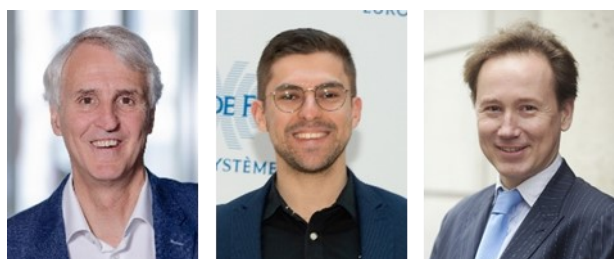


## The Determinants of Cash Holdings: The case of France



By Franz Seitz (Weiden Technical University of Applied Sciences), Lucas Devigne (Banque de France) and Raymond de Pastor (Banque de France)

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*JEL codes: C22, E41, E58.*

*The idea of the present note is to shed light on the different motives for holding cash in France<sup>1</sup>. For that purpose, we first establish cash demand equations to identify the determinants of cash holding and, in a second step, try to estimate the domestic transactions and hoarding shares as well as the foreign shares by means of seasonal methods. The cash demand equations reveal that different domestic and foreign motives for holding cash play a crucial role. The second part finds low and decreasing transaction balances involving a downward trend in the active circulation of cash in France. In contrast, cash hoardings as well as holdings outside the euro area increased. There is also a net demand from countries within the euro area. Interestingly, it seems that the two foreign parts are mainly driven by the small and medium denominations, at least in the last years.*

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<sup>1</sup> More details can be found in Seitz, Devigne & de Pastor (2022).

## The transactional and non-transactional motives for holding cash are present in France

To capture the different motives for holding cash, we estimate demand functions for the cumulated net issues of banknotes or cash of the Banque de France.<sup>2</sup> As these motives are fulfilled by the different denominations to different extents, it is implausible to assume that the variables and even the coefficients of the variables determining the demand for banknotes are the same for all denominations. For example, the transaction motive should be more important for small- and medium-value banknotes. By contrast, store of wealth considerations may dominate the demand for high-value banknotes. At the same time, substitution effects may exist between banknotes of similar value. Therefore, we do not only focus on relationships for total banknotes, but additionally estimate three separate relations for small, medium and large denominations, respectively. Our preferred classifications are €5 - €20 for "small" notes, only €50 as the "medium" note and €100 - €500 for "large" notes. This classification scheme is chosen as the large notes are not distributed by ATMs in France, which primarily serve to "top up" transaction balances. Moreover, the €50 banknote may probably be the smallest denomination that is used (amongst other things) for hoarding purposes.<sup>3</sup>

With respect to the optimal determinants of cash use, our findings are:

- First, the transactions motive seems to be of little importance for the large denominations. Besides house prices, no other transactions variable appears in the equations.
- Second, in contrast to total cash issues, opportunity costs in the form of interest rates do not play a role in explaining the evolution of the denominational groups, given the relevance of the other motives for holding cash.
- Third, foreign demand from outside the euro area is concentrated at the small and large denominations. It explains the increasing trend of the first. For the latter, this foreign effect seems to be present only until 2011.
- Fourth, France seems to be a net importer of large banknotes within the euro area (at least of the €200 and €500 banknote), but a net exporter of small as well as large banknotes to countries outside the euro area, a somewhat puzzling result.
- Fifth, access to cash is important for the small and medium bills distributed via ATMs. Consequently, a reduction in the number of ATMs that is observed in France in recent years may have resulted in a supply-driven forced decline in cash demand in France. However, this declining trend might also be due to the reduced use of cash for transaction purposes.
- Sixth, alternative cashless payment media exert a negative influence on the use of all three denominational groups.
- Seventh, uncertainty and crisis-related as well as precautionary motives are present with the large and medium denominations. The financial market crisis of 2008 increased the demand for both groups, whereas geopolitical risk<sup>4</sup> only affects the medium denomination.
- And finally, the unemployment rate as an indicator of the shadow economy stimulates the demand for small and large banknotes.

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<sup>2</sup> French overseas territories (see Sèze et al., 2011) are included in these net issues. An alternative would be to analyze the two parts of the net issues, specifically inpayments and outpayments of banknotes at the central bank, see on that topic, e. g., Deutsche Bundesbank (2009).

<sup>3</sup> By "hoarding", we mean cash not used for immediate domestic transactions (active circulation in the country of issuance). In France and other euro area countries, small denominations are hardly used for these hoarding purposes. In more unstable countries with high inflation rates, this might differ. There, €10 and €20 banknotes may very well be considered as large banknotes.

<sup>4</sup> This index (see Caldara & Iacoviello, 2019) is based on newspaper articles covering geopolitical tensions like the 9/11 terrorist attacks or the 2003 Iraq invasion. Since 2012, this index is trending upwards.

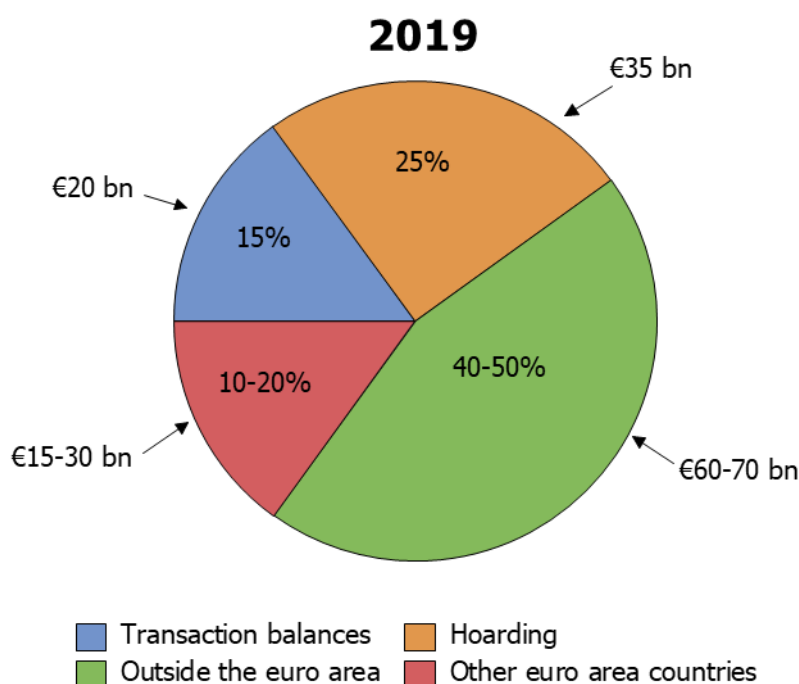
The cash demand equations reveal that transactions as well as non-transactional motives for holding cash are present in the case of France, both domestically as well as abroad. Therefore, in a next step, we try to estimate these shares.

### The estimation of the different motives for holding cash in France

Different variants of the so-called "seasonal method"<sup>5</sup> are applied to estimate the four shares: domestic transaction and non-transaction share (the latter named "hoarding" in figure 1) and the two parts of foreign holdings (outside and within the euro area). This seasonal approach is one of the indirect methods which make use of different characteristics of domestic transactions balances compared to cash balances held for other purposes (at home and abroad). In our case, we concentrate on the seasonal pattern of banknotes.

In 2019, only around 15 % of the cumulated net issues are used for domestic transactions. This number is lower than that in Politronacci et al. (2017) for 2015 if the shadow economy is included (around 20 %), and also lower than the euro area average of around 20 % (Zamora-Pérez, 2021). Around 25 % are used for store of value purposes (hoarding) within France, i. e., the cash holdings within France amount to 40 %. Around 60 % are used outside France, either in other euro area countries (i. e., France is a net exporter of banknotes within the euro area) or outside the euro area. Deutsche Bundesbank (2018) estimates that almost 50 % of its net issues are outside the euro area (about €350 bn.). Consequently, the vast majority of the 40 % of total euro banknotes held outside the euro area, about €500 bn. (Zamora-Pérez, 2021), stem from the Deutsche Bundesbank and the Banque de France.

Figure 1: Different motives for holding cash: The case of France 2019



Source: own calculations. Notes: rounded figures.

<sup>5</sup> See Seitz, Devigne & de Pastor (2022) for more details about the method.

One of the seasonal models can in principle also be applied to individual denominations and its foreign holdings. In the case of France, it works for every denomination except the €50 banknote due to strange seasonal fluctuations which are probably related to the dual (transaction and non-transaction) role of this denomination. For the other denominations the respective amounts outside the euro area in 2019 are 8 bn. (€10), 30 bn. (€20), 7 bn. (€100), -0.6 bn. (€5), -1.6 bn. (€200) and -12 bn. (€500). The negative signs for €5, €200 and €500 mean that France is not exporting, but importing these banknotes from countries outside the euro area (negative net shipments). This is consistent with the fact that France is also a net importer of these denomination within the euro area for years. From the estimates of the total holdings outside the euro area and the estimates for the different denominations, we can infer that about €30-35 bn. of the €50 banknote are abroad.

## Wrap-up

Our results have repercussions on cash logistics, cash distribution, withdrawal and depositing behaviour which occur probably less intensively due to the increasing "inactive" part of cash. All this has already been taken into account by the Banque de France, commercial banks and retailers as well as cash in transit firms. It may build the ground for new cooperation, e. g., between banks and retailers, and new business models.

The Corona pandemic starting at the beginning of 2020 has once again proven the importance of cash. In the course of the crisis, cash holdings have increased worldwide (see, e. g., Ashworth & Goodhart, 2021, and Rösl & Seitz, 2022). Interestingly, this is not only true for large, but also for small denominations. The French annually cumulated net issues in 2020 increased by €16 billion. This value is 30 % higher as in 2019. The €50 banknote was the most impacted denomination as it grew by 16 % on an annual basis which again demonstrates the outstanding role of the €50 note in France. The large denominations decreased, but to a lower extent than in previous years. This illustrates the important impact of the pandemic on cash demand, essentially for precautionary and uncertainty reasons. No matter whether the corona crisis has only led to a temporary or a permanent change in the relationships, it has shown the significant role of cash in such a situation (this is also true in the context of the current war in Ukraine).

Another important aspect is the significance of cash demand for transaction purposes. If cash is no longer demanded for transaction motives, what will be the effect on the non-transactional demand for cash? This also raises two other questions: the first is about the payment preferences of economic agents in times of further and increasing digitalization of payments. The second relates to the existence of a lower threshold of cash used for transaction purposes below which it is no longer profitable for banks to guarantee access to cash and for retailers to accept cash. All these questions refer to a situation where cash is no longer used for transaction purposes. Is this a sustainable and desirable development for society?

Against the background of steeply rising inflation rates and also increasing interest rates, the question is, how will cash demand react. This depends on how the motives for holding cash are influenced. If inflation only increases temporarily and only to one-digit numbers, the repercussions on cash demand will probably be restrained. If the process lasts longer, the transactional demand will increase and will need higher denominations than currently. In the econometric estimates, we found no statistical significant influence of interest rates on the three denominations. Therefore, if there is no structural break, and given that it was the foreign and hoarding parts which drove the real net cash issues in France in the last decade, the effects of increased nominal interest rates should be subdued. These considerations are left to future research. ■

## References

- Ashworth, J. & C.A.E. Goodhart (2021), The great covid cash surge – Digitalisation hasn't dented cash's safe haven role, CEPR Discussion Paper DP16618, October.
- Caldara, D. & M. Iacoviello (2019), Measuring geopolitical risk, Board of Governors of the Federal Reserve System, International Finance Discussion Papers, December.
- Deutsche Bundesbank (2009), The development and determinants of euro currency in circulation in Germany, Monthly Report, June, 49-62.
- Deutsche Bundesbank (2018), The demand for Euro banknotes at the Bundesbank. Monthly Report March 2018, 37-51.
- Politronacci, E., E. Ninlías, E. Palazzeschi & G. Torre (2017), The demand for cash in France: review of evidence, in: Deutsche Bundesbank (ed.), War on cash: Is there a future for cash?. International Cash Conference 2017, conference volume, Frankfurt, 92-146.
- Rösl, G. & F. Seitz (2022), Cash demand in times of crisis, Journal of Payments Strategy & Systems, Vol. 16(2), 107-119.
- Seitz, F., L. Devigne & R. de Pastor (2022), Different motives for holding cash in France: An analysis of the net cash issues of the Banque de France. Banque de France, Working Paper Series No. 888.
- Sèze, N. de, A. Marchand & R. Bardy (2011), French overseas territories and the euro, Banque de France, Quarterly Selection of Articles, No. 24, Winter 2011-2012, 101-124.
- Zamora-Pérez, A. (2021), The paradox of banknotes: Understanding the demand for cash beyond transactional use, European Central Bank, Economic Bulletin 2/2021, 121-137.

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