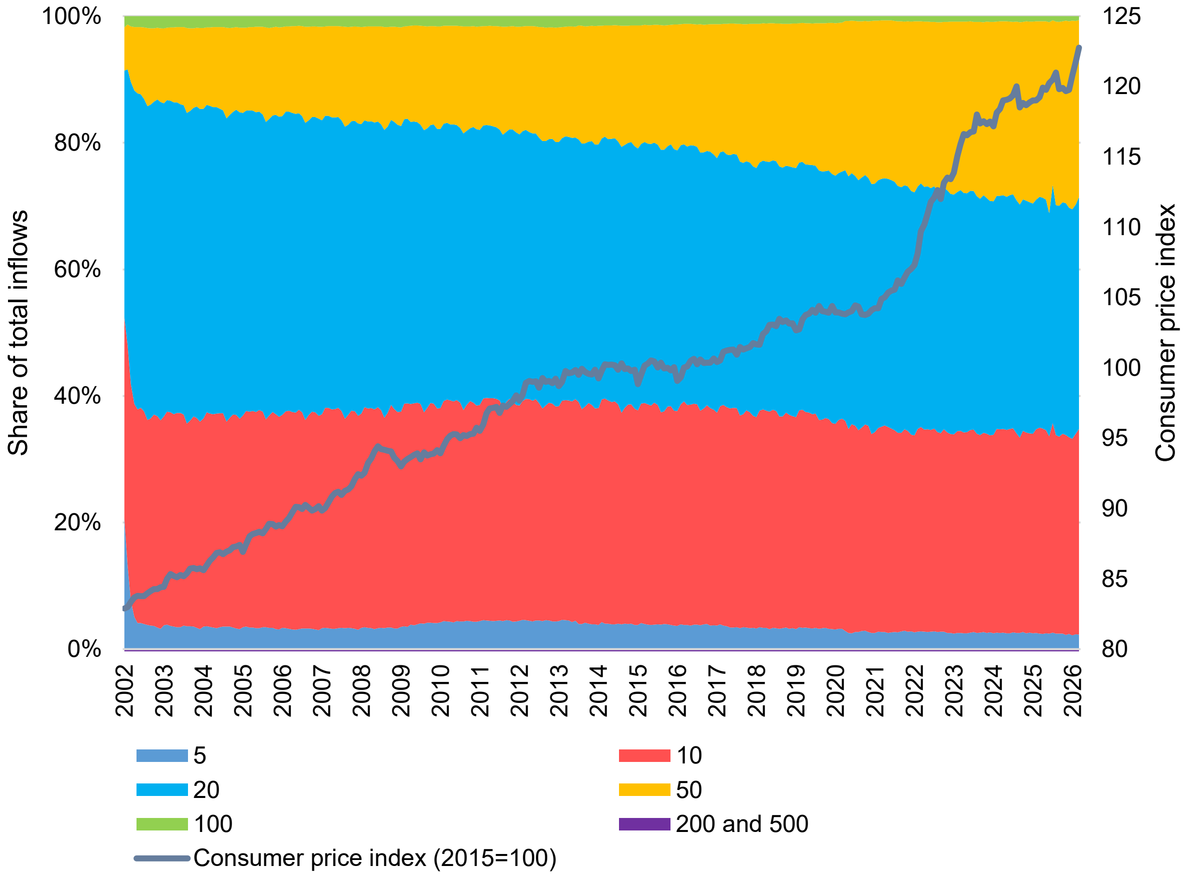
Changes in hoarding behaviour appear to be limited to specific denominations

Since 2002, the distribution of gross banknote inflows at cash cycle exchange points (Banque de France cash centres and cash-in-transit firms’ vaults) has remained stable both for the smallest denominations (EUR 5 and

EUR 10, around 5% and 35% of inflows respectively) and the largest (EUR 100, EUR 200 and EUR 500, 2% overall) (see Chart 1). This suggests that recent shocks have had only a limited impact on holding behaviour for these denominations.

In contrast, the analysis points to a gradual shift from EUR 20 to EUR 50 banknotes, linked notably to rising prices, larger average withdrawals and an increasing share of EUR 50 notes in automated teller machines (ATMs; see Chart 2). This could suggest a shift in the role of the EUR 50, with the notes becoming increasingly used in transactions – a trend that has been reinforced by recent crises.

Chart 2: Breakdown of banknote inflows at cash cycle exchange points in France (in number of banknotes)



Sources: INSEE for the consumer price index, Banque de France, authors' calculations.

Logistics approach: increase in the average length of circulation of banknotes

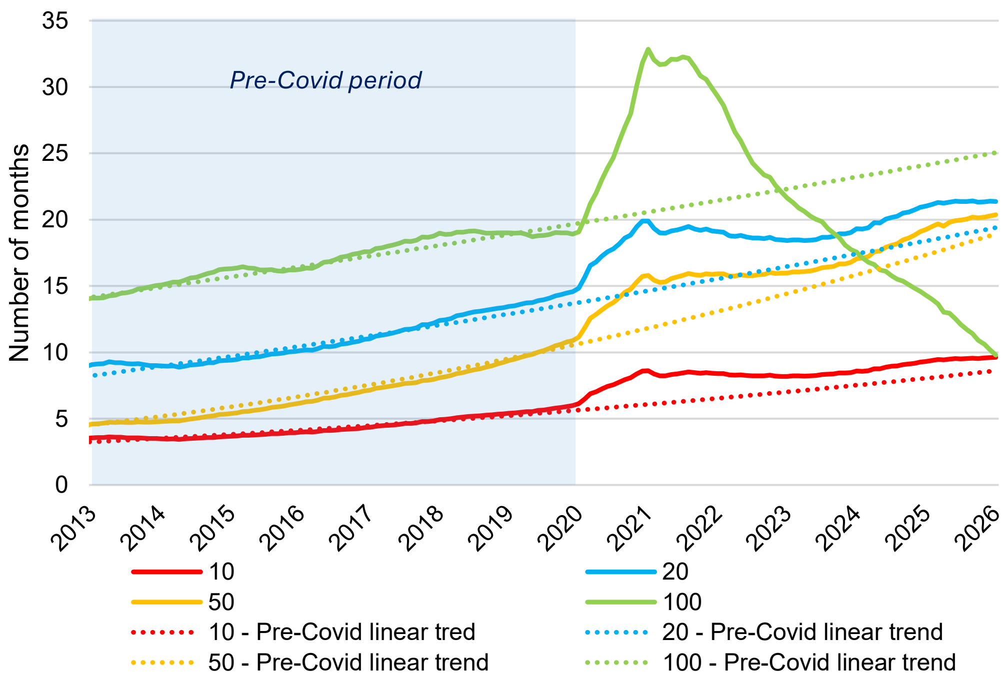
Circulation velocity can be estimated using Banque de France data on production and distribution flows. The method consists in comparing, over a given period, the number of banknotes returned to cash cycle exchange points, including those recirculated by private-sector operators, with the total stock of banknotes in circulation. This "logistics" indicator thus measures the average number of months a banknote remains in the economy before returning to an exchange point.

The indicator provides information on changes in the motives for holding different denominations: small and medium denominations (SMDs, up to EUR 50) are mainly used for transactions, whereas large denominations (LDs, EUR 100 and above) are mainly used for hoarding purposes (Seitz, Devigne and de Pastor, 2022). The results are presented in Chart 3.

Over the long term, the "logistics" indicator shows that the average length of circulation has increased. This reflects the growing digitalisation of payments and a shift away from transactional use towards hoarding (both domestically and outside the euro area).

With the onset of the Covid crisis, the length of circulation of SMDs increased sharply, reflecting higher precautionary saving and the fall in consumer spending linked to temporary shop closures, travel restrictions and the economic downturn. After the crisis, circulation times quickly returned towards their pre-Covid trend, but remained slightly above their long-term average.

Chart 3: Average number of months before banknotes are returned to cash cycle exchange points, by denomination



Sources: Banque de France and authors' calculations.

Circulation of EUR 100 banknotes has followed a somewhat atypical trajectory: their average length of circulation peaked in 2021 then fell sharply and has not yet returned to its long-term upward trend. One possible explanation is a massive return of EUR 100 notes from abroad – potentially due to market saturation and a shift towards EUR 200 notes – combined with lower remittance flows. This theory is supported by the fall in net banknote exports (measured as exports minus imports) since early 2022.

The macroeconomic approach confirms these results

An alternative approach is to compare the value of consumer cash spending with the stock of banknotes in circulation (all denominations combined). For a given level of consumer spending, a rise in the stock of banknotes indicates a reduction in the frequency of use of banknotes for transactional purposes. This method incorporates the effects of prices and consumption volumes: the more prices and volumes increase, the more transactional demand for banknotes should rise. Deviations from this trend reflect changes in non-transactional use.

The macroeconomic indicator (see Chart 1) formalises this approach. It is based on the logarithm of the ratio between consumer spending in cash (estimated using the ECB SPACE survey) and cumulative net banknote issuance. The indicator is interpreted as a change, not a level.

The results confirm the downward trend in banknote velocity. When price and volume effects are incorporated, SMDs continue to follow their pre-Covid trend, with only a limited disruption during the Covid period. Conversely, the EUR 100 follows a positive exponential trend, confirming a specific shift in its use.

Operational responses by the Banque de France and the ECB to improve banknote quality

Given the high transactional use of certain denominations, and despite the rise in hoarding, the ECB and euro area national central banks decided to varnish the EUR 5, EUR 10 and EUR 20 banknotes to make them more durable. The EUR 50 banknote has not been varnished, even though it appears to circulate for shorter periods than the EUR 20; it is frequently withdrawn at ATMs but rarely used in till floats, circulates less intensively than the EUR 20 and is rapidly returned to exchange points, limiting wear and tear. No specific measures are envisaged for the EUR 100 and EUR 200 notes; the decline in the circulation of the EUR 100 since 2022 mainly reflects a temporary rise in imports (see above), while transactional use of the EUR 200 remains very limited in France.

EUR 5 banknotes are used frequently in transactions and sometimes cause supply difficulties for merchants. The notes are often kept in till stock to provide change, they are rarely returned to cash cycle exchange points and are sometimes in poor condition, despite their varnish. Three solutions are currently being considered:

- Discontinuing external recycling by cash-in-transit firms and banks and centralising recycling at the Banque de France to ensure worn notes are replaced with new ones. An experiment conducted in 2025 yielded positive results.
- Speeding up flows by encouraging merchants to return EUR 5 banknotes more regularly in exchange for better quality ones. An experiment is scheduled for 2026.
- Increasing the availability of EUR 5 at ATMs, where their share remains very low.