



## AGE Platform Europe feedback on item 5 – Calibration of holding limits presented at the 11<sup>th</sup> ERPB technical meeting on 11/04/2024

AGE Platform Europe (AGE) welcomes the opportunity to contribute feedback on the first building block: **Usability and ecosystem**. In our view the calibration of holding limits will impact the usability and thus acceptance of the digital euro by individual users. Below are our feedback on the calibration of the overall upper holding limit and of the offline holding limit.

### Calibration of the overall upper holding limit (online + offline)

- It might be difficult to assess the total amount stored in digital euro accounts at a given moment and to monitor how this fluctuates due to the fact that part of the digital euros holdings might be stored in phones/cards secured elements for offline use. So a methodology is needed. We understand that overall upper holding limits are envisaged for that purpose as well as to avoid excessive outflows of private money deposits from commercial bank accounts to digital euro accounts and help the Eurosystem maintain their liability within certain limits.
- While we have no issue with the principle of holding limits per se, we feel that the calibration of upper holding limits should seek to facilitate - rather than complicate – usability for individual users. A too low (or ‘zero’) upper limit would not work for individual users who will not activate the waterfall/reverse waterfall functionalities. This would make the offline option difficult to use and would require that individual users connect their digital euro to a commercial bank account. This would seriously reduce consumer choice and privacy which are two key features for individual users.
- In the first phase, the total holding limit could be set at the EU average monthly salary (+/- 3.200€). Then, based on the take-up rate and consumers feedback, the upper limit could be raised if the upper limit is perceived as insufficient by consumers, and indexed overtime.
- We welcome the fact that individual users will have the option to request that the waterfall function is activated as soon as their account reaches a lower amount than the total holding limit. This will give them - de facto - the right to apply a lower holding limit for their digital euro account if they so wish. But this option will not be available for individual users who will not activate the waterfall function: in their case the total holding limit will apply. Could it be foreseen to give all individual users the option to apply a lower holding limit above which they will be alerted that they have reached the maximum amount they wish to store on their digital account and need to take action to defund their digital euro account? This would ensure all individual users have the choice to lower their holding limit if they so wish.

- The speed at which merchants, businesses and public authorities will offer digital euro mobile and card payment options at POS and through e-commerce will also impact take-up by individual users. It will not be enough that intermediaries are ready on time.
- Finally the take-up rate will depend on the availability of nearby cash and digital euro service points where individual users will be able to request onboarding and easily fund/defund their digital euro account if they do not wish to connect their digital euro account to a commercial bank account or use the reverse waterfall/waterfall function. This could concern +/- 40% of the population who currently face financial exclusion in underserved areas.

### Calibration of the offline upper limit

- Similarly, we feel that the calibration of the offline holding could initially be set at the EU average weekly salary (+/- 800€). Then, based on the take-up rate of offline payments and consumers feedback, the upper limit of offline holdings could be revised if needed and indexed overtime.
- In our view the take-up rate of offline payment option will depend on the availability of nearby 'cash and digital euro service points' where individual users will be able to easily fund/defund their digital euro account and update their offline holding.
- The take-up of offline digital euro payments by merchants, businesses and public authorities is crucial. We would like to encourage merchants to initially ensure that at least one (or a few) cashiers are equipped with a POS adapted to accept offline digital euro payments (as they do for cash payments), and aim at ensuring that all their POS will be adapted to offline payments as soon as possible.
- Finally we feel that the calibration of the offline limit will also depend on the ability of merchants to offer cash funding/defunding options to offline individual users. If individual users can easily fund/defund their offline holding at local shops, they may use it more to benefit from the greater privacy of offline payments, and the calibration of the offline holding limit may need to be reviewed.

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## BEUC response to ERPB written procedure on digital euro following ERPB technical session of 11th April 2024

BEUC response should be considered as feedback both for the ERPB working group and the rulebook development group given the overlap of topics presented.

### Offline digital euro

BEUC welcomes the progress made on the offline solution which provides a strong added value from a consumer perspective. In particular, we welcome the work undertaken on a smartphone-independent solution covering both peer-to-peer payments and payments at the point of sale.

As regards peer to peer payments, there have been two technical solutions presented:

1. A bridging device where two cards can be inserted to allow a payment transaction between those cards.
2. Battery powered cards which allow for offline transactions between both cards without any additional device.

BEUC supports having further user research on both technical solutions to identify the most suitable one. Such research should carefully focus on the needs of consumers not using smartphones currently for different reasons. This includes notably the accessibility of such a solution:

- Is the display large enough for visually impaired people?
- Does the display allow for small instructions on next steps?

We consider that these challenges could be better addressed with a bridge device rather than with a card which provides very limited space for a display, size of buttons etc.

In terms of convenience, the card could be easily carried in the consumer's physical wallet. Open questions are: Would it be the same card as the payment card used for online payments? How do you need to exchange the battery, and can users do this themselves? The bridge device needs to be carried along, but we would expect it to be not much larger than a TAN generator. Could the TAN generator and the bridge device be offered as one device? Would a battery-powered card or the bridge device be able to show how many digital euros are stored on the card (this could help for budget management)?

The selected solution should be provided free of charge to consumers, but we recommend taking costs into account to prevent high costs when a replacement is needed (i.e. card/device not working anymore or being lost). In addition, it is important that the smartphone-independent solution becomes available at a similar time than the smartphone-based solution to prevent discrimination of more vulnerable groups and misconception of the digital euro project.

As regards the online reconciliation: After a certain number of offline transactions, the user needs to go online so that certain yet to be defined data elements could be checked to prevent double spending of digital euros.

For consumers, convenience increases with the number of transactions which can be made in a row. It allows matters where such an online reconciliation could be made, in particular for those not using online banking at home. Could the online reconciliation take place at a payment terminal at Point of sale or only at an ATM?

The choice of data elements is highly important from a privacy perspective and should thus be carefully considered. In view of future legislative developments, an online version where transaction data is not stored should not be ruled out at this stage by technological decisions. In this regard, BEUC would be interested to know whether the presented offline solution would also work at distance or only for proximity payments.

In addition, the risk of double spendings raises liability questions. In case there is an issue with the settlement who is liable for the money lost?

## Multiple accounts

BEUC welcomes the technical analysis on the feasibility of multiple accounts. We agree with the assessment that holding limits would have a significant negative impact on the user experience when using multiple accounts as the overall holding limit would then be split among multiple accounts reducing the flexibility for each account individually. The lower the holding limit, the more the user experience with multiple accounts will be compromised. The waterfall functionality is not a solution for all consumers and all use cases (*see joint accounts below*).

Against this background, it is important that the holding limit is counterbalanced by allowing for smooth account switching in the form of DEAN portability. Like this, consumers could easily switch accounts like they do today with phone numbers allowing for competition between different offers.

BEUC does see an added value for multiple accounts mainly in two regards:

- **Joint accounts** e.g. with partner in addition to an individual account. For joint accounts, the waterfall functionality will be more difficult to use as in case of a separation of accounts, the main purpose of a joint account is to set aside money for common expenses and keep them separate from individual expenses.
- **Accounts being used for a very targeted payment solution** as currently the case for certain specialized offers by FinTechs (e.g. an account being used solely for currency conversions/international transfers). In this regard, multiple accounts support the digital euro as a platform for innovation.

## Calibration of holding limits

### Financial stability:

A holding limit is considered as a safeguard for financial stability preventing consumers from withdrawing all their money from their payment and saving accounts to store it in digital euro accounts. An effective remedy against this potential withdrawal of money from payment and saving accounts would be to offer attractive interest rates on saving accounts and offer inducement-free retail investment products. A study commissioned by the ECON Committee of the European Parliament also comes to the conclusion that holding limits have not been investigated enough and explores further benefits of the digital euro without a holding limit.<sup>1</sup>

For the calibration of the holding limit, the following factors should be taken into account to draw a realistic picture on financial stability:

- **The capacity of PSPs to prevent deposit outflows:** PSPs can prevent deposit outflows by offering attractive retail saving and investment products providing an added value as compared to storing high amounts of deposits on digital euro accounts.<sup>2</sup>
- **The likelihood of deposit outflows towards a digital euro account:** Evidence on the adoption of a digital euro could be gained by consumer testing and evidence on consumer payment attitudes (e.g. ECB SPACE study, collecting evidence on switching bank accounts). It is unlikely that there is an adoption rate of the digital euro of 100% and it is unlikely that 100% of consumers store the maximum amount allowed. For the calibration of the holding limit a realistic scenario should be established.
- **The saving capacity and its distribution among European households:** Given that wealth is very unevenly distributed in European societies, many consumers will only punctually or not at all reach the holding limit<sup>3</sup> while other consumers might reach the maximum quite easily but dispose of much more deposits which will then be stored on bank accounts or in saving and investment products. This should be factored in to make a realistic assumption on how many consumers will reach the holding limit over a period of time which is long enough to have an impact on bank deposit outflows. The uneven distribution of wealth also means

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<sup>1</sup> European Parliament (2023): Digital Euro: An assessment of the first two progress reports. The case for unlimited holdings of digital euros. Available here:

[https://www.europarl.europa.eu/RegData/etudes/IDAN/2023/741511/IPOL\\_IDA\(2023\)741511\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2023/741511/IPOL_IDA(2023)741511_EN.pdf)

<sup>2</sup> ECB Blog: Digital euro: Debunking banks' fears about losing deposits.

<https://www.ecb.europa.eu/press/blog/date/2024/html/ecb.blog20240219~ccb1e8320e.en.html>

<sup>3</sup> See for example data from the EU SILC Survey: around 30% of consumers do not have enough savings to meet unexpected financial expenses:

[https://ec.europa.eu/eurostat/databrowser/view/ilc\\_mdcs04/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/ilc_mdcs04/default/table?lang=en), vzbv data on the use of overdraft facilities: [https://www.vzbv.de/sites/default/files/2023-02/Chartbericht\\_Dispositionskredit\\_final\\_0.pdf](https://www.vzbv.de/sites/default/files/2023-02/Chartbericht_Dispositionskredit_final_0.pdf)

that for many consumers storing money on a digital euro account will not be used as an addition to storing money in cash but rather as an alternative.

### Consumer experience

A holding limit has a negative impact on the consumer experience. BEUC recommends setting the holding limit at a level where the digital euro account can be used as a **fully functional payment account**, independently from owning or linking a commercial bank account. To avoid discrimination, there should not be a differentiated holding limit depending on the level of spendings/income of different consumers.

The waterfall functionality would not be able to counterbalance a holding limit as explained in the following points:

- **Privacy:** As noted by the European Data Protection Board, “the introduction of holding limits would affect the rights and freedom of data subjects by requiring additional data collections and controls.”<sup>4</sup> In addition, a low holding limit would require a user to link their digital euro account with a commercial bank account which would transmit certain data points to the commercial bank account.
- **Budget management:** As expressed in a study on the digital euro commissioned by the ECB<sup>5</sup>, one added value of the digital euro would be to be able to set a certain amount of money aside (similarly to how this is often done with cash) and keep enough money for other purposes (e.g. incoming bills, rent) on a different account. In addition, the waterfall functionality was considered complex by consumers when managing their (limited) budget and see therein a risk of losing track of their expenses. To allow the digital euro to become a tool for budget management similarly to cash rather than the opposite, the holding limit cannot be set at a low level.
- **Enough space to receive incoming payments:** Consumers are not in full control of all incoming payments (e.g. government payments, refunds from merchants). When consumers do not want to use the reverse waterfall functionality, these payments would be refused in the absence of enough holding space on the digital euro. This would create an administrative burden for consumers, merchants and public administrations and systemic costs of refused transactions.
- **Limited possibility to use multiple accounts:** As expressed above, the added value of multiple accounts is significantly compromised by a holding limit. For joint accounts, the waterfall functionality cannot be easily used as explained above.

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<sup>4</sup> Response of the EDPB to the European Commission's targeted consultation on a digital euro. Available here: [https://edpb.europa.eu/our-work-tools/our-documents/other-guidance/response-edpb-european-commissions-targeted\\_en](https://edpb.europa.eu/our-work-tools/our-documents/other-guidance/response-edpb-european-commissions-targeted_en)

<sup>5</sup> Kantar Public: Study on Digital Wallet Features, March 2023. Available here: [https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.pr230424\\_1\\_annex~93abdb80da.it.pdf](https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.pr230424_1_annex~93abdb80da.it.pdf) (p. 74-75)

- **Limiting fraud:** Consumers might wish to keep the digital euro account separately (not linked to a commercial bank account) to limit the amount of money lost in case of payment fraud/loss of security credentials/card etc. Some consumers already today use a separate account when going on holidays/when they shop online. Using the waterfall functionality would be counterproductive in these circumstances as there would be a link to the commercial bank account of the consumer. At the same time, a low holding limit would reduce flexibility.



Brussels, 22 May 2024

## **ERPB consultation on the methodology for the calibration of digital euro holding limits**

### **EACB response**

The **European Association of Co-operative Banks** (EACB) is the voice of the cooperative banks in Europe. It represents, promotes and defends the common interests of its 26 member institutions and of cooperative banks in general. Cooperative banks form decentralised networks which are subject to banking as well as cooperative legislation. Democracy, transparency and proximity are the three key characteristics of the cooperative banks' business model. With 2,700 locally operating banks and 40,000 outlets co-operative banks are widely represented throughout the enlarged European Union, playing a major role in the financial and economic system. They have a long tradition in serving 227 million customers, mainly consumers, retailers and communities. The co-operative banks in Europe represent 89 million members and 720,000 employees and have a total average market share of about 20%.

For further details, please visit [www.eacb.coop](http://www.eacb.coop)

**The voice of 2.700 local and retail banks, 89 million members, 227 million customers in Europe**

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The EACB welcomes the opportunity to contribute to the ECB work on the calibration of the digital euro holding limits and comment on the [methodology presented by the ECB](#) in the ERPB technical session on 11 April 2024. From the viewpoint of cooperative banks, holding limits, together with the implementation and operating costs and the compensation model, constitute the central elements of the digital euro project.

## 1. Key considerations

We strongly support the necessity of holding limits in order to prevent the use of the digital euro as a store of value, adverse effects on bank deposits and credit provision to the economy by credit institutions, and ultimately a negative impact on financial stability in the euro area.

Without a (low) holding limit there is a substantial risk of deposit outflow, which leads to higher funding costs and subsequently to higher lending prices, which will negatively affect the European economy.

We strongly believe that the **maximum holding limits should be specified in the Digital Euro Regulation**, i.e. subject to democratic scrutiny plus avoid changing the holding limits easily. We support setting the limit for businesses to zero, which should be a permanent limit, not subject to changes in future. For individuals we suggest setting the maximum limit in the Digital Euro Regulation at EUR 500. The role of the ECB should be to decide on the actual limit, that could be equal to or below the maximum holding limit set by the legislator.

It is important to ensure that the methodology for the calibration of the holding limits takes into account all relevant factors. As already widely acknowledged, the impact on banks and the economy more broadly are among those factors to be considered. Furthermore, **it is important not only to focus on the banking sector in general but also consider the impact on the various segments and business models, including smaller cooperative banks**, which have a different funding base compared to large commercial banks.

Besides, we would like to emphasise a strong link with euro banknotes – the other form of central bank money. **Since the digital euro would be "an electronic form of cash for the digitalised world"<sup>1</sup>, we believe that the use of cash by citizens should serve as a benchmark for calibrating the holding limits for the digital euro.** Data across the euro area to be considered for that purpose include: average ATM withdrawal amounts, average amount of cash held in a wallet by individuals, average value of payments with cash. For example, in a survey conducted by the Deutsche Bundesbank in 2021, respondents on average had approximately EUR 100 in their wallet<sup>2</sup>. In France, the average amount of ATM cash withdrawals in 2021 was EUR 113<sup>3</sup>. The ECB's 2022 study provides valuable data on payment attitudes and preference for cash by consumers across the euro area<sup>4</sup>. Data on cash usage just before and after

<sup>1</sup> FAQ on digital euro, ECB:

[https://www.ecb.europa.eu/euro/digital\\_euro/faqs/html/ecb.faq\\_digital\\_euro.en.html#:~:text=A%20digital%20euro%20would%20be,format%2C%20complementing%20banknotes%20and%20coins](https://www.ecb.europa.eu/euro/digital_euro/faqs/html/ecb.faq_digital_euro.en.html#:~:text=A%20digital%20euro%20would%20be,format%2C%20complementing%20banknotes%20and%20coins).

<sup>2</sup> Payment behaviour in Germany in 2021, Deutsche Bundesbank, July 2022, page 9:

<https://www.bundesbank.de/resource/blob/894118/6c67bcce826d5ab16a837bbea31a1aa9/mL/zahlungsverhalten-in-deutschland-2021-data.pdf>

<sup>3</sup> <https://www.lafinancepourtous.com/decryptages/finance-perso/banque-et-credit/le-systeme-des-cartes-bancaires/>

<sup>4</sup> Study on the payment attitudes of consumers in the euro area, ECB, 2022:

[https://www.ecb.europa.eu/stats/ecb\\_surveys/space/html/ecb.spacereport202212~783ffdf46e.en.html#:~:text=The%20SPACE%202022%20results%20show,2016%20and%2025%25%20in%202019](https://www.ecb.europa.eu/stats/ecb_surveys/space/html/ecb.spacereport202212~783ffdf46e.en.html#:~:text=The%20SPACE%202022%20results%20show,2016%20and%2025%25%20in%202019).



the Covid pandemic could be taken into account to observe possible changes in consumer payment attitudes over that period<sup>5</sup>.

Also, it is worth stressing that the digital euro is being designed as a means of payment rather than a store of value, which means the holding limits have to be set at a low level. Furthermore, **with the design features such as waterfall and reverse-waterfall citizens would be able to make and receive payments beyond the holding limit, thus there doesn't seem to be a justification for setting the holding limits at a high level.**

Additionally, we wish to emphasise that the methodology for the calibration of holding limits should **take into account both normal periods and stress periods**, where there is higher risk of deposit outflows and financial instability.

## 2. Comments on the ECB presentation on the methodology for the calibration of holding limits

### Under which premises does the calibration take place?

- It is stated in ECB's slide 8 that one of the Eurosystem's investigation phase findings is to *"Preserve freedom of access to a public good such as central bank money and ensure a 'best in class' user experience when paying with digital euro"*: In our opinion, 'best in class' digital euro would conflict with the policymakers' objective not to crowd out private payment solutions<sup>6</sup>. Additionally, the Digital Euro Regulation, if not amended, would distort the playing field in the retail payments market even further (binding distribution of the digital euro by PSPs, binding acceptance by merchants, ECB app, lack of sustainable compensation for intermediaries etc.). The combination of the above elements could lead to crowding out of private payment solutions, including the EU home-grown initiatives.

### First building block: Usability and ecosystem (slide 11)

- Regarding *"Impact of speed of adoption on the calibration of holding limit"*: We disagree with the inclusion of this question in the list of factors under first building block. It is not clear how the speed of adoption could influence the calibration of the holding limit. Good anticipation of the speed of adoption is important for the sizing of payment systems and for the gradual impact on bank deposits mentioned in the following slides, but not on the holding limit itself. Besides, speed of adoption of the digital euro is impossible to predict before the digital euro is launched; it would be based on speculation and cannot serve as a reliable factor in the model. This question should be shifted to third building block as speed of adoption could have an impact on financial stability.
- Regarding *"User preferences in terms of pre-funding over reverse waterfall"*: Even those citizens who would prefer using reverse waterfall, could change their preference rapidly in times of financial stress. All the more so as the ECB promotes the digital euro as risk-free money, which implies that money in bank accounts is less safe. Thus, the calibration needs to be done considering the maximum pre-funding model in stress scenario, with the objective of preserving the financial stability.

<sup>5</sup> See, for example, the ECB's Occasional Paper Series "The use of cash by households in the euro area", 2017: <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op201.en.pdf>

<sup>6</sup> In line with the Eurosystem's [Report on a digital euro](#) (2020), one of the core guiding principles for the design of a digital euro is that *"... the prospect of central bank initiatives to issue a digital euro should neither discourage nor crowd out private solutions for efficient digital retail payments in the euro area"*.



- Regarding *"Amount of pre-funding needed for digital euro payments (P2P, POS, e-commerce) if users follow a monthly top-up cycle"*:
  - We wonder about the rationale for the inclusion of this question. In this context, it would be important to look at users' payment behaviour with regard to cash and debit card.
  - Also, we strongly recommend keeping the digital euro simple both for users and intermediaries. Intermediaries should be able to easily explain the features of the digital euro to their customers. Yet, this seems difficult when looking at the different design features under consideration and the related holding limits, e.g. overall holding limit, joint/shared accounts, multiple accounts per user, offline limit etc.
- Regarding *"Speed of reverse waterfall"*: We disagree with the inclusion of this factor. In our view, "what if" statements are not relevant for the calibration methodology. One should assume the system works properly, otherwise technical performance of any design features and tools can be questioned. For example, what if the ECB's front-end app does not work? How does that drive the adoption rate? How do bank apps drive the adoption rate vs. the ECB front-end app? What if the offline version does not work well etc.
- As already mentioned earlier, since the digital euro would be an electronic form of cash for the digitalised world, the use of cash by citizens should serve as a benchmark for calibrating the holding limits for the digital euro.
- There should be a uniform maximum holding limit across the euro area. Yet, the level of income of citizens across the euro area countries should also be taken into account when calibrating the holding limits.

### **Second building block: Monetary policy (slide 12)**

- We believe that the digital euro should not be a monetary policy instrument in any case.
- If the digital euro is considered as a monetary policy instrument, one should consider the joint effects with other tools (e.g. minimum reserve requirements) to avoid unintended consequences, e.g. diminished credit supply from banks. The ECB Board members have publicly pointed out the need to possibly increase the Minimum Reserve Requirements (MRR) amounts which would already increase the amount of central bank money at the expense of commercial bank money.
- If the digital euro is considered as a monetary policy instrument, the questions raised by the ECB should be analysed not as an average, but should rather include analysing different countries, regions, clustered by bank sizes, etc.

### **Third building block: Financial stability (slide 13)**

- In our opinion, the issues mentioned in the third building block, as well as liquidity and the interest rate perspective, are very relevant when evaluating the appropriate method for determining the holding limit.
- The list of questions and factors presented by the ECB seems exhaustive. We would like to highlight that the third building block is a central topic for commercial banks (together with the business model): the risk of deposit outflows and the consequences on costs and funding structure, revenues, economic and regulatory liquidity ratios.



- It is important to consider that these effects can be very different from one country to another depending on the respective banking models, but also from one bank to another, in particular cooperative banks which probably have significantly more retail deposits, hence are most likely to be impacted by the introduction of a digital euro than other banks. Thus, the questions raised by the ECB should be analysed not as an average, but should rather include analysing different countries, regions, clustered by bank sizes and funding models, etc.
- Substituting stable retail deposits with more expensive and more volatile market funding changes the funding structure of banks. More expensive funding will be passed on to consumers. Thus, changes in funding structure will have effects on credit pricing.
- Current liquidity risk regulation is based on the concept of stable retail deposits. A large holding limit could represent a potentially large migration of retail deposits to the digital euro undermining the concept of stable retail deposits. Overall, the effects on liquidity and IRRBB regulations should be considered since the concepts of stable and core deposits are key regulatory elements.

#### **Fourth building block: SSM banking supervision (slide 14)**

- The list of questions and factors presented by the ECB seems quite exhaustive.
- Two important points are mentioned here in relation to:
  - the risk of seeing collateral disappear if collateralised funding is to be raised to replace the deposits lost at the ECB.
  - the risk of having to replace a fixed-rate modelled resource with interest rate swaps that will have a substantial impact on the net interest margin.
- Additionally, factors such as quantitative tightening and financing the green economy should also be taken into account since these factors also take out funds from the economy or require more funds.

#### **Contact:**

The EACB trusts that its comments will be taken into account.

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**EBF feedback to ERPB Written Procedure on *Item 5 – Update on  
workstream on the methodology for the calibration of holding limits*  
(following 11<sup>th</sup> ERPB technical session on digital euro)**

24 May 2024

**EBF general remarks:**

The European Banking Federation (EBF) welcomes the ECB’s initiative to consult stakeholders on identifying and assessing the key factors for the calibration of holding limits based on a clear methodology, keeping in mind the link between the online and offline limits. The EBF generally supports the questions and factors proposed by the ECB.

Setting an adequate holding limit – which should be as low as possible and stable overtime - and ensuring continued, viable business model for the banking sector is crucial if a digital euro is implemented. The impact on financial stability will indeed depend greatly on the definition and the governance of the holding limit. Here, we would like to point at the study of December 2023 by Copenhagen Economics ([here](#)) which examines the impact of the digital euro on financial stability considering four different holding limits.

As a means of payment, any limit should be aligned with day-to-day users’ needs, that seem to be much lower than the figures discussed so far. Moreover, limits for the use of the digital euro do not need to cover all payment needs, as well-functioning, widely used, trusted and secure private electronic means of payments exist and should not be crowded out. In addition, (reverse) waterfall mechanism allows very low limits online, even zero, and improves usability.

The EBF’s feedback to the questions and factors proposed in the 11<sup>th</sup> ERPB technical session on digital euro can be found below under each building block. We would like to draw you attention to the fact that these are our initial views only, considering the complexity of the issues at stake, the continuous developments around the digital euro and the tight deadlines to provide comprehensive feedback.

**First building block: Usability and ecosystem**

Questions	Factor
Impact of speed of adoption on the calibration of holding limit	Adoption rate
User preferences in terms of pre-funding over reverse waterfall	Preference to pre-fund, usage of reverse waterfall

Impact of slower-than-expected reverse waterfall on users' preferences	Speed of reverse waterfall
Amount of pre-funding needed for digital euro payments (P2P, POS, e-commerce) if users follow a monthly top-up cycle	Ability to use pre-funding with a monthly cycle
<b>EBF proposed addition:</b>	
Liquidity impact of pre-funding/automatic/monthly top up vs. reverse waterfall	Effectiveness of reverse waterfall
<p><b>EBF feedback:</b></p> <p>We would welcome clarification from the ECB how it envisages the use of the adoption rate as a factor in the methodology, for what purposes and in which circumstances. We indeed believe that it is essential to have a limit which is clearly identified and stable over time. The use of adoption rate and user's preferences in the calibration of the holding limit seem to point to a limit that could change frequently, especially in the first period after the introduction of the digital euro, which would increase uncertainty. This should be avoided at all costs as it could have negative implications for liquidity risk management.</p> <p>In addition, conditions that normally govern the withdrawal of cash via ATM could potentially be a useful and significant reference factor to consider when assessing the adoption rate. Also, an effective and reliable (reverse) waterfall mechanism, that could be used when needed, makes the pre-funding of the online accounts almost useless and not interesting for users. Thus, the effectiveness, availability, and reliability of the (reverse) waterfall mechanism is obviously a key factor to consider in the holding limit calibration process to maintain financial stability.</p> <p>Moreover, the introduction of a transaction limit, together with a periodic limit (day, week, month), for the purpose of preventing fraud in retail payments should be foreseen.</p> <p>As regards the (reverse) waterfall mechanism, as well as automatic funding and defunding, their existence is consistent with the idea of setting low holding limits, since users, within the transaction and periodic limit, would always be able to make transactions of the amount they wish, regardless of the holding limit set. In this way, the usability of the digital euro would not be undermined even if their holding limits were set low.</p> <p>With respect to the 'slower-than-expected' factor, it is important to note that inefficiencies or delays in payments confirmation due to reverse waterfall mechanisms cannot justify a higher holding limit. In fact, in that specific scenario where payments triggering reverse waterfall will prove to be slower-than-expected, an optimization on the E2E process should be put in place (both at a technical level and optimizing the overall flow). Furthermore, we deem it crucial to differentiate between use cases, as the user tolerance in case of payment confirmation delays can be different depending on whether the user is at POS or executing a payment on e-commerce.</p> <p>Moreover, we believe that the risk of a slower-than-expected reverse waterfall functionality can be mitigated by leveraging on existing payment solutions. Such solutions should also boost the digital euro adoption, as both merchants and consumers are not required to install and get used to yet another payment method, they can use</p>	

existing solutions (while respecting the digital euro-specific branding that will be put in place). It is also beneficial for PSPs which could reduce their implementation costs.

We however deem it very unlikely that citizens will pre-fund monthly their digital euro wallet as the planning would be too difficult and, for financial stability reasons, the pre-funding should be primarily offered to unbanked people as they are the only ones not having the reverse waterfall mechanism as a tool able to “guarantee” payment execution. In this regard, we believe that a more frequent pre-funding cycle coupled with a low holding limit would be a more suitable option as compared to a high holding limit coupled with a less frequent pre-funding cycle. On the other hand, we note that many citizens do not have the financial luxury to distribute their funds over multiple payment accounts (in this case, a payment account and a digital euro account).

Finally, the impact of pre-funding vs. a reverse waterfall mechanism could increase the digital euro holdings, therefore would be negative for liquidity. If pre-funding is applied, including a potential monthly top up cycle, more of the allowance will be used because of residual amounts in the accounts. With a reverse waterfall this is not the case as funds are only pulled from the payment account whenever a payment is processed.

## Second building block: Monetary policy

Question	Factor
Range of effects on the economy for alternative limits, cash & digital euro demand levels and different central bank responses	<ul style="list-style-type: none"> <li>• Credit supply/bank lending</li> <li>• Bank deposits / funding conditions</li> <li>• Intermediation capacity (profitability and capital accumulation)</li> </ul>
Range of effects on stance, implementation and central bank balance sheet for alternative limits, cash & digital euro demand levels and different central bank responses	<ul style="list-style-type: none"> <li>• Money market conditions</li> <li>• Available modalities for Eurosystem balance sheet adjustment</li> <li>• Collateral constraints</li> </ul>
Potential impact of increased digitalization on composition of monetary aggregates (allocation of funds across cash, digital euro and bank deposits)	Cash holdings dynamics
<b>EBF proposed addition:</b>	
Impact on viability of smaller banks and secondary effect in the financial scenery	Deposit outflow and mitigation mechanisms

### **EBF feedback:**

One of the main consequences of the potential deposit outflow will be the reduction of lending capacity from banks to the real economy and the increasing of the cost of credit to the clients. The only way to limit this adverse effect is to maintain the holding limit low and as much stable as possible over time.

Considering the new funding demand, the interbank market could dry up if the decline in deposits is widespread. To enable banks to refinance, the ECB may need to consider offering a significant amount of long-term refinancing options, with the risk, however, of overreliance on the ECB which is not desirable for the banking industry and the whole economy.



The effect on monetary transmission is not clear-cut.

- It depends on e.g.
  - user preference: will people prefer pre-funding, or rather keep low digital euro holdings in combination with frequent reverse-waterfalling?
  - overall adoption rate
- Insofar as cash is converted into digital euro, there is no change to monetary transmission (both cash and digital euro are not remunerated). On the contrary, when remunerated bank accounts are converted into digital euro, there will be a reduction in monetary transmission.

Central banks gain funding over which they do not need to pay interest. This contributes to their income; however, running the digital euro as part of the Eurosystem will generate costs.

### Third building block: Financial stability

Question	Factor
Range of possible effects on bank deposits	<ul style="list-style-type: none"> <li>• Mapping of different limits and deposit outflows</li> <li>• Outflow of deposits</li> <li>• Inflow of deposits</li> </ul>
Range of possible effects on funding	<ul style="list-style-type: none"> <li>• Funding composition</li> <li>• Funding costs</li> <li>• New income sources</li> <li>• Interest income</li> </ul>
Range of possible effects on liquidity	<ul style="list-style-type: none"> <li>• Liquidity buffers</li> <li>• Compliance with regulatory ratios (NSFR, LCR) etc.</li> </ul>
Range of distributional impact (of all outcomes)	<ul style="list-style-type: none"> <li>• Across individual banks</li> <li>• Across countries</li> <li>• Across business model</li> </ul>

#### **EBF feedback:**

We believe that most clients will keep low balances on their digital euro accounts because of the reverse waterfall mechanism under normal circumstances and the fact that the digital euro will not be remunerated. However, things would change drastically in a crisis triggering a fly-to-quality situation. In such situation, all consumers who can afford it would immediately transfer liquid bank deposits in their digital euro account up to the limit (the lower the usual balances, the deeper the sudden drain on banks' balance sheets in a crisis). Consequently, when defining the holding limit, we should not only consider the daily use of the digital euro but also the depth of the liquidity tensions it would trigger in the market in case of a crisis, especially if balances are kept low under normal circumstances.

In assessing the digital euro holding limit, the average monthly spending of citizens together with the average earnings in the euro area could be relevant factors to consider. In this sense a holding limit as high as 3.000 euro could be less coherent with



the “mean of payment” envisaged function of the digital euro and closer to a “store of value” function, especially in the event of contingent market situations that may encourage distorted behaviour by users.

The above list of factors seems pretty exhaustive but we would like to highlight that this is a key topic for commercial banks (together with the business model): the risk of deposits outflows and the consequences on costs and funding structure, revenues, economic and regulatory liquidity ratios. It is important to consider that these effects can be very different from one country to another depending on the respective banking models, as well as on effectively differing collateral frameworks (ACCs), but also from one bank to another (in particular banks which have significantly more individual deposits are most likely to be impacted by the introduction of a digital euro than others).

We propose the following factors to calculate the outflow of deposits: (i) number of individual clients; (ii) customer clusters divided by threshold deposits amount; (iii) users who already pay by digital devices or digital wallets and who might be receptive to the digital euro.

A distinction should be made between

- structural deposit drain, which has a structural upward effect on lending rates, as bank funding becomes more expansive (e.g. more wholesale issuance or higher reliance on central bank borrowing);
- higher volatility of (remaining) bank deposits, as people have an additional choice of holding their liquid funds next to bank deposits, cash and e-money. An additional distinction can be made here between:
  - normal times, and
  - crisis times

As for the funding composition, it should consider the differing access of European banks to central bank liquidity given the wide range of different collateral frameworks (ACCs).

Another factor to be considered for financial stability is the overall impact of digital euro on the banks’ payment business, which may be critical in terms of overall soundness of the business model of each bank.

#### Fourth building block: SSM banking supervision

Question	Factor
Range of impact on banks’ business model sustainability, including on how this differs across individual banks and business models Range of impact of deposit shift to the cost of funding and thus the Net Interest Income	Business model sustainability
Range of impact on liquidity buffers and funding mix (including during stressed conditions), including on how this differs across individual banks and business models and countries	Liquidity buffers (LCR and further metrics)
	Collateral availability (incl. counterbalancing capacity)
	Funding mix (NSFR and further metrics)

<p>Possibility of clustering banks into “stylized funding models” to have a holistic view across the SSM</p> <p>Identification of the most important KPIs/indicators to consider</p> <p>Identification of the level of deposit outflows at which the liquidity position of a SI would be impaired</p>	<p>Interest rate risk in the banking book (IRRBB)</p>
<p><b>EBF proposed addition:</b></p>	
<p>Internal targets for liquidity metrics for individual banks - these are much higher than the black or even amber thresholds for the same metrics and if they are missed there are direct funding implications</p>	<p>ECB expanding and harmonizing the non HQLA collateral pool for banks could be an effective mitigation (still very different collateral frameworks (ACCs) predominant, that impact liquidity)</p>
<p><b>EBF feedback:</b></p> <p>The analysis should be done beyond the SSM scope, including the impact on less significant institutions made by national supervisors. Moreover, the analysis should consider the still widely differing collateral frameworks (ACCs) on a national level, that limit bank’s possible counterbalancing actions to liquidity outflows.</p> <p>Funding for banks is relevant and especially the retail sight account balances have a significant impact on liquidity metrics (e.g. LCR ratio). To compensate the possible effect of money transfers from traditional accounts to wallet, not only in recovery or resolution scenarios but also in normal situation, the implementation of a permanent and reliable ECB liquidity facility to compensate the outflows for banks, could guarantee a safety net for the banks, with benefits also in terms of financial stability.</p> <p>It is also important to evaluate the unintended consequences of wide overlapping of digital euro with traditional payment systems and sustainability of banks business models.</p> <p>Here, we would like to mention two important points in relation to the risk of:</p> <ul style="list-style-type: none"> <li>• seeing collateral disappear if collateralised funding is to be raised to replace the deposits lost at the ECB;</li> <li>• having to replace a fixed-rate modelled resource with interest-rate swaps that will have a substantial impact on the net interest margin.</li> </ul> <p>Finally, next to financial impact, there is also an impact on client intermediation, i.e. the digital euro may strengthen the competitive position of non-banks (in particular big techs). While banks are obliged to offer the whole set of digital euro services (for free), non-banks can pick and choose among these services. In this respect, in order to avoid client disintermediation (and the associated data disintermediation) and to guarantee fair competition, all PSPs that distribute the digital euro should offer the same set of free digital euro services.</p>	

## ESBG Feedback to ECB Considerations to Holding Limit Calibration

### Usability and ecosystem

- Public good nature of the digital euro and proportionality principle: restrictions should be necessary, appropriate and the least intrusive to maintain financial stability and support the effectiveness of monetary policy.
- Yet, it is important deepen the understanding of the practical implications of usability resulting from different holding limits.

### Adoption Rate:

- The adoption rate is key factor for several building blocks. Therefore, there needs to be a close monitoring and disclosure.
- It is very likely that adoption rate is (at first) country specific before converging to a pan eurozone equilibrium. Hence, it could be a good benchmark for institutions within a country when modelling Digital Euro take-up effects.
- Historic data on pre-fund services may be misleading to assess the digital Euro pendant since the retail CBDC is central bank money with online and offline capabilities while e. g. Geldkarte was merely private money.

### Monetary policy

- Look at range of effects the digital euro may have on the monetary policy stance, transmission and implementation.
- Range of effects on the economy for alternative limits, cash & digital euro demand levels and different central bank responses
- Potential impact of increased digitalisation on composition of monetary aggregates (allocation of funds across cash, digital euro and bank deposits) and cash holdings dynamics are all appropriate considerations/
- In the light of the new entity 'Digital Euro as retail CBDC' the flexibility of the Eurosystem collateral framework gets even more important.
- All institutions on the Eurozone should be able to participate in tender operations of the Eurosystem according to their abilities to produce the needed collateral. This should also incorporate private household lending.

### Financial stability

- It is of the utmost importance to understand that there is going to be a real economic effect of deposit outflows (relevant factor is e. g. the „adoption rate“) and an ad hoc stress scenario effect in banks' liquidity buffers and regulatory ratios such as LCR (and to some extent) NSFR
- As long as the regulatory ratios are part of the disclosure of institutions, they will always keep them above the regulatory minimum even if the regulator explicitly allows doing otherwise for a certain period of time.
- LCR: The higher the anticipated outflows within a 30 days period the more the LCR falls! This effect is even more detrimental than 'losing' HQLA. – An appropriate model should estimate a sensible effect of the Eurosystem newly introduced as the ultimate safe haven for digital Euro deposits for (at least) all Eurozone citizens  
– This model should incorporate the idea of unwinding: That could be done e. g. by tackling the estimated percentage of digital euro outflow in the LCR stress scenario by decreasing the HQLA





instead having an outflow. By this means the ratio falls less severe and follows the notion of a changed cash position in the balance sheet.

– The adoption rate e. g. set per country should be used as a first step to determine the individual maximum amount of anticipated stressed outflows for the retail basis of an institution. Digital Euro estimates should be part of the ILAAP in Pillar II.

SSM banking supervision

- Look at the range of effects of the digital euro on\*\* banks' business model\*\* sustainability, liquidity and funding management.
- Part of the SSM are also the indirectly supervised banks. A holistic approach takes the business model and challenges of the LSI – usually with a regional focus and a highly diversified retail client base – into account. The dialog could involve the local supervisory authorities.
- The relevant economic liquidity buffer is the counterbalancing capacity often used to calculate the 'Survival Period' or 'time to wall'. Supervisors should allow for shorter stress figures and/or allow a greater reliance of central bank lending to counterbalance the effect of (stressed) digital euro deposit outflows.
- In IRRBB the fluent nature of NMD is already correctly incorporated: the digital euro could be integrated accordingly.

### **Key Factors to be Considered**

#### **Proportionality and necessity test**

- As a public good, the restrictions imposed by the digital euro on market participants should be necessary, appropriate and the least intrusive to maintain the public policy aims of financial stability, strategic autonomy and effective monetary policy. Evidently, a quality user experience is an implicit secondary aim in order to attain the necessary popular uptake for the policy objectives to be achievable. Any additional policy purposes should be stated by the ECB or the legislation before being used as the basis for extension of digital euro holdings.
- Consideration: what holding limit necessary and proportionate for the digital euro objectives to be achieved in every given scenario. Implications such as cost of financial investment and other resources by both ECB and PSPs should be weighed against the impact to the specific objectives. Digital euro holdings should therefore not be automatically implemented where unnecessary, but instead rely exclusively on the waterfall/reverse waterfall functionality with existing PSP accounts.

Tests of proportionality and necessity are well established in the legal functioning of the EU and the legal systems of its member states. Due to the evolving (inter alia, geopolitical, technological) context it is essential that the digital euro includes legal mechanisms that remain flexible for contemporary circumstances. ESBG's position recognises the possible need for holding limits, but considers it erroneous and costly to create universal, uniform holding limits when they are costly and superfluous for the stated aims of the EU's CBDC.

These tests provide a natural balance between the policy motivations of the digital euro with serious implications to the costs and efforts necessary for an expanded digital euro project – which, for example, detract from investment in banking innovation elsewhere. ESBG encourages the digital euro



to leverage existing EU infrastructures wherever possible, this includes utilising existing banking services and deposits where not necessary to achieve stated goals of the digital euro.

### **Business Model**

- Range of impact on banks' business model sustainability, including on how this differs across individual banks and business models. Range of impact of deposit shift to the cost of funding and thus the Net Interest Income.
- Consideration: several subsidiary considerations and standards should be incorporated into calibrating a holding limit to ensure a viable business model for PSPs being relied upon for distributing and operating the digital euro. The digital euro will directly impact multiple core elements of banks' model and will require to be reflected in appropriate compensation and holding limits.

Sustainable business model:

For the distributors of the Digital Euro, a long-term sustainable business model will be required – for market engagement and non-reliance on public funds. In regard to the compensation model, the business case depends on the following:

- Payer & Payee: should have pricing corresponding to comparable debit card usage
- PSPs: scheme fee + processing cost (+waterfall transaction related fees)
- Merchant: Interchange fee + operations fee + cost for acceptance device

Overall, the model shall be built under following considerations:

- The Digital Euro payment should not be more costly to use for the citizens than debit cards and SEPA credit transfers;
- Provide payer and acceptor pricing that encourage commercially efficient behaviour by merchants and end users;
- Support the distribution and use of the Digital Euro and the associated network effects to promote the voluntary uptake of the Digital Euro across the euro area;
- Align with best market practices for electronic payments to avoid disruption and minimize the possibility of market failure for the Digital Euro.

Suitability and adaption:

Suitability of holding limits for respective PSPs should be specifically considered in calibration. Savings banks are a notable example of banks which typically operate with very low deposit margins (i.e. several of our members see that by the end of the month a large number of customers have little to no savings) therefore any deposit outflows due to digital euro holdings would have a far more significant impact on these banks than other PSPs that would be able to continue a very similar business model once adapted for the digital euro. It should be further noted that savings banks, more than other PSPs, are relied on to use what deposits they have to finance the wider domestic and European economy (particularly SMEs). Therefore, calibration of holding limits should seek to safeguard the good-functioning of the European economy and the health of its key financial institutions.

Impact on balance sheet and funding structure:



Looking at the banks' balance sheets, the introduction of the CBDC can either result in smaller balance sheet or the bank will switch to other types of funding in order to retain the same size of the balance sheet as prior to the introduction of the CBDC.

Banks with excess liquidity could adapt to the new reality by reducing holdings at the central bank, and liquidity constrained banks could reduce credit supply. Banks that do not have excess liquidity and have access to market-based funding will switch to market-based funding, meaning that they will not necessarily need to decrease their level of lending to households and corporates.

Also, banks with excess liquidity will be incentivised to replace the deposit outflow while deposit outflows need to be replaced with other funding sources. Immediate consequences of enforced transition:

- Internal continuity planning, targets, limits, recovery triggers, risk appetite
- Buffers are needed since LCR is a volatile metric
- Reduced resilience to handle a stressed scenario
- Potential negative credit rating impact

#### **Annex I: ESBG Position on LCR and other metrics of bank stability**

Impact on the Liquidity Coverage Ratio (LCR): the LCR is a stressed cashflow oriented short-term liquidity measure with detailed regulatory parameters and assumptions. The Non-Maturing Deposits (NMD) that would be directly affected by the limits of a Digital Euro have usually an outflow-rate amounting to 5%. Hence, simply looking at the reduced amount of NMD (less outflow) is too short-sighted.

Lower LCR levels may require banks resorting to other, usually more expensive, funding sources, whilst lower NSFR levels may require banks to involve the use of capital market instruments, to which some intuitions have little to no access. Both options are expensive, if possible at all, and will negatively impact banks bottom lines.

LCR must be 100% fulfilled on a daily basis. All supervised institutions have internal buffers in place which reflect their risk appetite framework in terms of liquidity risk. Both will be changed by the introduction of a Digital Euro on an incremental basis: based on our calculation, the introduction of a Digital Euro will cause the decline of both LCR and NSFR on average, the higher the amount of Digital Euro holdings will be allowed, the stronger the decline of both LCR and NSFR.

Credit intuitions invest volatile, highly liquid positions in liquid assets. The LCR defines them as High Quality Liquid Assets (HQLA) which increase the ratio by “market value - (a small) haircut”. For compliance reasons, credit institutions shall always apply a conservative approach when calculating this liquidity metric. Hence, the limit of Digital Euro holdings is binding for calculating the LCR. Therefore, credit institutions will have to make a choice: either accepting lower levels of LCR or compensating the loss of NMD and HQLA by resorting to other, usually more expensive, funding sources.

Impact on Net Stable Funding Ratio



The NSFR follows a one-year horizon balance sheet approach. NMD do usually provide at any time 95 % factor of available stable funding. HQLA as the counterparty asset solely needs the (small) haircut as required stable funding (if not encumbered). A fall in NMD results in an immediate and significant decline of the NSFR.

While the LCR can be adjusted with cash management techniques, the achievement of higher levels of NSFR is far more complex and expensive. Hence, credit institutions will have to either accept lower levels of NSFR or need to compensate the loss of NMD by other funding sources and a new funding strategy. The latter option will always involve the use of capital market instruments, to which some intuitions have little to no access.



# ERPB feedback request

## Holding limit calibration

24 May 2024

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### 0. Generic comments

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We welcome the opportunity to provide feedback regarding holding limit calibration. As merchants, we are not directly impacted by the way holding limits will be calibrated, and in general are somewhat indifferent to holding limits, as long as the user experience is seamless, simple and fast – this holds true specifically to the applicability of (reverse) waterfall mechanisms.

We are starting to be more concerned as the latest discussions reveal that processes related to enforcing holding limits in a multi-wallet digital euro environment are becoming increasingly complex and impractical. In line with the RDG feedback on multiple accounts, we worry that the foreseen processes will not safeguard the needed seamless, simple, and fast user experience that the digital euro needs in order to offer a compelling and competitive offer to end-users.

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### 1. Usability and ecosystem

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Surely, factors related to usability and ecosystem will be deterministic to the calibration of holding limits. We would estimate that these factors are also fundamental to the *overall* success of the digital euro project – specifically a well-functioning and speedy waterfall mechanism.

Question	Factor	Comment
Impact of speed of adoption on the calibration of holding limit	Adoption rate	Deposit outflows are very likely correlated with end users' digital euro adoption rate. It would be necessary to further analyse such correlation to better understand the true impact of adoption on such outflows and whether holding limits will have to be adjusted according to the development of adoption. Further attention should be placed on whether the introduction of holding limits will have a negative effect on



		adoption rate as it may impact some use-cases and customer journeys.
User preferences in terms of prefunding over reverse waterfall	Preference to pre-fund, usage of reverse waterfall	With intuitive and well-designed waterfall functionality, we would expect very few users to fully exploit their holdings in digital euro.
Impact of slower than expected reverse waterfall on users' preferences	Speed of reverse waterfall	If reverse waterfall will not work conveniently and in a speedy manner, we'd foresee consumers relying on such functionality would be moving away from the digital euro solution altogether instead of using large balances of digital euro holdings
Amount of pre-funding needed for digital euro payments (P2P, POS, e commerce) if users follow a monthly top up cycle	Ability to use pre-funding with a monthly cycle	Although we would estimate that a large proportion of digital euro end users would be relying on a seamless waterfall mechanism, end users may still want to (regularly) prefund their wallet for various reasons. Holding limits should not limit consumers ability or preference to prefund and should therefore allow for sufficient buffer. <i>Link to adoption rate</i> : interesting to better understand how tight holding limits would lead to digital euro abandonment, specifically by end user groups favouring prefunding.

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## 2. Monetary policy

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Questions and factors pertaining to monetary policy are relevant when calibrating holding limits. The alleged impacts derived from the digital euro introduction on financial stability would have to be accommodated for by appropriate measures and responses by the EuroSystem within their mandate to implement monetary policy via its operational framework.

Question	Factor	Comment
Range of effects on the economy for alternative limits, cash & digital euro demand levels and different central bank responses	Credit supply/bank lending	Valid questions and factors to further analyse as part of this exercise.
	Bank deposits / funding conditions	

	Intermediation capacity (profitability and capital accumulation)	
Range of effects on stance, implementation and central bank balance sheet for alternative limits, cash & digital euro demand levels and different central bank responses	Money market conditions	
	Available modalities for Eurosystem balance sheet adjustment	
	Collateral constraints	
Potential impact of increased digitalisation on composition of monetary aggregates (allocation of funds across cash, digital euro and bank deposits)	Cash holdings dynamics	

### 3. Financial stability

Financial stability questions and factors are potentially at the core of this exercise. The analysis should provide factual evidence to what extent the introduction of a digital euro will cause sustainable outflows of bank deposits, weakening the re-financing capabilities of the financial sector and therefore potentially impacting the economy as a whole.

Such analysis should take into account already existing payment (wallet) solutions that allow end-users to convert commercial bank money into e-money with the click of a finger and its effect on financial stability. It shall further take into consideration the fact that banks are in a unique position to remunerate such holdings, therefore being able to incentivise its customers to retain holdings within their ecosystem.

In addition, the analysis should also try and elaborate to what extent any additional wallet per user will lead to further deposit outflows, regardless of holding limits.

Question	Factor	Comment
Range of possible effects on bank deposits	Mapping of different limits and deposit outflows	A crucial factor that should be at the core of the calibration exercise.  We would expect little to no impact as we would be expecting low outflow of deposits because of the introduction of the digital euro – regardless of how many accounts a user may open.
	Outflow of deposits	A crucial factor that should be at the core of the calibration exercise.  Banks should fully exploit their

		unique position to remunerate deposits via interests, providing consumers with a clear economic incentive to keep deposits on commercial bank accounts. The introduction of holding limits, and/or multiple accounts should therefore have limited impact on bank's refinancing capabilities (see above) and funding conditions
	Inflow of deposits	Just like outflows, inflows due to the introduction of digital euro should also be taken into account for the analysis.
Range of possible effects on funding	Funding composition	Yes, all these questions and factors are relevant.
	Funding costs	
	New income sources	
	Interest income	
Range of possible effects on liquidity	Liquidity buffers/	
	Compliance with regulatory ratios (NSFR, LCR) etc.	
Range of distributional impact (of all outcomes)	Across individual banks	
	Across countries	
	Across business model	

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**4. SSM banking supervision**

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Commenting on questions and factors pertaining to SSM banking supervision is outside of our competence.

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