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Consumer attitudes towards a central bank digital currency

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Abstract: We field a series of experiments in a population-representative survey of European consumers to examine their attitudes towards the possible introduction of a digital euro. First, we show that a short video explaining the key features of the digital euro is effective in changing consumers' beliefs about such a new form of payment and increases the likelihood of adoption by 12pp relative to a control group that is not shown the video. Second, we find that on aggregate consumers would allocate a relatively small fraction from a positive wealth shock to digital euros and their allocation to other liquid assets would be little affected. Third, holding limits in the range of €1,000 to €10,000 have insignificant differential effects on the composition of liquid asset holdings. We also show that a non-trivial fraction of consumers report that they will not adopt the digital euro due to strong preferences for existing forms of payment.

***JEL* Classifications:** E41, E58, D12, D14, G51

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Non-technical summary

In October 2023, the European Central Bank started a preparation phase that aims to set up the relevant rules and infrastructure for the possible rollout of a central bank digital currency (CBDC) in the euro area. We use novel information collected in a population-representative survey of European consumers to examine their attitudes towards possibly introducing a digital euro.

First, we investigate the effectiveness of communication about key CBDC features by the central bank in changing consumers' beliefs about digital payments and encouraging them to adopt CBDC. To this end, we implement a Randomised Control Trial in a population-representative survey where we show a short video to respondents in the treatment group and record their subsequent reactions to those of an untreated control group. In this setup, we can identify the causal effect of central bank communication on consumer attitudes towards a CBDC adoption.

Second, we examine how consumers would allocate their funds across existing financial assets and the digital euro from a modest wealth shock. Third, we implement another survey experiment to estimate the causal effect of different holding limits on the propensity to adopt the digital euro and the amount allocated to it compared with other liquid assets. Moreover, we provide insights into the main reasons that discourage households from adopting this new form of payment, thereby identifying important communication challenges that central banks are likely to encounter.

We find evidence that consumers who are shown a short video providing concise and clear communication about the key features of the digital euro are substantially more likely to update their beliefs about this new form of payment, which, in turn, increases their immediate likelihood of adopting it compared to an untreated control group. In addition, when consumers are given the cost-free option to learn more about CBDC after the short video, most choose not to do so. Consumers interested in learning more about the digital euro are mainly the more financially literate and higher educated ones for whom information acquisition costs tend to be lower compared to their less literate and less well-educated counterparts. Our results also highlight the significant role of habit persistence in consumers' payment preferences. We demonstrate that a substantial portion of consumers report that they would likely not adopt the digital euro, primarily due to a strong preference for an existing payment method. These results suggest that clear communication about the digital euro's key practical features is essential to encourage broader adoption. However, for this communication to be effective, it needs to be repeated and targeted at groups that are not inherently inclined to learn more about this new payment option. Furthermore, communication efforts should account for the strong role of existing preferences and payment habits that many consumers have developed through their routine use of current forms of payments.

We also show that when presented with a positive wealth shock of €10,000, consumers tend to allocate only a small portion of this additional liquidity to the digital euro. At the same time, their portfolio allocation across alternative, traditional liquid assets—including cash, current accounts, and savings accounts—remains largely unchanged. In addition, our findings show that holding limits within the range of €1,000 to €10,000 have minimal impact on the composition of consumers' liquid asset portfolios. Moreover, there is virtually no bunching of the digital euro amount at thresholds of €3,000 or more.

1. Introduction

Several central banks are pursuing plans to introduce a central bank digital currency (CBDC) alongside physical money (BIS 2024; Auer et al. 2023). Such plans are drawn up amid a fast-changing payment landscape marked by reduced usage of cash and increasing use of non-cash payments (ECB 2022) and a rise of FinTech (ECB 2024; Berg et al. 2020). In October 2023, the European Central Bank started a preparation phase that aims to set up the relevant rules and infrastructure for the possible rollout of a retail-oriented digital euro. These preparations for a CBDC raise several important questions and associated trade-offs. On the one hand, central banks want to make sure that the new digital currency will be widely accessible and easy to use by consumers, but little is known about the demand for CBDCs that central banks can expect and how heavily they should invest in developing the necessary infrastructure (Huynh et al. 2021; Li 2022; Nocciola and Zamora-Pérez 2024; Claessens et al. 2024). Related to this, there is virtually no evidence on whether central banks should step up their communication efforts, which messages to communicate to the general public, and which groups to target. On the other hand, central banks try to avoid a potentially de-stabilising allocation of wealth into CBDC away from traditional bank deposits that might result in financial disintermediation and pose threats to financial stability (Andolfatto 2021; Agur et al. 2022; Piazzesi and Schneider 2022; Keister and Sanches 2023; Whited et al. 2023).

Against this background, we address three main issues related to the possible implementation and adoption of CBDC. First, we investigate the effectiveness of communication about key CBDC features by the central bank into changing consumers' beliefs about digital payments and encouraging them to adopt CBDC. To this end, we field a novel information experiment in a population representative survey where we show a short video to respondents in the treatment group and record their subsequent reactions in relation to those of an untreated control group. By implementing this Randomised Control Trial (RCT) approach we are able to identify the causal effect of central bank communication on consumer attitudes towards a CBDC adoption.

Second, we examine how consumers would allocate their funds across existing financial assets and the digital euro from a modest positive wealth shock. Third, we implement another survey experiment to estimate the causal effect of different holding limits on the propensity to adopt the digital euro and the amount allocated to it compared with other liquid assets.[1] Moreover, the paper provides insights into the main reasons that discourage households from adopting this new form of payment and thereby identified important communication challenges that central banks are likely to encounter.

[1] Our experimental design aims to contribute to economic research and discussions and is not related to the work of the digital euro team.

For our analysis, we use data from about 19,000 households collected in eleven euro area countries from a number of survey rounds of the Consumer Expectations Survey (CES), a nationally representative panel survey administered by the ECB. This survey, described in detail in ECB (2021) and Georgarakos and Kenny (2022), collects microdata monthly via the internet in a fully harmonised way since 2020. We use the CES to describe key features of the socio-demographic heterogeneity associated with awareness about and adoption of a digital euro in the euro area. To overcome the challenges of identification usually associated with observational studies, we also field several new survey experiments in the March 2024 round of the CES, implementing a special set of questions on the possible use of a digital euro. We complement this data with follow-up questions related to consumers' interest in the digital euro in the June 2024 wave of the CES.

Our starting point is a divergent pattern observed in the data over the past two years. While there is a significant increase in the fraction of consumers who have heard about the digital euro over this period there is not an analogous increase in their propensity to adopt it. This divergence suggests that mere awareness about CBDC may not automatically translate into consumer adoption and that there may be scope for more effective communication. However, estimating the causal effect of such communication on consumer demand for CBDC is empirically challenging and cannot be addressed with standard econometric methods. As we discuss below, the propensity to adopt the digital euro is partly determined by idiosyncratic unobserved factors and beliefs (e.g., economic sentiment, skepticism about new financial technologies) that in turn correlate with consumers' propensity to search for as well as the type of information they choose to receive about CBDC. Against this backdrop, we use RCT methods in which we investigate whether communication about key features of the digital euro can influence consumers' beliefs about digital payments and their propensity to adopt this new instrument.

We report three novel findings. Our first set of results concerns the effectiveness of communication that aims to promote the use of CBDC and points to possible communication challenges. We find evidence that consumers who are shown a short video providing concise and clear communication about the key features of the digital euro are substantially more likely to update their beliefs about this new form of payment, which, in turn, increases their immediate likelihood of adopting it compared to an untreated control group. We show that these findings are not driven by survey demand effects (see Haaland et al. 2023) but that they are relatively short-lived with the effects of communication largely fading away three months after our information experiment. In addition, when consumers are given the cost-free option to learn more about CBDC after the short video, most of them choose not to do so. Consumers interested in learning more about the digital euro are mainly the more financially literate and higher educated ones for whom information acquisition costs tend to be lower compared to their less literate and less well-educated counterparts. Our results also highlight the significant role of

habit persistence in consumers' payment preferences. We demonstrate that a substantial portion of consumers report that they would likely not adopt the digital euro, primarily due to a strong preference for an existing payment method. Taken together, these results suggest that clear communication about the digital euro's key practical features is essential to encourage broader adoption. However, for this communication to be effective, it needs to be repeated and targeted at groups that are not inherently inclined to learn more about this new payment option. Furthermore, communication efforts should account for the strong role of existing preferences and payment habits that many consumers have developed through their routine use of current forms of payments.

Second, we build on recent advancements in survey methodology that ask consumers to make hypothetical choices within realistic scenarios, where certain factors are experimentally varied (Stantcheva 2023). When presented with a positive wealth shock of €10,000, consumers tend to allocate only a small portion of this additional liquidity to the digital euro, while their portfolio allocation across alternative, traditional liquid assets—including cash, current accounts, and savings accounts—remains largely unchanged.

Third, to assess the causal effects of different possible limits on digital euro holdings on consumers' liquid wealth allocation we field another survey experiment where we randomly assign different holding limits to respondents and ask them to indicate how much of their current liquid wealth they would allocate to the digital euro. This randomization of the holding limits across sub-samples helps to overcome any concerns about reverse causality or endogeneity associated with unobserved consumer traits and beliefs (e.g., demand for liquidity, shopping behavior). Our findings show that holding limits within the range of €1,000 to €10,000 have minimal impact on the composition of consumers' liquid asset portfolios. Moreover, there is virtually no bunching of the digital euro amount at thresholds of €3,000 and above.

The introduction of CBDCs is a relatively recent development, and there are naturally very few empirical studies that use data to assess their potential implications. Most research to date has examined the impact of CBDC on the financial system and the macroeconomy from a theoretical angle.[2] This theoretical literature presents mixed findings on the welfare effects of introducing CBDCs, as they may pose potential threats to financial stability. Some studies suggest that central banks should be mindful of disintermediation risks if a significant number of consumers exchange their bank deposits for CBDCs

[2] Detailed recent reviews of this broad literature include Bindseil and Senner (2024), Chapman et al. (2023), Infante et al. (2022), Ahnert et al. (2022) and Zamora-Pérez et al. (2022). For a review of motivations for CBDC, including a geopolitical dimension, see Berg et al. (2024) and Demertzis and Lipsky (2023). In another recent study, Conlon et al. (2024) show how central bank announcements have the potential to boost positive sentiment towards CBDCs through the provision of reassurance.

(e.g., Keister and Sanches 2023; Whited et al. 2023). However, other studies argue that disintermediation could enhance welfare by alleviating incentive problems within private banks (e.g., Williamson 2022). Ultimately, the impact of CBDCs on the demand for bank deposits remains an empirical question.

Our paper contributes to a rapidly expanding body of empirical research on the potential introduction and future adoption of CBDCs. Due to the ongoing discussions about implementing CBDC in many countries, most studies currently rely on survey data that elicits consumer intentions and beliefs. For example, Li (2023) calibrates a structural model for Canadian consumers based on survey data on cash and bank deposit holdings, estimating that between 4% to 52% of household liquid assets could potentially shift to CBDCs. While this study highlights a substantial potential demand, it also points to considerable uncertainty, depending on the specific design features of the digital currency. Similarly, Zamora-Pérez and Nocciola (2024) use payment surveys from the euro area to assess CBDC demand and find that consumers may hesitate to adopt a newly introduced CBDC due to switching costs. They also point to a role of effective information dissemination about CBDCs as a means to promote adoption, independent of design features and overall trends in alternative payment options. Using data from the Indian CBDC pilot, Di Maggio et al. (2024) find that consumers substitute away from bank deposits when presented with the option to invest in CBDC.

Other studies have examined consumers' intention to adopt a CBDC by directly surveying their willingness for such a currency. Four studies closely related to ours are country-specific investigations focusing on Austria (Abramova et al. 2022), Germany (Ridder et al. 2024), the Netherlands (Bijlsma et al. 2023), and Slovakia (Cupak et al. 2024). These studies explore consumer intentions to adopt CBDCs and their attitudes toward different aspects of CBDC. Taken together, these papers suggest potential for CBDC adoption in the context of retail payments. However, the question remains how central banks can effectively promote adoption while balancing the risk of insufficient uptake versus the challenge of too many bank deposits being channelled into CBDCs.

Our paper contributes to the literature in at least three ways. First, we are the first to investigate the impact of central bank communication on consumers' intention to adopt a CBDC, using RCT methods to establish causality. Second, we contribute to the ongoing discussion about potential CBDC holding limits by testing the causal effect of different holding limits on the reallocation of liquid wealth toward the digital euro. Third, we address concerns about insufficient adoption of CBDC by exploring the factors that may be hindering the widespread use of this payment method. More broadly, to the best of our knowledge, this is the first paper to apply RCT methods to address the effects of communication

and holding limits on CBDC adoption and one of the few in the field of economics to use a video as information treatment within a survey RCT setting.[3]

The remainder of the paper is organised as follows: Section 2 outlines the survey design, focusing on the treatment selection and the experimental framework. Section 3 presents the empirical analysis, including robustness tests to ensure the integrity of the experimental design and robustness of our findings. Finally, section 4 concludes by discussing the implications of our findings.

2. Data and experimental design

2.1 The Consumer Expectations Survey

We use micro-level data from the ECB's Consumer Expectations Survey (CES). This internet-based survey is fielded every month in the eleven largest euro area countries offering nationally representative data of the underlying populations. The CES was launched in a pilot phase in January 2020 interviewing households every month in the six largest euro area economies (Belgium, France, Germany, Italy, the Netherlands, Spain). Since January 2022, the survey has been expanded to cover five additional countries (Austria, Greece, Finland, Ireland, and Portugal). The survey covers each month about 19,000 consumers and is described in detail by Georgarakos and Kenny (2022) and ECB (2021).

The flexible survey design, the very large number of observations, and its online nature make the CES especially suitable for our research purposes. The CES allows us to field survey experiments and special-purpose questions in a fully harmonised way across the euro area while also making use of rich background information on individual socio-demographic characteristics.

2.2 Survey information on CBDC and experimental design

Information about CBDC was collected in the CES for the first time in September 2021, two months after the ECB's announcement on 14 July 2021 to launch the investigation phase of a digital euro project (Ehrmann et al. 2023). During the subsequent investigation phase of a digital euro by the ECB (October 2021 to October 2023), the CES elicited information about CBDC on an ad-hoc basis to keep track of consumer awareness and the propensity to adopt of this new digital form of payment. In

[3] Videos have been used in RCT settings primarily in the field of medicine (e.g., El-Jawahri et al. 2010). A recent novel use of videos in finance has been by Schoar and Sun (2024) in the context of financial advice for retail investors.

particular, in August 2022 and June 2023 consumers were asked about their awareness and their intention to adopt a digital euro.[4]

In this paper, apart from this earlier information we mainly use data from a special purpose module fielded in March 2024 and a follow-up survey fielded in June 2024 with the purpose of uncovering consumers' attitudes towards CBDC. In addition, we fielded a number of survey experiments in the March special purpose module to address specific research questions.[5]

At the beginning of the March 2024 survey, we elicited awareness about the digital euro by asking respondents if they had *ever heard about it*. Additional background information, such as socio-economic characteristics, are collected in earlier survey rounds, or the regular monthly survey in March, fielded before the special purpose module. In what follows we discuss the experimental design, while Figure 1 provides an overall illustration of our experimental set-up.

a. Communication: Video treatment and Frequently Asked Questions (FAQ)

In the first part of the survey, we aim to investigate whether communication about key features of the digital euro can be effective and encourage consumers to adopt it. To this end, we fielded a randomised control trial, where we randomly split the entire sample into two groups. Half of the sample receives no information about the digital euro and serves as the control group. The other half of respondents receive some information about the digital euro. A novel feature of our experiment is that we use a short video to provide information to treated respondents. Recent research has shown that audiovisual communication is quite effective compared to static mediums (e.g., text) that are typically used in survey experiments.[6] Indeed, as we discuss below, the vast majority of respondents in the treatment group watched the entire video and found it quite engaging.

Following the information-provision stage we further randomised respondents in the treatment group into two equally-sized subgroups (i.e., 25% of the total sample each) where the first proceeded with the rest of the survey while the second was given the option to receive additional information (in the form of a set of Frequently Asked Questions (FAQs)) about the digital euro.

Within this second treatment group, we aim to examine who is seeking additional information (at low cost) about this new means of payment after receiving some basic information about the digital

[4] See Georgarakos et al. (mimeo) for an earlier analysis on heterogeneity in the adoption of a digital euro.
[5] See Appendix C for all related survey questions.
[6] See, for example, Ash et al. (2024) who show that video treatment leads consumers to adjust their expectations stronger than when receiving a text transcript. Larger effects of videos over text communication have been shown earlier by Chaiken and Eagly (1976, 1983) in the area of social psychology and Elliot et al. (2012) in the field of accounting. Similarly, Bholat et al. (2019) show how the inclusion of visuals can make monetary policy communication more relatable and increase trust.

euro via the short video. This way we can gain insights into how much information consumers are likely to demand about the digital euro and which population subgroups are more prone to receive such information. While it is instructive to gain such insights, one should note that the choice of respondents within this group to access more information is endogenous. As a result, our baseline analysis, on the causal effects of the information provision (via the video) on various outcomes will utilise the control group and the first treatment group that was not given the option to acquire more information. For completeness, we will also present results on the second treatment group in the Appendix that, in relation to the first, also includes some respondents who have chosen to receive the additional information via the FAQs.

The treatment video is publicly available via the ECB's webpage and the ECB YouTube channel since October 18, 2023. However, it is quite unlikely that survey participants had watched it as it had only 12,000 views by end-February 2024 (i.e., shortly prior to fielding our experiment).[7] The video, showing everyday life scenes, provides concise and practical information about key features of how the digital euro will work upon its implementation. It first points out the association to the ECB as the provider and the similarity to physical cash but in a digital form using a smart device. Different scenes show customers paying using "contactless" Near Field Communication (NFC) technology, and a wallet function also allows an easy transfer of money among peers. In addition, the video refers to key principles of a digital euro design, also featured on the ECB webpage, such as no transaction fees, euro area wide availability, and offline and online capabilities.[8] Through its relatively short length of 1:33 minutes, the video was well suited for implementing a web survey experiment since long videos might lead to substantial inattention. Notably, the video was fully embedded in the survey environment to avoid breaking the flow of survey questions. Since the CES is fielded simultaneously and fully harmonised across eleven euro area countries, we used Dubverse.ai, an industry-best-practice AI-based dubbing tool, to provide local language voice-over to the original video file.[9] We obtained the translated spoken word in the video directly from YouTube subtitles embedded there by the official ECB channel to match publicly available information. A team of local language experts in the ECB also double-checked both text translations and videos with local language voice-overs. To further aid the accessibility of the video, we enabled subtitles to show the translations at the same pace as in the original video. We also ensure respondents do not skip the video by implementing a minimum screen time for the duration of the video.

[7] The video is accessible here: https://www.youtube.com/watch?v=cNJis8BEieo.
[8] See https://www.ecb.europa.eu/euro/digital_euro/html/index.en.html.
[9] Dubverse.ai has also been used by large cooperate brands to reach audiences in their local language. See Appendix D for a detailed protocol of how the videos were processed.

As mentioned, in order to study who is more prone to receive additional information on the digital euro, the second treatment group of respondents was given the option to select to receive further information after the video. More specifically, after watching the video these respondents saw in a separate screen the following message:

If you want, you can learn more about the digital euro on the next screen. There we will show the answers to some of the most frequently asked questions about the digital euro.

Would you be interested to learn more about the digital euro?

If a respondent chose to receive additional information, she saw a follow up screen with a collection of 10 original Frequently Asked Questions and the ECB's official answers concerning the design, use, and goals of implementing a digital euro. [10] For each of the ten FAQ items, respondents were able to indicate if they had read it.

After the information provision stage, we ask all respondents about their propensity to adopt a digital euro with reference to four main usage dimensions. In particular, respondents answered the following question on a five-point Likert scale.

The European Central Bank is considering the introduction of a digital euro. It would be a digital form of cash issued by the central bank and available to everyone in the euro area.

If a digital euro is introduced, how likely is it that you would take the following decisions?

(i) *to make in-person day-to-day payments (e.g., in shops, including supermarkets or restaurants)*

(ii) for online purchases

(iii) in peer-to-peer transactions (e.g., with family and friends)

(iv) to receive my salary / wage in digital euro

As a final step in this first part, we aim to better understand the underlying motives of consumers who do not intend to adopt a digital euro. To this end, we asked all respondents who indicated adoption as *very unlikely* or *unlikely* at the end of the survey about the reasons for their apprehension towards a digital euro. We provided several different reasons with a residual option to select "other".[11] Moreover,

[10] These FAQs were displayed on one screen as unfolding items. The FAQ text shown remains available on the ECB webpage but has been updated in the meantime. The official translation to local languages from the ECB webpage was used. We obtained the version shown in February 2024 (i.e., the most recent update fieldwork for the survey started, see Appendix C for the detailed question wording). The current set of FAQs, was last updated in December 2024: https://www.ecb.europa.eu/euro/digital_euro/faqs/html/ecb.faq_digital_euro.en.html

[11] Respondents are asked to provide the most important reason: *Earlier you said that it would not be likely that you adopt the digital euro for day-to-day payments. Why is it not likely that you will adopt a digital euro for making in-person day-to-day payments?* And could choose from the following list: (i) *It will be less secure compared to alternative (non-cash) means of payment* (ii) *It will have lower degree of anonymity or privacy compared to*

as we discuss in Section 3.5, we take a number of steps to ensure the experimental integrity of the video and include additional questions to test formally for the so-called experimenter or survey demand effects.

Three months after the initial treatment intervention we asked all respondents of the June 2024 wave if they were aware of a digital euro and whether they had searched for any relevant information in the past 3 months. In addition, we repeat the same question asking about the intended adoption of a digital euro. Using the panel structure of the CES, this follow-up June survey allows us to assess the persistence of the initial digital euro communication on consumers' awareness, subsequent information acquisition, and propensity to adopt it.

b. Portfolio allocation

In the second section, following the information provisions stage, we invite respondents to allocate a hypothetical windfall of 10,000 EUR across various financial assets, including the option to hold (part of) their portfolio in digital euro. As we discuss, this portfolio scenario is a modified version of a similar question asked in earlier studies to study the causal effects of macroeconomic uncertainty on investment decisions (see Coibion et al. 2024). In the present context, it will help to gain insights on how the introduction of CBDC could affect (if at all) consumers' portfolio allocation across different financial assets. More specifically, we ask the following question:

> *Imagine that you receive a one-off windfall of €10,000 to store in cash, save or invest in financial assets. Please indicate in which of the following asset categories you would store/save/invest this amount.*
>
> *(i) Cash/physical money at home*
>
> *(ii) Digital euro in an application or digital wallet on a mobile device*
>
> *(iii) Current accounts or savings accounts*
>
> *(iv) Individual stocks or shares in publicly traded companies*
>
> *(v) Mutual funds and collective investments (including exchange-traded funds (ETFs))*
>
> *(vi) Government or corporate bonds*
>
> *(vii) Crypto-assets (e.g., Bitcoin)*
>
> *(viii) Other financial assets (e.g., retirement assets) not included above*

As this question was asked in the post-information treatment part of the survey our baseline analysis will be carried out using the control group only. In addition, we will compare the responses of

alternative (non-cash) means of payment (iii) *Shops currently not accepting alternative (non-cash) means of payment will not accept it* (iv) *It will come with additional transaction costs compared to alternative (non-cash) means of payment* (v) *I use alternative payment methods that meet my needs (vi) Another reason not listed above.*

those in the treatment group relative to the control group to study the extent to which the provision of some basic information about the digital euro (via the video) could influence portfolio rebalancing.

c. Holding limits

One of the main challenges in setting up a CBDC concerns its so-called holding limits, which regards the maximum amount consumers will be able hold in a CBDC at a given time. The main rationale put forward for holding limits is to avoid an excessive disintermediation of private bank deposits. In the third part of the survey, we aim to assess the effects of different holding limits on money allocation across different saving vehicles. A very low holding limit may discourage using digital euro for frequent and/ or some significant purchases and ultimately reduce its overall usage for payments. On the other hand, a very high limit may have broader repercussions for savings held in various types of accounts and for commercial banks more generally. Against this background, we conducted a third survey experiment. First, we ask respondents to report ownership and amounts held in their liquid and safe financial assets, including physical cash, current accounts, and savings accounts. Subsequently, we ask respondents the following question:

> *Imagine that a digital euro is introduced with a holding limit of {L} euro per person.*
> *Taking into account the money you (your household) currently hold on your current and savings accounts and in cash, how much money would you allocate into your digital euro account?*

We aim to estimate a causal relationship of the holding limit on the fraction of liquid assets that consumers would allocate into the digital euro, while taking into account their current amounts of safe financial resources. To this end, we randomly assign different possible holding limits to respondents (€1,000, €3,000, €5,000, €10,000, €50,000, €120,000). This way, we ensure that holding limits are, by design, orthogonal to consumers observed and unobserved characteristics. As a result, the differences in allocations that we will estimate stem from (exogenous) variation in holding limits. That is, they are not contaminated by differences in observed (e.g., wealth) and unobserved (e.g., economic sentiment) consumer characteristics. Given that we fielded this experiment after the video information provision, we can also examine whether such information impacts the estimated relationship between the limits and the allocated funds into the digital euro.

d. Other questions

One key motivation for setting up the digital euro regards the declining use and acceptance of cash in day-to-day payments and an increasing digitalisation of the payment landscape (see Cipollone 2024). One key feature of the digital euro would be to also operate in situations with limited connectivity (as a physical cash equivalent). To gain insights on the importance of this feature, we ask respondents

to indicate, using a slider that ranges from 0 to 100, the share of offline payments that they would be willing to perform with the digital euro:

> *A digital euro would offer both online and offline functionalities, anticipating situations of limited connectivity. When digital euro payments are made offline, payment information would only be known to the payer and the payee, providing the highest possible level of privacy. If you had to use the digital euro in some of your transactions, what fraction (in percent) of your total payments would you make offline?*

In our analysis, we test for the effect of the video treatment in encouraging the offline functionality of the digital euro.

Finally, we also include questions to address concerns of possible survey demand effects (see Haaland et al. 2023). To this end, we include a few additional questions that elicit information on the ECB's ability to achieve price stability also used in Ehrmann et al. (2023) and the perceived stance of the ECB on climate change. In particular, respondents were first asked to choose on a slider from 0% to 100% their perceived likelihood of price stability being delivered by the ECB over the medium-term:

> *How likely do you think it is that the European Central Bank will maintain price stability in the euro area economy over the next 3 years?*

On a separate screen, we ask respondents to indicate their agreement using a 5-point Liker scale with the following statement:

> *The European Central Bank works to better understand, monitor, and manage climate-related risks in monetary policy and investment operations, and in the financial system.*

In our robustness analysis, we test for differences in responses to these questions between control and the treatment group that was informed about the digital euro as a major ECB project. If the primary aim of these respondents following the video treatment is to please the survey sponsor (the ECB) they will tend to respond more positively to the ECB's role as outlined in these questions.

3. Empirical results

3.1 CBDC: knowledge and adoption

On 14 July 2021, the Governing Council of the ECB announced the launch of the investigation phase of the digital euro project. According to the CES data collected back then, about 9% of respondents had heard about the digital euro (see Ehrmann et al. 2021). [12] In August 2022, we asked CES respondents

[12] See Bindseil et al. (2024) or Bindseil and Senner (2024) for a review of key design features following the conclusion of the investigation phase of the digital euro project and a summary of main considerations by the academic literature so far.

again report whether they had heard about the digital euro. Only about 18% of consumers reported that they had heard about it, while this fraction increased to about one-third ten months later (June 2023). Over time, this significant increase in *awareness* among euro area consumers is also consistent with the ECB's communication efforts to inform the public about plans to assess and eventually set up this new form of digital payments. Consistent with this trend, awareness about the digital euro increased further in March 2024 to about 40% (Figure 2).

Following the question on awareness, we provided respondents in these surveys, starting from 2022, with the following brief, two-sentence information:

> *The European Central Bank is considering the introduction of a digital euro. It would be a digital form of cash, issued by the central bank and available to everyone in the euro area.*

We used this brief and rather neutral information as a common background to ask survey respondents how likely they would be to adopt the digital euro, in case it is introduced, for any of the following four, specific uses: daily purchases, online payments, peer-to-peer transactions, or as a salary depository.

About 28% of respondents reported that they would adopt (for at least one of the four possible uses) this new digital payment instrument in August 2022. This fraction increased to 45% in June 2023 (Figure 3, panel a) which signals a high demand for digital euro, although it stands below the fraction of households that own a bank or saving account (97% according to November 2024 CES). In any case, the propensity to adopt digital euro remained virtually unchanged between June 2023 and March 2024.

This 'flattening' in adoption rates between 2023 and 2024 contrasts sharply with the considerable increase in awareness about the digital euro recorded over the same period. There may be various factors behind these divergent patterns. For example, higher awareness is likely to reflect a higher information provision from multiple sources (media, the ECB, etc.) and/or more information acquisition on behalf of consumers, but, at the same time, the propensity to adopt may have begun to hit a 'ceiling' where more than 50% of consumers are not willing to embrace the new payment instrument.[13] Another possibility could be that the kind of information about the digital euro consumers have received has increased their awareness. Still, it may not be sufficient to encourage adoption among many. Against this background, it will be instructive to investigate the extent to which the propensity to adopt this new digital form of payment is mainly driven by consumer beliefs often revised in response to new information or more deeply ingrained preferences that are harder to change.

[13] Table B1 in the appendix provides some suggestive evidence of a decline in the conditional correlation between having heard about the digital euro and the propensity to adopt it.

We start our analysis using reduced-form regressions to estimate correlations between various socio-economic characteristics, awareness about the digital euro, and the propensity to adopt it.[14] These descriptive results, shown in Table 1, suggest some heterogeneities across demographic groups. For example, awareness about the digital euro and the propensity to adopt it are negatively correlated with being female and positively correlated with education. On the other hand, a distinct set of factors appears to be associated with only one of these two outcomes. Financial literacy correlates with awareness rather than with the propensity to adopt. Age, employment, and income do not correlate with awareness. Still, the likelihood of adopting is more prevalent among consumers who are younger, have more income, and are more affluent and non-employed. Taken together, these differential correlations suggest that there are likely different underlying factors behind the two outcomes and adoption should not be seen as an automatic outcome of awareness. Instead, one may need to design communication policies targeting different consumer groups to increase awareness and encourage adoption among them.

3.2 Communication, preferences and beliefs

The propensity to adopt the digital euro is not only determined by observed socio-economic characteristics, but also by idiosyncratic unobserved factors and beliefs that are likely time varying (e.g., skepticism about new technologies, privacy concerns, familiarity with digital payments, etc.). Such unobservables most likely correlate with consumers' choices to search for and the type of information they wish to receive about this new digital form of payment. Moreover, a consumer may choose to receive more information *because* she intends to adopt the digital euro. As a result, estimating the causal effect of communication that explains the key features of the digital euro on consumers' propensity to adopt it is empirically challenging and cannot be addressed with standard econometric methods.

Against this background, we use RCT methods to investigate whether some concise communication about key features of the digital euro can influence consumers' propensity to adopt it. To the extent it does, it will imply that (more) communication can effectively change people's beliefs about this new means of payment and, ultimately, encourage adoption. However, if consumer preferences mainly determine the propensity to adopt, these will be harder to change with new information, and one needs to uncover the underlying reasons (e.g., preference for another form of payment).

To be clear, our RCT does not aim to provide insights into which is the most effective way to communicate a given message to the public, as this may involve different communication channels (e.g.,

[14] We report here results for any use of the digital euro across the different dimensions (retail, online, peer-to-peer or receiving wages). Table B2 reports the results by dimension.

via traditional news media, social media, seminars, etc.) and different content that may vary in detail. Instead, we show engaging consumers with some brief but useful information about the main features of the digital euro (e.g., via a brief, practical and easy-to-follow video like the one we show) is an effective way to encourage adoption. More specifically, we estimate the following probit model:

$$Prob(P_{iz}) = Prob(\alpha_{c,s} + \beta_1 T_i + \gamma_1 X_i + \varepsilon_{iz} > 0) \quad (1)$$

where P_{iz} is a binary indicator that takes the value 1 if respondent *i* reports that he/she will adopt the digital euro for each of the four possible uses z (i.e., daily purchases, online payments, peer-to-peer transactions, or as a salary depository) and 0 otherwise. T_i is the dummy variable of interest denoting respondents who received the video treatment (i.e., takes the value 1 if respondent *i* was assigned to the treatment group and 0 otherwise). $\alpha_{c,s}$ is a set of dummy variables accounting for country and sample type (probabilistically or non-probabilistically recruited) dummies.[15] ε_{iz} is a standard error term. Apart from this parsimonious specification, we also estimate one that takes into account a set of additional controls X_{it} (such as age, education, income, financial literacy, etc.) that serve to increase the efficiency of our estimated treatment effect.

Estimated average marginal treatment effects from (1) for specifications with and without household controls and per intended use are shown in Table 2.[16] We find that the video treatment has sizeable and statistically significant positive effects on the likelihood of adoption with reference to each of the four possible uses. Overall, the information provision increases the likelihood of adoption by 12 pp. However, there are some notable differences across the estimated effects per intended use, as depicted in Figure 3 (panel b). In particular, the information treatment has a relatively modest impact on the likelihood of using the digital euro as a depository to receive monthly wages. This possible use is clearly the least popular among respondents in the control group. This likelihood increases by 7 pp for treated respondents and may reflect the fact that there is no explicit reference in the video about the possible use for receiving wages. The second least popular use of the digital euro among non-treated consumers regards its use for person-to-person transactions. We estimate the largest treatment effect for such use, possibly because a large part of the video is devoted to this particular feature, including transfers offline. In contrast, the estimated treatment effect on online purchases (representing the most popular possible use) is relatively modest. Overall, these underlying differences per intended use are consistent with the video content and provide additional support to the evidence discussed previously about a high number of respondents who found the video engaging.

[15] Given that all randomizations are stratified by country and sample type, we include dummy variables representing the respective strata in all our baseline specifications (see Gerber and Green 2012).
[16] Results from linear probability models estimated using OLS are virtually identical to those we present and are available upon request.

Following the video treatment, half of the treatment group was also given the option to acquire additional information on the digital euro. However, only about 38% of those respondents chose to receive some extra information in the form of an official FAQ from the ECB's digital euro page. This finding suggests that a majority of consumers display limited motivation to learn more about this new form of payment, even when they are given such an opportunity with seemingly minimal search costs. Furthermore, we correlate the choice of seeking more information with various socioeconomic characteristics. Results, shown in Table 3, suggest that older consumers and females are less prone to acquire more information. In addition, having low education and low financial literacy negatively correlates with the likelihood to acquire more information. This is striking as these two groups typically have limited knowledge about new payment methods and face higher information costs, nonetheless they choose not to learn more about the digital euro. These findings are consistent with widespread consumer inattention and inertia documented by various household finance studies and characterize a variety of consumer financial choices. Communication efforts can encourage digital euro adoption but its widespread use is unlikely to be straightforward. According to our evidence, effective communication needs to be targeted and carefully designed, e.g., towards groups that are not only less likely to adopt it but are also unwilling to learn more about it.

While video communication shows a sizable treatment effect encouraging the digital adoption of a digital euro for retail payments, not everybody would use it. The majority of consumers (~58%) in the treated group and even more in the untreated group (~69%) report that it would be unlikely or very unlikely that they would make retail payments with a digital euro. When respondents in the control group are asked why this is the case, the most prevalent answer by far (~43%) is that they prefer an alternative means of payment (see Figure 4).[17] This result suggests a high degree of habit persistence in payment preferences. While direct communication about a CBDC might temporarily shift beliefs about it and encourage adoption for some consumers, it might not convince the majority to switch to using such a new payment method.[18]

Three months after the initial information treatment, in June 2024, we asked all CES respondents whether they were aware of the digital euro. Like in previous studies, we also find evidence that the information provided seems to fade away quickly (e.g., Coibion et al. 2024). We then estimate the effect of the video treatment on awareness three months later, shown in the Appendix Table B3 (columns 1 and 2). We observe a statistically significant impact of a 3 pp higher likelihood on awareness. Moreover, we find no effects on information acquisition over the past 3 months (Table B3, columns 3 and 4),

[17] A similar pattern is displayed by the treatment group, see Figure A1 in the appendix.
[18] About 85% of consumers choose reasons from the list and not the residual option "other", which we see as evidence for having captured most of people's concerns that might hold back CBDC adoption.

pointing to some limits of communication in encouraging independent consumer search for information (see Ehrmann et al. 2023).

Regarding adoption, we find that after 3 months, there is a relatively small, statistically significant at the 10 percent level, positive effect of 2 pp on the propensity to use a digital euro for peer-to-peer payment (Table B3, column 11 and 12). This positive effect on the adoption of peer-to-peer payments could be related to its prominence during the video. In turn, consumers might have updated their beliefs about a possible use for peer-to-peer payments more strongly, in line with the more substantial immediate treatment effect (17 pp). We do not find any statistically significant impact for overall adoption or intended use for day-to-day payments or receiving wages.

A distinct feature of cash compared to existing digital means of payment such as debit cards, credit cards or smartphone/-watch apps is its offline functionality. Cash as a means of payment offers thereby additional resilience even if network coverage is limited or in the (rare) event of a power cut. A digital euro will also offer such offline functionality according to the ECB (see Cipollone 2024). The video shown to the treatment group explicitly highlights the feature of offline usability. In additional background analysis, we find indeed that respondents from the treatment group are about 4 pp more likely to use a digital euro offline compared to the control group.[19] Given consumers in the control group would use this feature for about one-third of transactions this represents a non-trivial and statistically highly significant treatment effect. This result suggests that communicating about key features of the digital euro that point to the similarity to cash might be one factor for encouraging adoption.

Overall, our findings suggest that direct communication can stimulate immediate interest and willingness to adopt a CBDC. Such communication, however, would need to be repeated as the effects fade away quickly and seem to have largely dissipated after three months.

3.3 Portfolio allocation across assets and CBDC

A frequently discussed question linked to the introduction of CBDC is how (if at all) the availability of an unremunerated, highly liquid, and safe asset, directly issued by the central bank, other than physical cash, would affect consumers' choice to allocate their savings across various financial assets. Following recent developments in survey methodology, we ask respondents to think of a modest wealth gain that can realistically relate to a bonus, in vivo transfer, or a small bequest and make hypothetical portfolio choices.[20] More specifically, we engage respondents in a portfolio allocation

[19] See Table B4 in the appendix reporting the regression results.
[20] A number of studies have fielded such hypothetical scenarios to examine the consumption response from positive wealth shocks, see, e.g., Shapiro and Slemrod (2003), Jappelli and Pistaferri (2014), Christelis et al. (2019), Fuster et al. (2021).

scenario where we ask them how they would invest a windfall of €10,000 across different asset classes. Similar scenario questions have been used recently in other survey experiments to assess, e.g., the impact of macroeconomic uncertainty, various consumer beliefs, and inflation expectations and uncertainty on portfolio investment (see Coibion et al. 2024, Beutel and Weber 2023, and Georgarakos et al. 2024, respectively). In the second part of the survey, we ask all respondents such a portfolio allocation question where, beyond the standard asset classes (e.g., cash, bank accounts, stocks etc.), they are also given the option to allocate (at least part of) the €10,000 windfall into digital euro. In addition, we compare these responses to those given in similar questions without the digital euro option that had been asked few months earlier in the CES (in September 2022 and December 2023). This way we can gain insights into the possible 'spillover' effects that the introduction of the digital euro may have on the structure of household portfolios.

The information we collect allows analysing portfolio behaviour in response to a positive wealth shock with regards to two margins: an extensive margin where we study which asset class will be owned or not and an intensive one that focuses on the amount invested on owning the underlying asset class. In Figure 5, panel (a), we show ownership rates per asset class from an assumed €10,000 windfall using responses to September 2022 and December 2023 surveys (without the digital euro option) and March 2023 (with the digital euro option).[21] The ownership rates reported in September and December waves of previous years across the various asset classes are quite comparable. When these are compared to the control group in March 2023 that was given the additional digital euro option, it is apparent that there are few but relatively small differences in some asset classes. About 27% of consumers in the control group would allocate, at least part of the €10,000 windfall into a digital euro (i.e., the extensive margin). For comparison, the respective ownership rates for cash and bank accounts are 55% and 82%, respectively. In panel (b) of Figure 5 we show unconditional average portfolio shares per survey wave and asset category. The intended allocation towards the digital euro is about 5.1% on average and does not seem to significantly crowd out other asset categories. If anything, when provided with the digital euro option, respondents on aggregate would allocate a relatively lower fraction in physical cash (i.e., its closest substitute) and a relatively higher fraction in current and savings accounts.[22] If one looks instead into the conditional portfolio shares (i.e., among those who would allocate some money into the

[21] As this question was part of two other information experiments fielded in September 2022 and December 2023, we show results from the respective control groups that answered the question without receiving any prior information. To facilitate a more direct comparison we also use the control group from March 2024 special-purpose survey that is utilised in the present study. The March 2024 version does include the digital euro option but, unlike the two earlier versions, it does not provide investment in retirement assets as a separate category (instead respondent can use the category other to indicate investment in retirement assets).

[22] One should note that both ownership and shares allocated in current and saving accounts (cash) display some small increase (decrease) over time that may reflect the more favorable interest rate environment.

digital euro) the intended digital euro share is 22%, and these consumers would hold significantly less into current/ savings accounts compared to their counterparts who would not hold the digital euro. We look more closely into the likely substitution across liquid holdings of this group, also in relation to the possible holding limits, in the next section.

We also estimate how these portfolio allocations from the positive wealth shock associate with household socio-economic characteristics and the effect of our communication treatment. To this end, we estimate the following specification:

$$W_{ik} = \alpha_{c,s} + \beta_1 T_i + \gamma_1 X_i + \omega_{ik} \quad (2)$$

We first estimate (2) using a set of probit models where W_{ik} is an indicator variable that takes the value 1 if the respondent *i* would choose to own the respective asset category *k* (i.e., cash, digital euro, bank accounts, stocks, mutual funds, bonds, crypto and other assets). Subsequently, we use a series of tobit models where W_{ik} represents the fraction of the windfall that would be invested in every asset *k* (conditional on owning it). The estimated tobit models with lower limits 0 and 1 account for the fact that a (non-random) fraction of respondents chooses not to allocate any of the windfall gain into certain asset classes, while relatively few respondents may allocate the entire windfall into one asset class only. Like in specification (1), T_i represents the video treatment dummy, X_i a vector of demographics, $\alpha_{c,s}$ a set of country and sample type dummies, and ω_{ik} an error term.

We show estimated results from (2) on the extensive and intensive margins of portfolio allocation in Table 4, panels (a) and (b), respectively.[23] As regards demographics, it is apparent that the allocation into digital euro implies a strong negative age gradient that contrasts with the absence of estimated age effects for cash and bank accounts. Instead, similar negative age profiles are derived for risky financial assets such as stocks and mutual funds as well as for crypto assets.

Our evidence on financial literacy aligns with the extensive household finance literature (see e.g., Van Rooij et al. 2011), namely that literate consumers are more likely to invest in sophisticated and risky assets, such as stocks, mutual funds and bonds. On the other hand, literacy associates negatively with allocating windfall money into cash and the digital euro, suggesting that CBDC is not viewed as a complex, informationally demanding and risky asset. The estimated negative effect may reflect uncaptured wealth effects (i.e., wealthier consumer would not need to allocate additional money for transaction purposes) and/ or may be also consistent with our earlier finding that more literate respondents are more inclined to learn more about digital euro in order to adopt it.

[23] For brevity, we show estimated average marginal effects for few selected covariates and the video treatment dummy, and the entire set of results are shown in appendix Table B5.

Turning to indicators of affluence, we do not find any systematic association between income quartiles or being hand-to-mouth and allocation into the digital euro (appendix tables B5 and B6). In contrast, hand-to-mouth consumers are more likely to allocate the windfall gain into cash and less likely into a bank account, possibly because they face limitations in their access to banking services. To gain additional insights into the possible role of wealth differences for these results, we combine our survey with information on household wealth that is collected in the CES November 2023 module. Utilising this additional information we calculate a measure of cash-on-hand (total financial wealth plus monthly household net income) that represents a standard household well-being variable in life cycle portfolio models and the empirical household finance literature. We present results for a specification that instead of income conditions on quartiles of cash-on-hand in appendix Table B6. Consistent with our baseline specification we do not estimate any clear pattern between cash-on-hand and investment allocation into digital euro.

Taken together, the association above suggest that the digital euro is likely seen as a non-complex, non-information demanding, and a low-risk instrument that can be also held by low-income consumers. Instead, to ensure financial inclusion, CBDC designers will have to also take into account the strong negative age gradient and the aversion of older consumers in adopting it.

Next, we also test the effects of the video treatment on the propensity to allocate windfall money into digital euro. We find about a 13pp higher propensity to use digital euro for consumers who received the video treatment compared to the control group (Table 4 panel a). This treatment effect is well aligned with the effect on the propensity to use the digital euro for either retail payments, online purchases, peer-to-peer transactions or receiving a wage / salary that we estimated in Section 3.2 and highlights the consistency of responses across different experimental settings.[24] Moreover, there are not any discernible effects of the video treatment on other asset categories. This suggests that a focused communication on a digital euro is unlikely to trigger investment into other assets such as crypto.

In sum, we find no evidence on aggregate for sizable spillovers to other (traditional) asset categories such as cash or bank account (Table 4 panels a and b). Instead, consumers would allocate relatively less in stocks, bonds and other investments to allocate some funds into digital euro wallets. Overall, however, these effects are quantitatively minor and statistically not significant at any conventional level.

[24] Table B7 in the appendix compares the average treatment effects of the video treatment and shows overall quantitatively comparable effects. Differences in digital euro adoption on the extensive margin in the control group might in part be caused by different question wording, response scale and the context of the question (use for a specific purpose, sizable wealth shock, reallocation of household's current asset holdings). A particular strength of our approach is that it allows a comparison of the treatment effects across all three design choices and yields both qualitatively and quantitatively comparable results.

3.4 Holding limits and portfolio allocation into CBDC

One important design feature of CBDCs with possible unintended consequences for savings accounts and commercial banks more generally regards its holding limits, i.e., the maximum amount of CBDC that is permitted to be held in a digital wallet at any point in time. Central banks have the opportunity to set such limits and the views about the 'right' level of holding limits often diverge and may imply certain trade-offs. While the ECB has indicated a range of €3,000 to €4,000 as a possible limit, the Bank of England contemplates a significantly higher amount of about £20,000 (see Demertzis and Lopez 2024). Academic evidence on this important issue is quite scarce. One exception is Bidder et al. (2024), who use a theoretical model matched with a sample of German consumers and find that a holding limit between €1,500 and €2,500 would increase welfare and ensure financial stability.

Deriving consistent estimates of the effect of different holding limits on the propensity to adopt and allocate money into digital euros is empirically challenging as the underlying amounts likely correlate with unobserved consumer traits and beliefs (e.g., demand for liquidity, shopping behaviour). To address these endogeneity concerns we design another survey experiment to estimate the causal effect of different holding limits on consumers' demand for CBDC and thus helps assess the likely 'spillover' effects of these limits for other safe and liquid financial assets in household portfolios. Our design considers holding limits in the range of €1,000 to €120,000, broadly covering the range of proposed holding limits in the literature.

We draw from recent advancements in survey-based scenario questions where the (endogenous) variable of interest is randomly assigned to respondents to facilitate that its effect is consistently estimated. For example, Christelis et al. (2024) randomly assign the amount of a hypothetical windfall to survey respondents and then ask them how much they would consume and how much they would allocate between risky and safe financial assets. In this way they can estimate the effects of a positive wealth shock on respondents' marginal propensity to consume and on stock investing. As also explained in Section 2.2, the random assignment of different holding limits to survey respondents in our setup ensures that we identify the causal effects of holding limits on liquid wealth allocation towards the digital euro. In this context, we examine the impact of the holding limits into two margins: the extensive margin that regards the likelihood to hold digital euro or not and the intensive margin that regards the fraction of total liquid savings that are allocated into a digital euro.

More specifically, we estimate the following specification:

$$Y_i = \alpha_{c,s} + \sum_{j=1}^{M} \pi_j L_{ji} + + \gamma_1 X_i + \varepsilon_i \qquad (3)$$

where Y_i denotes: either i) an indicator variable that takes the value 1 if the respondent i would choose to hold some digital euro; or ii) the fraction of liquid assets that they would allocate into the digital euro (conditional on holding some of it). We estimate i) using a probit model, while we estimate ii) using a

tobit model with lower limit 0 to account for the fact that a significant (non-random) number of respondents would not choose to hold any digital euro. L_{ji} are dummy variables representing the various holding limits j that are randomly assigned to each respondent (where j is €1,000, €5,000, €10,000, €50,000 and €120,000, with €3,000 being the omitted category). ε_i is a standard error term. As before, X_i consists of a set of demographics that help to improve efficiency of the treatment effects of interest (π_j) and $\alpha_{c,s}$ a set of country and sample type dummies.

Given that the random assignment of holding limits is orthogonal to the random allocation into the control and video treatment group that took place earlier in the survey, we can derive consistent estimates of $\pi_j$either using the entire sample of respondents or the control group only (for completeness we show results on both). Still, we exploit the fact that the scenario question on limits was fielded after the video communication experiment and test whether the various limits imply a differential demand for CBDC between a baseline group of consumers and their counterparts who did receive information about key CBDC features.[25]

In general, consumers are willing to reallocate at least some money into CBDC. About 63% of consumers in the control group would reallocate some liquid assets (cash or bank account savings) into digital euros. The higher rate of usage compared to the different scenarios discussed before can be rationalised as we ask respondents in this scenario to suppose a digital euro is already introduced today. That is, we specify a (randomly assigned) holding limit and ask more broadly about the allocation of their liquid assets into the digital euro (and not their intended use per specific purpose or asset class).

Our results across the holding limits suggest no noticeable difference in the reallocation of liquid assets on the extensive margin, as illustrated in Figure 6. We test this result more formally by using a probit model to estimate (3). Results in Table 5 (panel a) suggest no significant differences between higher or lower holding limits compared to the baseline category of €3,000.

Conditional on investing some liquid wealth into digital euros, respondents allocate 16% of their liquid assets (cash, money in bank accounts, and crypto assets) to digital euros on average.[26] Next, we assess the effect of different holding limits on the (conditional) share of liquid wealth allocated into digital euro by estimating a Tobit model. We report average marginal treatment effects conditional on digital euro ownership in Table 5, panel b (columns 5 and 6). Our results suggest that a holding limit of €1,000 leads to 1pp less liquid wealth allocated to the digital euro. In contrast, a €5,000 limit is associated with no systematic increase in liquid wealth allocation to the digital euro. Limits of €50,000

[25] See Figure A2 in the appendix for a comparison.
[26] In our baseline specification reported in Table 5 we use random draws of a uniform distribution from the ranges respondents choose (see appendix C for the question wording) for each asset type to impute their total liquid asset holdings. In Table B8 in the appendix we use the upper bound for each asset type instead with very similar results.

and €120,000 are associated with an equal rise of 1pp more liquid wealth allocated into digital euro, respectively. However, turning to those respondents who received the video treatment, we find some evidence for larger conditional effects on the share of liquid wealth allocated into digital euro, suggesting some additional impact of communication in the presence of relatively high holding limits compared to what is currently discussed in the public debate for the euro area. Overall, our results show that different holding limits, at least in the range of €1,000 to €10,000, have relatively small and insignificant effects on the composition of liquid asset holdings compared to a base limit of €3,000.

Last, this setup also allows to examine whether there are signs of bunching of the amounts allocated into the digital euro at various possible thresholds. To this end, we report the share of consumers that would allocate into digital euro more than 90% of their assigned limit (appendix Table B9). We also estimate the likelihood of allocating such a high share close to the threshold as a function of the various limits and demographic characteristics. Results, shown in appendix Table B10, suggest some bunching at the lowest limit of €1,000 but no bunching of the digital euro amount at thresholds of €3,000 and above.

In this context, we also use information from the main survey on respondents' expectations about the likelihood of a financial crisis affecting the financial system and their country's economy over the next twelve months. In particular, we re-estimate the specifications shown in this section (Table 5, panel b and Table B10) by interacting the holding limits dummies with a dummy denoting a relatively high expectation (more than 50%) of a financial crisis. In none of these specifications do we find any significant effect for the interaction terms, suggesting that idiosyncratic beliefs about a financial crisis episode are unlikely to drive the estimated effects of holding limits on liquid wealth re-allocation or possible bunching.

3.5 Experimental integrity and robustness

We use a number of ways to assess the experimental integrity of the video shown in the information provision stage. First, we look at the balance of key socio-economic characteristics between the control and treatment groups (Table B11). We find no evidence of a systematic difference between treatment and control groups across countries or along key characteristics such as age, education, gender, income, financial literacy, and household size or the perceived likelihood of a future financial crisis. Moreover, the treatment and control groups do not systematically differ in terms of time spent to complete the regular monthly survey, awareness about a digital euro reported prior to the treatment or having received any type of news, including about a digital euro, that regard the ECB over the one month preceding the interview. We only find a statistically significant (at the 5% level) but quantitatively small

difference for the share of hand-to-mouth consumers in Treatment arm 2. Overall, we conclude from these tests that the randomisation has worked as intended.

Second, we take advantage of the web survey's automatically collected para-data and analyse the time respondents spent on the screen of the video. It turns out that respondents found the video quite engaging, as most of them spent more time than the duration of the video (1:33 minutes) watching. On average, consumers spent 1:58 minutes on the video screen[27], which is 27% more than the original video time. 25% of respondents spend 1:36 minutes or less on the video screen, close to the minimum time, and another 25 spend 1:51 on the video. There was no restriction on the number of times people could watch the video, so this might reflect the number of respondents who re-watched sections of the video.[28]

Third, we directly test for attention by following the usual practice of including an attention check question (see Haaland et al. 2023 and Stantcheva 2023). Almost all respondents (91%) answered a follow-up check question about the videos' content correctly.[29] In our baseline analysis we do not eliminate respondents who failed the attention check to avoid introducing any sample bias by selecting on post treatment variables.[30]

One concern regarding our findings might be that they are mainly driven by the so-called survey (or experimenter) demand effects. In our context, demand effects would imply that treated respondents may tend to over-report that they will adopt the digital euro when they realise that they receive information about an ECB project in a survey that the ECB sponsors.[31] However, we implement a formal test to assess demand effects directly. To this end, we ask respondents in the post-treatment stage about their views regarding the ECB's role in two different contexts. First, we ask how credible respondents think the ECB is in delivering price stability. Responses are recorded on a 0 to 100 scale using a slider question.[32]

How likely do you think it is that the European Central Bank will maintain price stability in the euro area economy over the next 3 years?

Second, we ask on a 5-point ordinal Likert scale about climate risks.

[27] We winsorised the most extreme two percentiles to account for outliers.
[28] See Figure A3 (panel a) in the appendix for the distribution of response times to the special-purpose module.
[29] We ask respondents "Think back to the video you just saw. What would you say was the main topic of that video?" and they can choose from (i) A music video on a new European Anthem *(ii) A possible new payment method for euro area consumers* (iii) A new product available in supermarkets for consumers (iv) A summary of recent interest rate decisions by the European Central Bank (v) A soon to be available new handheld gaming device. See Figure A3 (panel b) for the distribution of responses.
[30] See, for example, Varaine (2023) for a discussion of omitting respondents who failed the attention check as a source for bias in estimates. In any case, our results remain virtually unchanged when we drop those few 'inattentive' respondents.
[31] In line with European regulation, the European Central Bank is disclosed to the respondent at the recruitment stage and are available at all times in a publicly accessible online FAQ.
[32] This question was first introduced by Ehrmann et al. (2023).

Please indicate how much you agree with the following statement:

The European Central Bank works to better understand, monitor, and manage climate-related risks in monetary policy and investment operations, and in the financial system.

Thus, we ask how people view the ECB with explicit reference to its key mandate (price stability) as well as to a policy challenge (climate risks) that represents one possible threat for price stability and many people can easily relate to. If survey demand effects had been important, the treatment group should have reported a higher likelihood the ECB to achieve price stability and should have displayed a more positive view of the ECB's climate stance. However, differences between the treatment and control groups for both these questions are statistically insignificant and quantitatively unimportant (Table B12). For example, the difference in the perceived likelihood of price stability is close to zero and statistically insignificant at any conventional statistical level. Similarly, respondents who belong to the treatment group are not more or less likely to agree that the ECB is taking climate change into consideration. In both cases, we find no evidence of respondents who received information about the digital euro to purposefully report more positive assessments of the ECB's role. Taken together, we assess the video treatment to have been successfully administered without any signs of inattention during the treatment or survey demand effects being present.

One additional consideration could be that the video treatment did not only encourage people's propensity to adopt a digital euro but also changed their beliefs of the attractiveness of digital assets more generally. We test for this by asking respondents post-treatment about their plans of purchasing any (or any additional) crypto assets over the next 12 months. While about one out of ten consumers report to plan purchasing crypto assets over this period, we find no meaningful or statistically significant differences between the control group and respondents who received information about the digital euro.[33] We conclude from this that the video treatment triggered effects that relate to its content and did not create any spillovers to other existing digital assets.

Another concern could be that the video treatment annoyed some respondents and triggered survey attrition. Through the panel dimension of the CES we can test this hypothesis by comparing the attrition in the following month (April 2024) as well as in subsequent waves (May and June 2024). In results shown in appendix Table B14 we do not find any statistically significant difference in attrition rates between the untreated and treated respondents. We view this as additional evidence for a successful treatment implementation that did not increase the overall survey burden beyond a point that would have caused differential attrition.

[33] See Table B13 in the appendix for the results.

Last, we also check the balance of key socio-economic characteristics across the six possible CBDC limits that were randomly assigned across respondents. As intended, overall socio-demographic characteristics are well balanced across the randomly assigned limits (appendix Table B15). In three instances we find statistically significant but quantitatively small differences (age, gender, hand-to-mouth) most likely reflecting the small underlying samples. In any case, as shown, our results are resilient to controlling for these characteristics in our regression analysis.

4. Conclusion

The way people make payments has drastically changed over the last years and will change further in the years to come. The use of physical cash for euro area retail payments declined from 79% in 2016 to 59% in 2022 (ECB 2022). In contrast, contactless cards and smart payments are on the rise. If anything, COVID-19 seems to have accelerated this trend.[34] As a response to these rapid developments and the expansion of digitalisation in payment via private entities, the majority of central banks across the world are now investigating or piloting CBDCs (BIS 2024).

Our paper uses data on consumers for the euro area, where 25 years after introducing the euro, the ECB is preparing for a possible introduction of a digital version of its common currency. In doing so, we also provide new evidence that speaks to emerging literature on the development and implementation of CBDCs around the globe.

We provide several novel findings. First, we show that concise and practical communication about key features of the digital euro can affect consumers' propensity to adopt a digital euro. As we argue, there is clear scope for effective communication to change consumer beliefs about this new form of payment and ultimately encourage its adoption. However, for such communication to be effective in the planning and possibly in the roll-out phase it needs to be targeted, well designed, and repeated. Repeated communication appears necessary because the effects that we estimate seem to dissipate rather quickly. On the other hand, for a non-trivial fraction of consumers the possibility of adoption seems quite far-fetched and many of them display a strong preference towards another (existing) payment method that is already perceived to meet their needs. This finding also suggests that convincing some users of the value added of a CBDC might pose a challenge for policymakers, and more research will certainly be needed in this area. Second, we find that consumers would allocate a relatively small fraction out of a positive wealth shock in digital euro and their portfolio composition in other liquid assets would be little affected. Third, different holding limits at least over the range between €1,000 and €10,000 have quite small and insignificant effects on the composition of liquid asset holdings.

[34] See Jonker et al. (2022) for a recent review of this literature.

References

Abramova, S., Böhme, R., Elsinger, H., Stix, H. and Summer, M., 2022. What Can CBDC Designers Learn from Asking Potential Users? Results from a Survey of Austrian Residents (No. 241). Working Paper.

Agur, I., Ari, A. and Dell'Ariccia, G., 2022. Designing Central Bank Digital Currencies. Journal of Monetary Economics, 125, pp.62-79.

Ahnert, T., Assenmacher, K., Hoffmann, P., Leonello, A., Monnet, C., and Porcellacchia, D., 2022. The Economics of Central Bank Digital Currency. ECB Working Paper No. 2022/2713.

Ash, E., Mikosch, H., Perakis, A. and Sarferaz, S., 2024, Seeing and Hearing is Believing: The Role of Audiovisual Communication in Shaping Inflation Expectations, CEPR Discussion Paper No. 18792. CEPR Press, Paris & London.

Auer, R., Cornelli, G., and Frost, J., 2023. Rise of the Central Bank Digital Currencies. International Journal of Central Banking, 19(4), 185-214.

Andolfatto, D., 2021. Assessing the Impact of Central Bank Digital Currency on Private Banks. The Economic Journal, 131(634), pp.525-540.

Berg, T., V. Burg, A. Gombović, and M. Puri (2020). On the Rise of FinTechs: Credit Scoring Using Digital Footprints. Review of Financial Studies, 33(7), pp. 2845–2897

Berg, T., Keil, J., Martini, F. and Puri, M., 2024. CBDCs, Payment Firms, and Geopolitics (No. w32857). National Bureau of Economic Research.

Beutel, J. and Weber, M., Beliefs and Portfolios: Causal Evidence (September 21, 2023). Chicago Booth Research Paper No. 22-08.

Bholat, D., Broughton, N., Ter Meer, J. and Walczak, E., 2019. Enhancing Central Bank Communications using Simple and Relatable Information. Journal of Monetary Economics, 108, pp.1-15.

Bidder, R., Jackson, T. and Rottner, M., (2024), CBDC and Banks: Disintermediating Fast and Slow. Deutsche Bundesbank Discussion Paper No 15/2024.

Bijlsma, M., van der Cruijsen, C., Jonker, N. and Reijerink, J., 2024. What Triggers Consumer Adoption of Central Bank Digital Currency?. Journal of Financial Services Research, 65(1), pp.1-40.

Bindseil, U., Panetta, F., and Terol, I., 2021. Central Bank Digital Currency: Functional Scope, Pricing and Controls. ECB Occasional Paper, (2021/286).

Bindseil, U. and Senner, R., 2024. Macroeconomic Modelling of CBDC: A Critical Review, ECB Working Paper No 2978.

Bindseil, U., Cipollone, P., and Schaaf, J., 2024. The Digital Euro after the Investigation Phase: Demystifying Fears about Bank Disintermediation, VoxEU.org, 19 February.

BIS (2023). Central Bank Digital Currencies: Ongoing Policy Perspectives (May 2023).

Blinder, A.S., Ehrmann, M., de Haan, J. and Jansen, D.J., 2024, Central Bank Communication with the General Public: Promise or False Hope? Journal of Economic Literature.

Brown, M., Hentschel, N., Mettler, H., and Stix, H., 2022. The Convenience of Electronic Payments and Consumer Cash Demand. Journal of Monetary Economics, 130, 86-102.

Brunnermeier, M., and Niepelt, D.. 2019. "On the Equivalence of Private and Public Money." Journal of Monetary Economics 106:27–41.

Chaiken, S. and Eagly, A.H., 1976. Communication Modality as a Determinant of Message Persuasiveness and Message Comprehensibility. Journal of personality and social psychology, 34(4), p.605.

Chaiken, S. and Eagly, A.H., 1983. Communication Modality as a Determinant of Persuasion: The Role of Communicator Salience. Journal of personality and social psychology, 45(2), p.241.

Chapman, J., Chiu, J., Davoodalhosseini, M., Jiang, J. H., Rivadeneyra, F., & Zhu, Y., 2023. Central Bank Digital Currencies and Banking: Literature Review and New Questions. Staff Discussion Paper 2023-4, Bank of Canada.

Chen, S., Doerr, S., Frost, J., Gambacorta, L. and Shin, H.S., 2023. The Fintech Gender Gap. Journal of Financial Intermediation, 54, p.101026.

Christelis, D., Georgarakos, D., Jappelli, T., Pistaferri, L. and Van Rooij, M., 2019. Asymmetric Consumption Effects of Transitory Income Shocks. The Economic Journal, 129(622), pp.2322-2341.

Christelis, D., Georgarakos, D., Jappelli, T. and Kenny, G., 2024. Wealth Shocks and Portfolio Choice. Journal of Monetary Economics, p.103632.

Cipollone, P., 2024. Monetary Sovereignty in the Digital Age: The Case for a Digital Euro. Keynote speech at the Economics of Payments XIII Conference organised by the Oesterreichische Nationalbank.

Claessens, S., Cong, L.W., Moshirian, F. and Park, C.Y., 2024. Opportunities and Challenges Associated with the Development of FinTech and Central Bank Digital Currency. Journal of Financial Stability, p.101280.

Coibion, O., Georgarakos, D., Gorodnichenko, Y., Kenny, G. and Weber, M., 2024. The Effect of Macroeconomic Uncertainty on Household Spending. American Economic Review, 114(3), pp.645-677.

Conlon, T. S. Corbet, Y. (Greg) Hou, Y. Hu C. Larkin and L Oxley (2024), Understanding sentiment shifts in central bank digital currencies, Journal of Behavioural and Experimental Finance 44(2024) 100988.

Cupak, A., Gertler, P., Hajdiak, D., Klacso, J. and Rychtarik, S., 2024. Survey of Potential Users of the Digital Euro: New Evidence from Slovakia (No. OP 2/2024). Research Department, National Bank of Slovakia.

Demertzis, M. and Lipsky, J., 2023. The Geopolitics of Central Bank Digital Currencies. Intereconomics, 58(4), pp.173-177.

Demertzis, M. and Lopez, K., 2024. On the Digital Euro Holding Limits. Bruegel Analysis.

Di Iorio, A., Kosse, A. and Mattei, I., 2024. Embracing Diversity, Advancing Together-Results of the 2023 BIS Survey on Central Bank Digital Currencies and Crypto. BIS Papers No. 147.

Di Maggio, M., Ghosh, P., Ghosh, S.K. and Wu, A., 2024. Impact of Retail CBDC on Digital Payments, and Bank Deposits: Evidence from India (No. w32457). National Bureau of Economic Research.

El-Jawahri, A., Podgurski, L. M., Eichler, A. F., Plotkin, S. R., Temel, J. S., Mitchell, S. L., ... & Volandes, A. E., 2010. Use of Video to Facilitate End-of-Life Discussions with Patients with Cancer: A Randomized Controlled Trial. Journal of Clinical Oncology, 28(2), 305-310.

Elliott, W.B., Hodge, F.D. and Sedor, L.M., 2012. Using Online Video to Announce a Restatement: Influences on Investment Decisions and the Mediating Role of Trust. Accounting Review, 87(2), pp.513-535.

European Central Bank (ECB), 2021. ECB Consumer Expectations Survey: An Overview and First Evaluation, ECB Occasional Paper No. 287.

European Central Bank (ECB), 2022. Study on the Payment Attitudes of Consumers in the Euro Area (SPACE). ECB, Frankfurt am Main.

European Central Bank (ECB), 2024. Report on Financial Integration and Structure in the Euro Area. ECB, Frankfurt am Main.

Fernández-Villaverde, J., D. Sanches, L. Schilling, and H. Uhlig, 2021. Central Bank Digital Currency: Central Banking for All?, Review of Economic Dynamics 41, 225-242.

Fuster, A., Kaplan, G. and Zafar, B., 2021. What Would You Do with $500? Spending Responses to Gains, Losses, News, and Loans. Review of Economic Studies, 88(4), pp.1760-1795.

Georgarakos, D. and Kenny, G., 2022. Household Spending and Fiscal Support during the COVID-19 Pandemic: Insights from a New Consumer Survey. Journal of Monetary Economics, 129, pp. S1-S14.

Georgarakos, D., Gorodnichenko, Y., Coibion, O. and Kenny, G., 2024. The Causal Effects of Inflation Uncertainty on Households' Beliefs and Actions (No. w33014). National Bureau of Economic Research.

Georgarakos, D., Kenny G., Meyer J., Tsiortas A., 2024. Digital currencies but for whom? Unveiling consumers demand for Central Bank Digital Currencies in the Euro Area, mimeo, European Central Bank.

Gerber, A.S. and Green, D.P., 2012. Field Experiments: Design, Analysis, and Interpretation. W.W. Norton Publishers.

Guiso, L., Sapienza, P., & Zingales, L., 2008. Trusting the Stock Market. Journal of Finance, 63(6), 2557-2600.

Haaland, I., Roth, C. and Wohlfart, J., 2023. Designing Information Provision Experiments. Journal of Economic Literature, 61(1), pp.3-40.

Infante, S., Kim, K., Silva, A. F., & Tetlow, R. J., 2022. The Macroeconomic Implications of CBDC: A Review of the Literature. Finance and Economics Discussion Series 2022-076, Federal Reserve Board.

Jappelli, T. and Pistaferri, L., 2014. Fiscal Policy and MPC Heterogeneity. American Economic Journal: Macroeconomics, 6(4), pp.107-136.

Jonker, N., Van der Cruijsen, C., Bijlsma, M. and Bolt, W., 2022. Pandemic Payment Patterns. Journal of Banking & Finance, 143, p.106593.

Keister, T., and Sanches, D. 2023. Should Central Banks Issue Digital Currency? Review of Economic Studies, 90(1), pp. 404-431.

Kosse, A. and Mattei, I., 2023. Making Headway-Results of the 2022 BIS Survey on Central Bank Digital Currencies and Crypto. BIS Papers (June 2024).

Li, J., 2023. Predicting the Demand for Central Bank Digital Currency: A Structural Analysis with Survey Data. Journal of Monetary Economics, 134, pp.73-85.

Lusardi, A. and Mitchell, O.S., 2011. Financial Literacy and Retirement Planning in the United States. Journal of Pension Economics & Finance, 10(4), pp.509-525.

Lusardi, A. and Mitchell, O.S., 2014. The Economic Importance of Financial Literacy: Theory and Evidence. American Economic Journal: Journal of Economic Literature, 52(1), pp.5-44.

Mishra, B. and Prasad, E., 2024. A Simple Model of a Central Bank Digital Currency. Journal of Financial Stability, p.101282.

Niepelt, D., 2024. Money and Banking with Reserves and CBDC. Journal of Finance, 79(4), pp.2505-2552.

Nocciola, L. and Zamora-Pérez, A., 2023. Transactional Demand for Central Bank Digital Currency. ECB Working Paper No. 2024/2926.

Piazzesi, M. and Schneider, M., 2022. Credit Lines, Bank Deposits or CBDC? Competition and Efficiency in Modern Payment Systems, Mimeo, Stanford University.

Schilling, L., Fernández-Villaverde, J. and Uhlig, H., 2024. Central Bank Digital Currency: When Price and Bank Stability Collide. Journal of Monetary Economics, p.103554.

Schoar, A. and Sun, Y., 2024. Financial Advice and Investor Beliefs: Experimental Evidence on Active vs. Passive Strategies (No. w33001). National Bureau of Economic Research.

Shapiro, M.D. and Slemrod, J., 2003. Consumer Response to Tax Rebates. American Economic Review, 93(1), pp.381-396.

Stantcheva, S., 2023. How to Run Surveys: A Guide to Creating Your Own Identifying Variation and Revealing the Invisible. Annual Review of Economics, 15, pp.205-234.

Van Rooij, M., Lusardi, A. and Alessie, R., 2011. Financial Literacy and Stock Market Participation. Journal of Financial Economics, 101(2), pp.449-472.

Varaine, S., 2023. How Dropping Subjects Who Failed Manipulation Checks Can Bias Your Results: An Illustrative Case. Journal of Experimental Political Science, 10(2), pp.299-305.

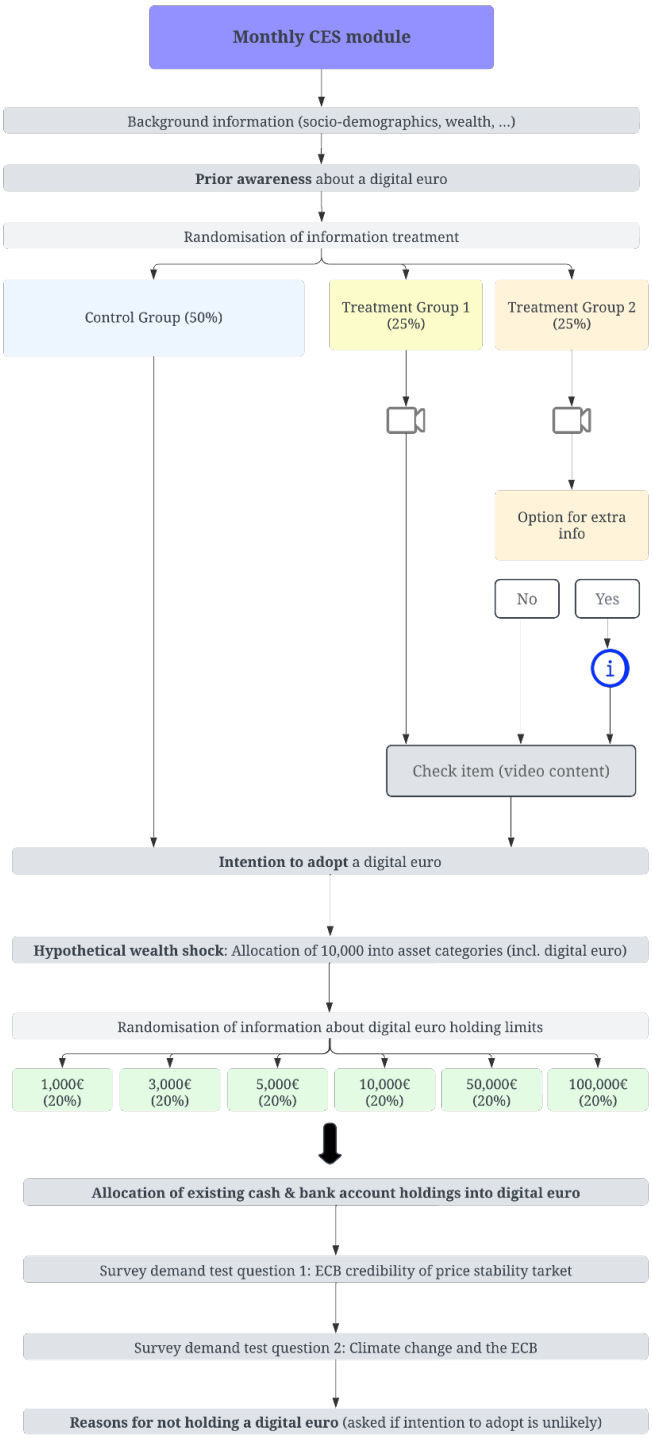
Whited, T. M., Wu, Y., & Xiao, K. (2023). Will Central Bank Digital Currency Disintermediate Banks?. Mimeo, University of Michigan.

Williamson, S., 2022, Central Bank Digital Currency: Welfare and Policy Implications, Journal of Political Economy 130(11), 2829-2861.

Zamora-Pérez, A., Coschignano, E., & Barreiro, L.,2022. Ensuring Adoption of Central Bank Digital Currencies–An Easy Task or a Gordian Knot?. ECB Occasional Paper, (2022/307).

Figures

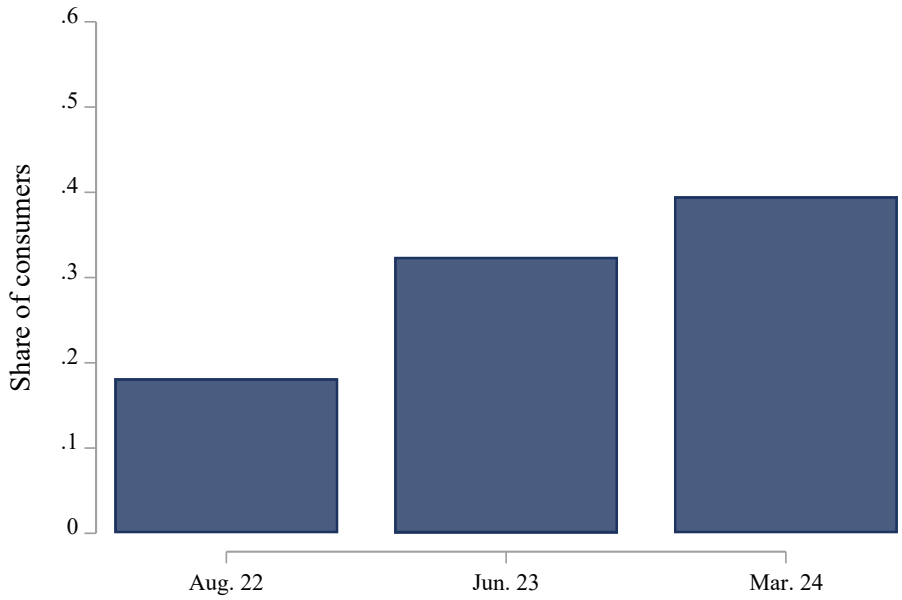
Figure 1. March 2024 question flow and experimental design



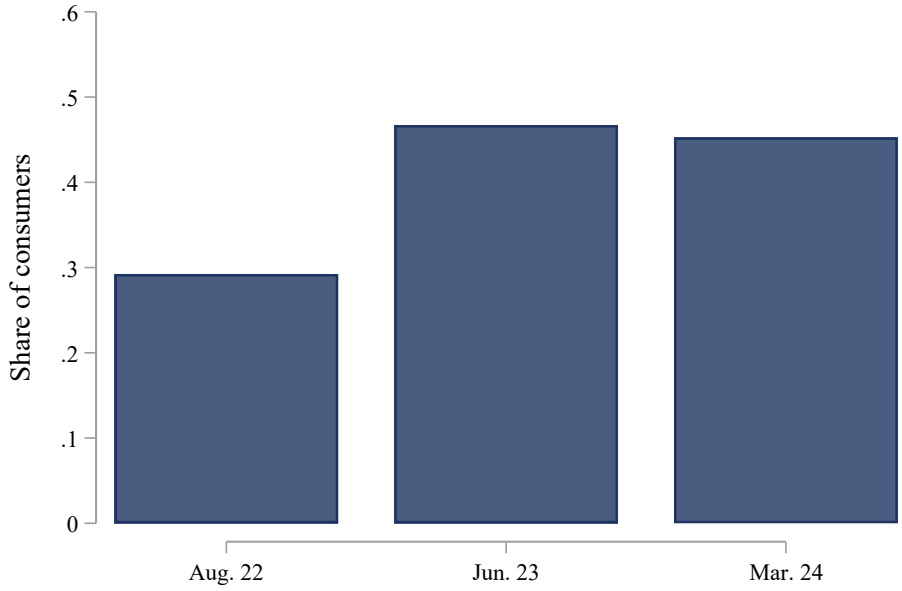
Notes: The figure shows the stylised questionnaire flow of the special purpose CES module fielded in March 2024. See Appendix C for a detailed overview of the question wording.

Figure 2. Consumers' awareness and propensity to adopt digital euro over time

(a)

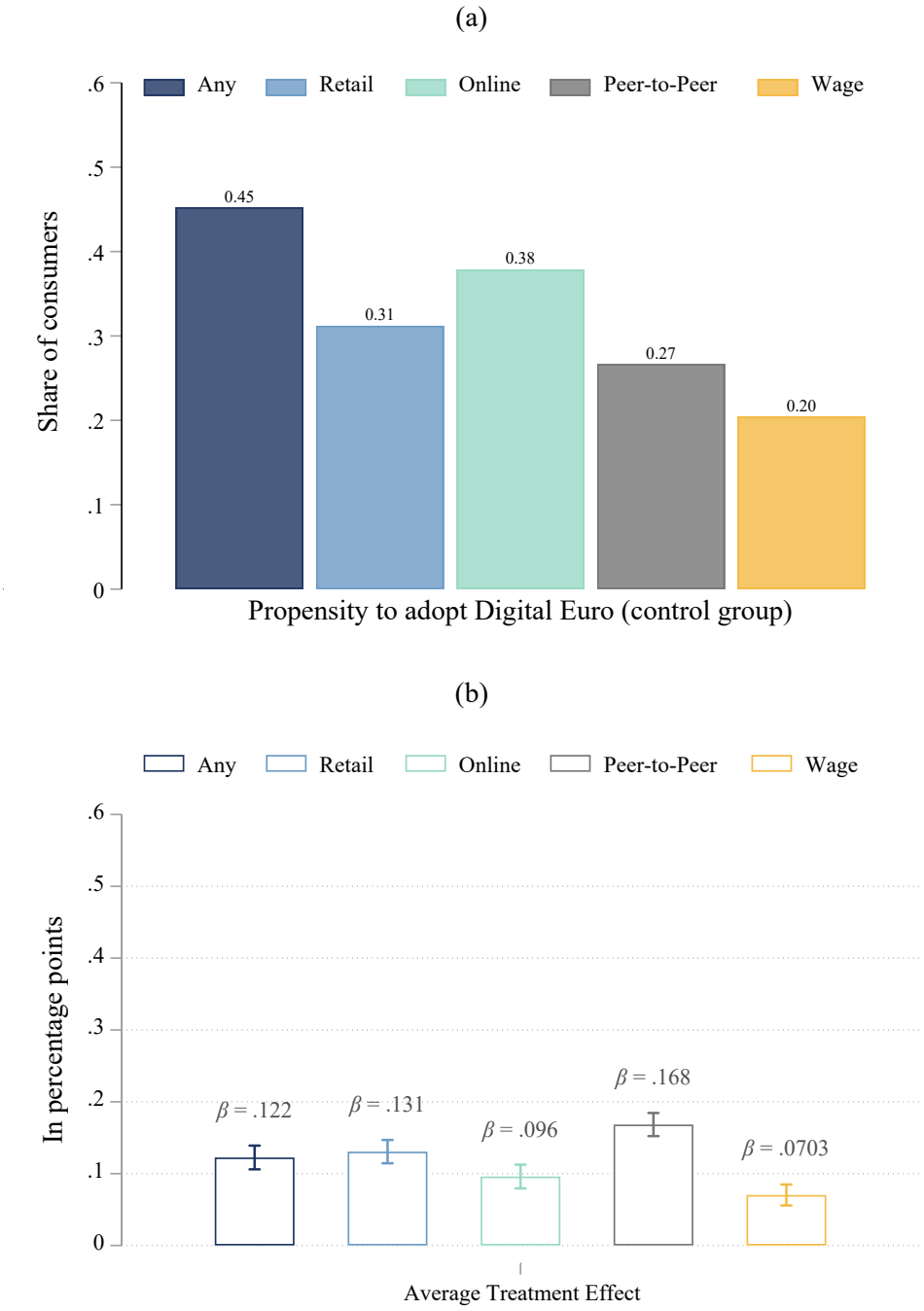


(b)



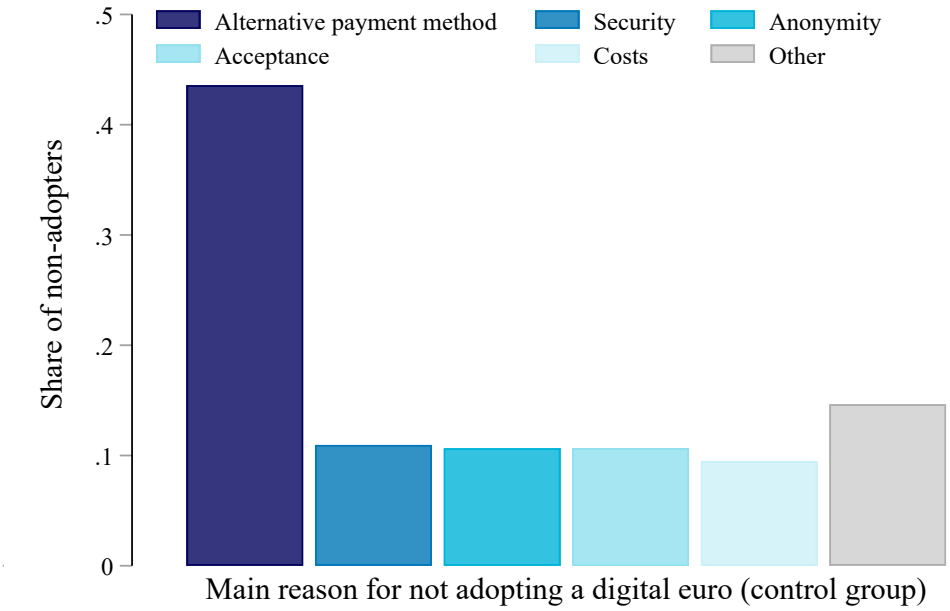
Notes: Panel (a) plots the share of consumers who have heard about the digital euro before taking the survey. Respondents who indicate that they *do not know* are classified as not having heard about it. Panel (b) plots the share of consumers *likely* or *very likely* to use a digital euro for either retail payments, online payments, peer-to-peer transactions, or wages received in digital euros. In August 2022, the survey asked about store of value instead of online and peer-to-peer transactions. Using only the categories (retail payments and receiving wages in digital euro) yields a comparable pattern. Authors' calculations are based on the ECB Consumer Expectations Survey (CES) data – population-weighted statistics. Data from the March 2024 survey round includes only the control group.

Figure 3. Propensity to adopt a digital euro in the control group and average treatment effects



Notes: The figure depicts in panel (a) the population-weighted share of consumers from the control group who are *likely* or *very likely* to use a digital euro by different dimensions, and panel (b) plots the marginal effect (ATE) of the video information treatment on the propensity to adopt a digital euro from estimating a probit model for each dimension of adoption. The whiskers show 95-% confidence intervals. All regressions include country and sample type dummies. Authors' calculations are based on the ECB Consumer Expectations Survey (CES) March 2024 data.

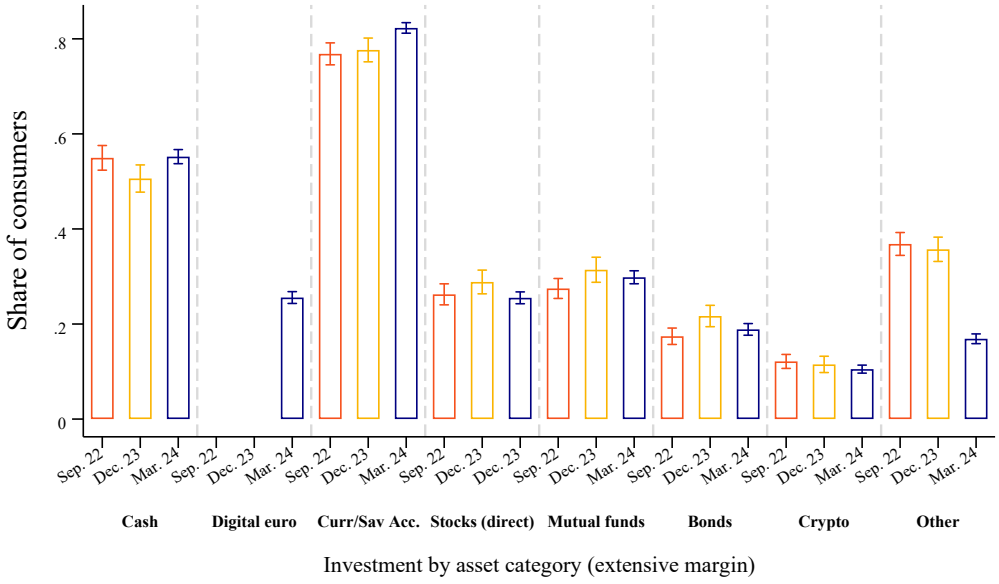
Figure 4. Reasons for not adopting a digital euro for retail payments



Notes: The figure shows the share of consumers (control group only) who report not intending to adopt a digital euro for in-person day-to-day payment purposes. Those respondents were asked "*Why is it not likely that you will adopt a digital euro for making in-person day-to-day payments?*" at the end of the survey. Respondents chose from a list of six options (see Appendix C for the full wording). The response options were (i, security) *it will be less secure compared to alternative (non-cash) means of payment* (ii, anonymity) *it will have lower degree of anonymity or privacy compared to alternative (non-cash) means of payment* (iii, acceptance) *shops currently not accepting alternative (non-cash) means of payment will not accept it* (iv, costs) *it will come with additional transaction costs compared to alternative (non-cash) means of payment* (v, alternative payment method) *I use alternative payment methods that meet my needs* (vi, other) *another reason not listed above*. The order of those response items was randomised to avoid any order effects such as primacy. Authors' calculations are based on the ECB Consumer Expectations Survey (CES) March 2024 data – population-weighted statistics.

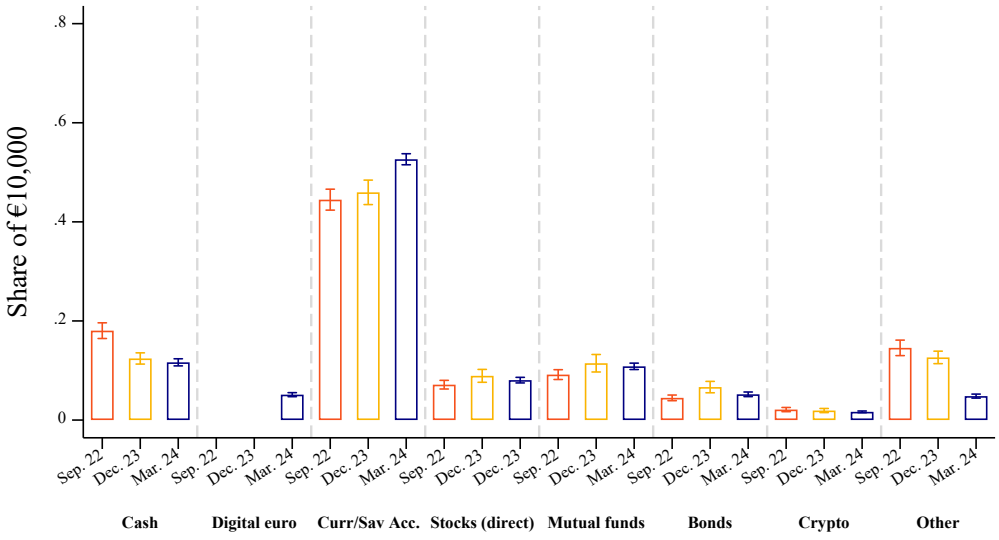
Figure 5. Holding limits and propensity to allocate liquid assets in digital euro

(a)



Investment by asset category (extensive margin)

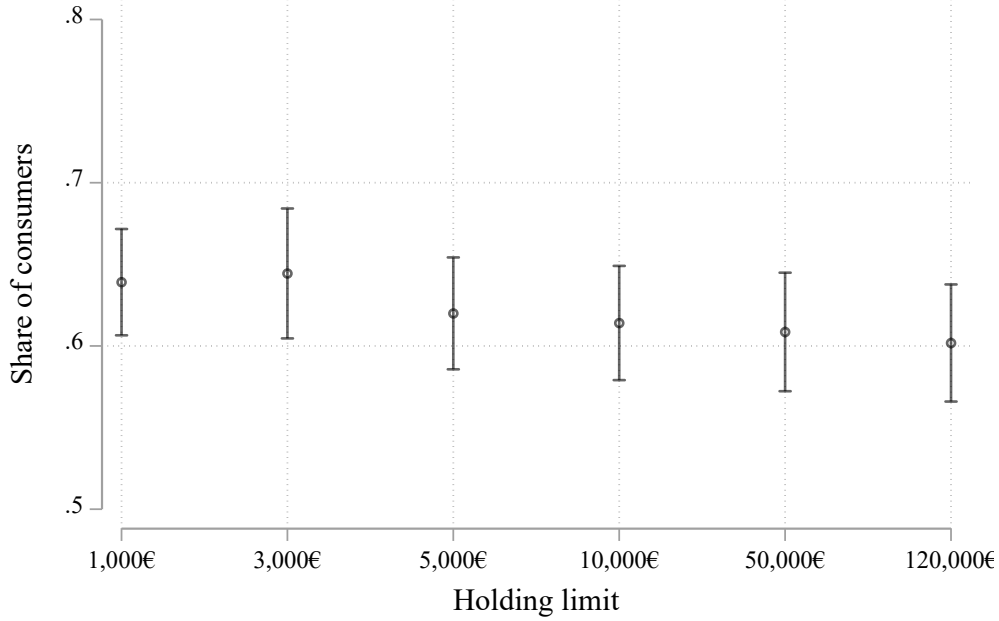
(b)



Share of wealth shock invested, by asset category (unconditional, intensive margin)

Notes: In September 2022, December 2023 and March 2024, CES respondents were given the option to allocate a €10,000 windfall gain into specific asset categories. The figure shows in panel (a) the share of consumers who report to allocate any money from the windfall gain into a specific asset category and in panel (b) the unconditional portfolio share invested in each asset category. The digital euro category was added in March 2024 and not presented as an option before. In September 2022 and December 2023, a separate option for "voluntary retirement and pension products or whole life insurance" was provided and is grouped here into other to be consistent with the question wording used in Mach 2024 when "other" included retirement assets. Respondents from March 2024 are from the control group only and equally September 2022 and December 2023 respondents are only from the control groups of experiments conducted in these rounds. Authors' calculations are based on the ECB Consumer Expectations Survey (CES) data – population-weighted statistics.

Figure 6. Holding limits and propensity to allocate liquid assets in digital euro



Notes: The figure shows the share of consumers (control group) allocating any money into a digital euro (y-axis) given they are asked, "*Imagine that a digital euro is introduced with a holding limit of {L} euro per person. Taking into account the money you (your household) currently hold on your current and savings accounts and in cash, how much money would you allocate into your digital euro account?*" over the randomised holding limits shown on the (x-axis). Authors' calculations are based on the ECB Consumer Expectations Survey (CES) March 2024 data – population-weighted statistics based on the control group.

Tables

Table 1. Awareness and propensity to adopt a digital euro

	Probit, average marginal effects				
	Digital euro Awareness (yes/no)		Digital euro propensity to adopt (any use), (yes/no)		
	(1)	(2)	(3)	(4)	(5)
Mean of dep. var. (control group)	0.40			0.45	
Digital euro awareness					0.095***
					(0.010)
Age 35 to 49	-0.000	-0.003	-0.074***	-0.073***	-0.074***
	(0.010)	(0.010)	(0.013)	(0.013)	(0.013)
Age 50 to 64	0.017*	0.004	-0.105***	-0.118***	-0.117***
	(0.010)	(0.010)	(0.013)	(0.013)	(0.013)
Age > 64	0.012	-0.009	-0.144***	-0.184***	-0.182***
	(0.012)	(0.013)	(0.017)	(0.017)	(0.017)
Household size	0.003	0.005	0.026***	0.018***	0.018***
	(0.003)	(0.003)	(0.004)	(0.005)	(0.005)
Women	-0.157***	-0.137***	-0.074***	-0.070***	-0.056***
	(0.007)	(0.007)	(0.010)	(0.010)	(0.010)
University education	0.065***	0.040***	0.049***	0.041***	0.037***
	(0.007)	(0.007)	(0.010)	(0.011)	(0.011)
Employed		-0.006		-0.055***	-0.054***
		(0.008)		(0.012)	(0.012)
2nd income quartile		-0.013		0.036**	0.037**
		(0.010)		(0.014)	(0.014)
3rd income quartile		-0.018*		0.053***	0.053***
		(0.010)		(0.015)	(0.015)
4th income quartile		-0.007		0.093***	0.092***
		(0.011)		(0.016)	(0.016)
Hand-to-mouth		-0.081***		-0.003	0.005
		(0.008)		(0.012)	(0.012)
High financial literacy		0.083***		0.006	-0.001
		(0.007)		(0.011)	(0.011)
Pseudo R-Squared	0.06	0.07	0.05	0.05	0.06
No. of observations	19,937	19,828	9,994	9,936	9,936
	Full sample			Control group	

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024 (columns 3, 4 and 5 use only data from the control group). In columns (1) and (2), the binary dependent variable takes the value one if a consumer has heard about the digital euro. In columns (3), (4) and (5), the binary dependent variable takes the value one if a consumer is *likely* or *very likely* to use a digital euro either for retail payments, online payments, peer-to-peer transactions or receiving their wage in digital euro. All columns include country dummies and sample type dummies (not reported). Robust standard errors are in parenthesis. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table 2. Information treatment effects on the propensity to adopt

	Probit, average marginal effects									
	Dep. Var. propensity to adopt a digital euro (yes/no)									
Dimension of adoption	**Any use**		**Retail**		**Online**		**Peer-to-peer**		**Wages**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Mean of dep. var. (control group)	0.45		0.31		0.38		0.27		0.20	
Video treatment	0.122***	0.122***	0.131***	0.132***	0.096***	0.096***	0.168***	0.169***	0.070***	0.071***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)
Control variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Pseudo R-Squared	0.04	0.06	0.04	0.06	0.03	0.05	0.04	0.06	0.03	0.05
No. of observations	14,973	14,873	14,973	14,873	14,973	14,873	14,973	14,873	14,973	14,873

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. The binary dependent variable takes the value one if a consumer is *likely* or *very likely* to use a digital euro either for retail payments, online payments, peer-to-peer transactions or receiving their wage in digital euro (column 1 and 2) and each of the dimensions respectively (columns 3 to 10). All regressions include country dummies and sample type dummies (not reported), and the control variables indicated are the same set of variables used in Table 1 (columns 2 and 4). Robust standard errors are in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table 3. Additional information acquisition about a digital euro and financial literacy

	Probit, average marginal effects			
	Choosing to see additional information (0/1)		Confirmed reading of additional information (0/1)	
	(1)	(2)	(3)	(4)
Mean of dep. var. (control group)	0.36	0.36	0.51	0.51
CBDC awareness		0.082***		-0.007
		(0.015)		(0.025)
Age 35 to 49	-0.008	-0.007	-0.037	-0.037
	(0.020)	(0.020)	(0.033)	(0.033)
Age 50 to 64	-0.044**	-0.044**	-0.020	-0.020
	(0.020)	(0.020)	(0.034)	(0.034)
Age > 64	-0.073***	-0.073***	-0.127**	-0.126**
	(0.027)	(0.027)	(0.050)	(0.050)
Household size	0.012*	0.012*	0.003	0.003
	(0.007)	(0.007)	(0.011)	(0.011)
Women	-0.073***	-0.062***	0.020	0.019
	(0.014)	(0.015)	(0.025)	(0.025)
University education	0.056***	0.055***	0.064**	0.064**
	(0.015)	(0.015)	(0.027)	(0.027)
Employed	-0.017	-0.017	-0.018	-0.018
	(0.017)	(0.017)	(0.030)	(0.030)
2nd income quartile	0.020	0.023	0.014	0.013
	(0.021)	(0.021)	(0.036)	(0.036)
3rd income quartile	0.016	0.018	0.015	0.015
	(0.022)	(0.022)	(0.037)	(0.037)
4th income quartile	0.015	0.017	0.013	0.013
	(0.023)	(0.023)	(0.039)	(0.039)
Hand-to-mouth	-0.025	-0.017	-0.086***	-0.087***
	(0.017)	(0.017)	(0.030)	(0.030)
High financial literacy	0.034**	0.026*	0.088***	0.088***
	(0.015)	(0.015)	(0.027)	(0.027)
Pseudo R-Squared	0.04	0.05	0.03	0.03
No. of observations	4,582	4,582	1,717	1,717

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies and sample type dummies (not reported). Observations that fail the attention check are excluded (359 cases of those who saw the video and had the option of choosing extra information, <8% of observations for treatment 2). Robust standard errors are in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table 4. Portfolio allocation from a wealth shock

(a) Treatment effects on extensive margin

	Probit, average marginal effects							
.	*Allocate any money into … (0/1)*							
	Cash	Digital euro	Bank accounts	Stocks	Mutual Funds	Bonds	Crypto	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean of dep. var. (control group)	0.55	0.26	0.82	0.26	0.30	0.19	0.11	0.17
Video treatment	0.014*	0.130***	0.019***	-0.003	-0.001	-0.005	0.006	-0.001
	(0.008)	(0.008)	(0.006)	(0.007)	(0.008)	(0.007)	(0.005)	(0.007)
Selected Demographics								
Age 35 to 49	-0.010	-0.058***	-0.016*	-0.091***	-0.079***	-0.027***	-0.048***	-0.021**
	(0.011)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.006)	(0.008)
Age 50 to 64	-0.011	-0.060***	-0.015*	-0.124***	-0.103***	-0.024***	-0.098***	-0.039***
	(0.011)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.006)	(0.009)
Age > 64	0.008	-0.105***	0.008	-0.125***	-0.107***	-0.015	-0.103***	-0.082***
	(0.016)	(0.013)	(0.012)	(0.011)	(0.012)	(0.012)	(0.005)	(0.011)
Hand-to-mouth	0.032***	-0.020**	-0.057***	-0.041***	-0.077***	-0.037***	0.012**	0.014*
	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.007)	(0.006)	(0.008)
High financial literacy	-0.024***	-0.017**	0.009	0.025***	0.101***	0.040***	-0.005	-0.019***
	(0.009)	(0.008)	(0.006)	(0.008)	(0.008)	(0.007)	(0.006)	(0.007)
Pseudo R-Squared	0.06	0.06	0.03	0.04	0.07	0.07	0.07	0.04
No. of observations	14,638	14,638	14,638	14,638	14,638	14,638	14,638	14,638

(b) Treatment effects on intensive margin

	Tobit, average marginal effects							
	Share of total wealth shock (€10,000) allocated in … (conditional on investment)							
	Cash	Digital euro	Bank accounts	Stocks	Mutual Funds	Bonds	Crypto	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean of dep. var. (control group)	0.21	0.20	0.64	0.32	0.36	0.28	0.16	0.29
Video treatment	0.002	0.031***	-0.002	-0.003	-0.002	-0.003	0.001	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Selected Demographics								
Age 35 to 49	0.008***	-0.011***	0.008**	-0.024***	-0.018***	-0.005*	-0.014***	-0.004
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Age 50 to 64	0.002	-0.010***	0.010***	-0.032***	-0.021***	0.001	-0.032***	-0.008***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Age > 64	0.006	-0.023***	0.018***	-0.035***	-0.024***	0.005	-0.040***	-0.024***
	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
Hand-to-mouth	0.032***	0.002	-0.010***	-0.010***	-0.027***	-0.015***	0.006***	0.004*
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
High financial literacy	-0.016***	-0.008***	-0.011***	0.005**	0.035***	0.016***	-0.000	-0.006***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Pseudo R-Squared	0.08	0.07	0.04	0.04	0.09	0.09	0.08	0.03
No. of observations	14,638	14,638	14,638	14,638	14,638	14,638	14,638	14,638

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies, sample type dummies (not reported) and the full set of control variables reported Table 1. Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

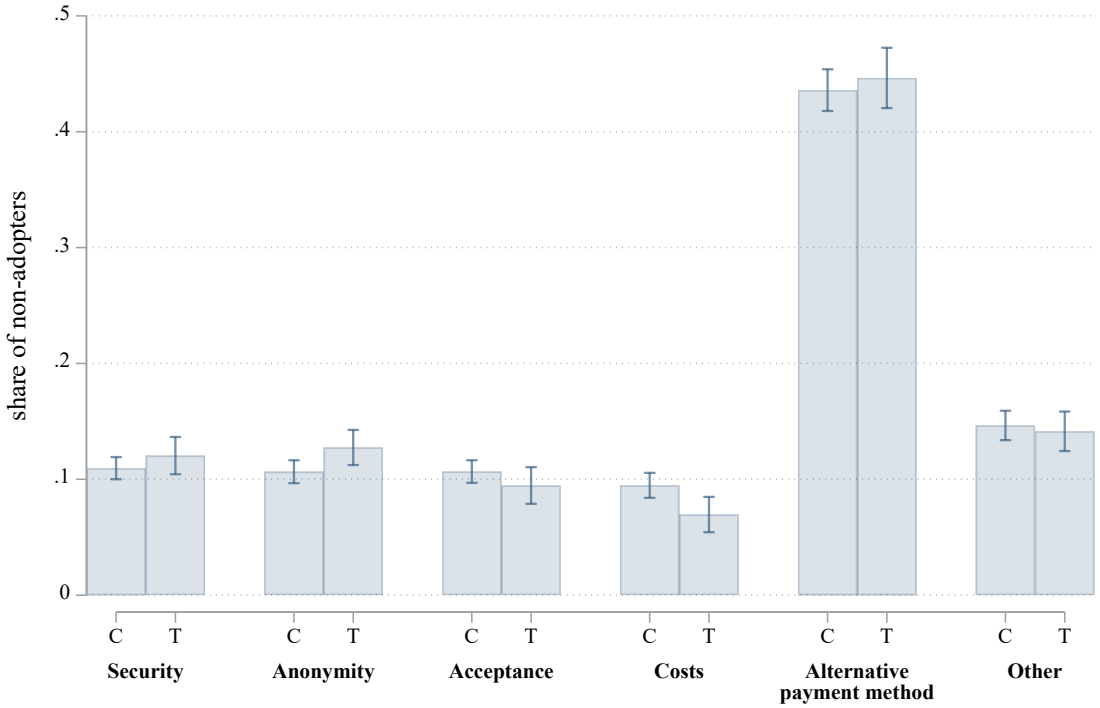
Table 5. Holding limits and allocation to digital euro

(a) Any liquid wealth reallocated to digital euro (0/1)						
	Probit, average marginal effects					
	Control group		Video treatment		Pooled sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var. mean (control only)	0.63					
Holding limit (base category: €3,000)						
€1,000	-0.002	-0.001	0.022	0.024	0.007	0.007
	(0.016)	(0.016)	(0.021)	(0.021)	(0.013)	(0.013)
€5,000€	-0.016	-0.015	-0.009	-0.004	-0.016	-0.014
	(0.016)	(0.016)	(0.022)	(0.022)	(0.013)	(0.013)
€10,000	-0.007	-0.003	-0.012	-0.007	-0.011	-0.008
	(0.016)	(0.016)	(0.022)	(0.022)	(0.013)	(0.013)
€50,000	-0.025	-0.024	-0.019	-0.017	-0.024*	-0.023*
	(0.016)	(0.016)	(0.022)	(0.021)	(0.013)	(0.013)
€120,000	-0.026	-0.028*	-0.004	0.001	-0.019	-0.019
	(0.017)	(0.016)	(0.021)	(0.021)	(0.013)	(0.013)
Control variables	No	Yes	No	Yes	No	Yes
Pseudo R-Squared	0.03	0.05	0.05	0.07	0.03	0.05
No. of observations	10,005	9,936	4,968	4,937	14,973	14,873
(b) Share of liquid wealth reallocated to digital euros						
	Tobit model, average marginal effects					
	Control group		Video treatment		Pooled sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var. mean (control only)	0.16					
Holding limit (base category: €3,000)						
€1,000	-0.010***	-0.010***	0.003	0.001	-0.006**	-0.006**
	(0.003)	(0.003)	(0.005)	(0.005)	(0.003)	(0.003)
€5,000	-0.002	-0.002	0.010*	0.010**	0.001	0.002
	(0.004)	(0.004)	(0.005)	(0.005)	(0.003)	(0.003)
€10,000	0.004	0.005	0.005	0.006	0.005	0.005*
	(0.004)	(0.004)	(0.005)	(0.005)	(0.003)	(0.003)
€50,000	0.006	0.007	0.014***	0.014***	0.009***	0.009***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.003)	(0.003)
€120,000	0.003	0.004	0.020***	0.020***	0.009***	0.009***
	(0.004)	(0.004)	(0.006)	(0.006)	(0.003)	(0.003)
Control variables	No	Yes	No	Yes	No	Yes
Pseudo R-Squared	0.07	0.08	0.14	0.15	0.08	0.09
No. of observations	8,599	8,545	4,233	4,210	12,832	12,755

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies, sample type dummies (not reported) and the full set of control variables reported Table 1. Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

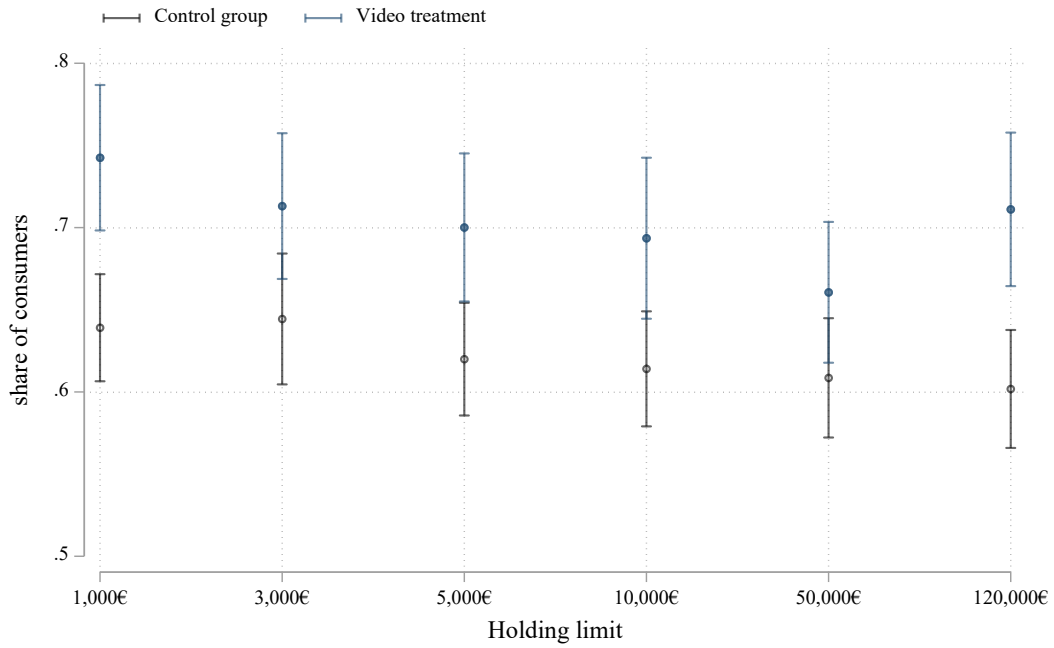
Appendix A. Additional Figures

Figure A1. Reasons for not adopting a digital euro for retail payments (split by control (C) and video (only) treatment (T))



Notes: The figure plots the main reason: "*Why is it not likely that you will adopt a digital euro for making in-person day-to-day payments?*" grouped by control group and video treatment group. See notes in Figure 4 for details. Authors' calculations are based on the ECB Consumer Expectations Survey (CES) March 2024 data – population-weighted statistics.

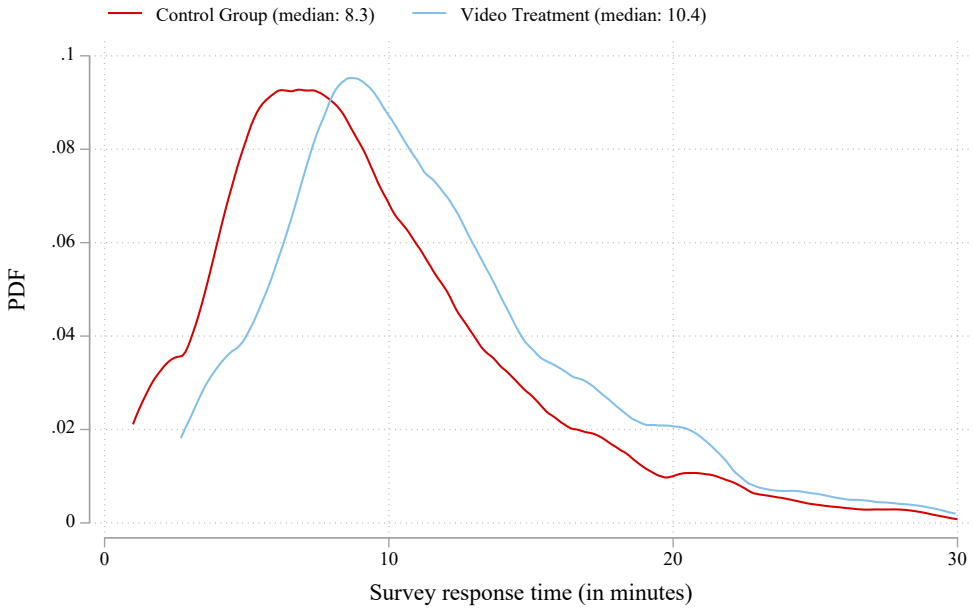
Figure A2. Holding limits and propensity to allocate liquid assets in digital euro



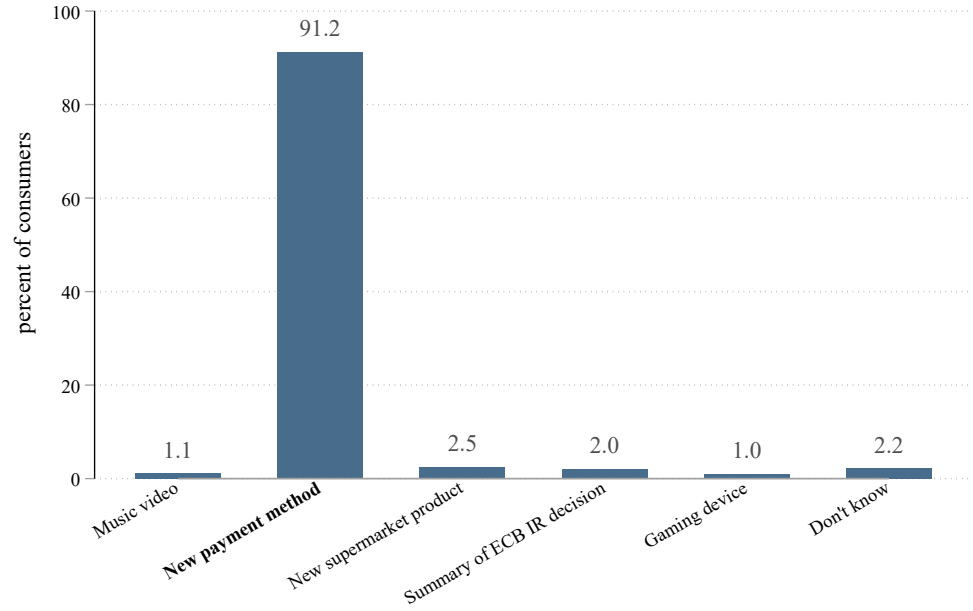
Notes: The figure shows the share of consumers allocating any money into a digital euro (y-axis) given they are asked, "*Imagine that a digital euro is introduced with a holding limit of {L} euro per person. Taking into account the money you (your household) currently hold on your current and savings accounts and in cash, how much money would you allocate into your digital euro account?*" over the randomised holding limits shown on the (x-axis) by control or video treatment group. Authors' calculations are based on the ECB Consumer Expectations Survey (CES) March 2024 data – population-weighted statistics.

Figure A3. Treatment take-up

(a) Survey response time distribution



(b) Post-treatment attention check



Notes: Panel (a) shows the distribution of time respondents spent on the special-purpose module in March 2024. Panel (b) shows the responses to an attention check item asked to respondents who saw the video. Respondents were asked: "*Think back to the video you just saw. What would you say was the main topic of that video?*". Authors' calculations are based on the ECB Consumer Expectations Survey (CES) March 2024 data – population-weighted statistics.

Appendix B. Additional Tables

Table B1. Association between CBDC awareness and adoption over time

	Probit, average marginal effects					
	Propensity to adopt a digital euro, any dimension (0/1)					
	August 2022		June 2023		March 2024	
	(1)	(2)	(3)	(4)	(5)	(6)
Mean of dep. var. (control group)	0.29		0.47		0.45	
CBDC awareness	0.185***	0.157***	0.138***	0.124***	0.108***	0.092***
	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)
Age 35 to 49		-0.050***		-0.027**		-0.074***
		(0.008)		(0.013)		(0.013)
Age 50 to 64		-0.058***		-0.062***		-0.118***
		(0.008)		(0.013)		(0.013)
Age > 64		-0.093***		-0.111***		-0.182***
		(0.011)		(0.018)		(0.017)
Household size		0.016***		0.014***		0.016***
		(0.003)		(0.004)		(0.005)
Women		-0.065***		-0.040***		-0.059***
		(0.007)		(0.010)		(0.010)
University education		0.042***		0.053***		0.040***
		(0.007)		(0.010)		(0.011)
Employed		-0.010		-0.008		-0.060***
		(0.008)		(0.012)		(0.012)
2nd income quartile		-0.004		0.040***		0.041***
		(0.009)		(0.014)		(0.014)
3rd income quartile		0.022**		0.053***		0.059***
		(0.010)		(0.014)		(0.015)
4th income quartile		0.047***		0.079***		0.106***
		(0.011)		(0.016)		(0.016)
Hand-to-mouth		-0.038***		-0.006		0.006
		(0.007)		(0.011)		(0.012)
High financial literacy		0.002		0.022**		0.001
		(0.007)		(0.010)		(0.011)
Pseudo R-Squared	0.03	0.05	0.04	0.06	0.03	0.05
No. of observations	19,649	19,496	10,393	10,318	10,005	9,936

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies and sample type dummies (not reported). Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B2. Drivers of digital euro adoption

	Probit, average marginal effects							
	Propensity to adopt a digital euro (0/1)							
	Retail payments		Online purchases		Peer-to-peer transactions		Receiving wages	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean of dep. var. (control group)	0.31		0.38		0.27		0.20	
Digital euro awareness		0.089***		0.105***		0.081***		0.082***
		(0.010)		(0.010)		(0.009)		(0.009)
Age 35 to 49	-0.043***	-0.043***	-0.046***	-0.047***	-0.053***	-0.053***	-0.034***	-0.034***
	(0.012)	(0.012)	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)
Age 50 to 64	-0.067***	-0.067***	-0.078***	-0.077***	-0.078***	-0.077***	-0.056***	-0.055***
	(0.013)	(0.012)	(0.013)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)
Age > 64	-0.107***	-0.105***	-0.130***	-0.129***	-0.140***	-0.139***	-0.084***	-0.083***
	(0.016)	(0.016)	(0.017)	(0.017)	(0.014)	(0.014)	(0.013)	(0.013)
Household size	0.009**	0.008*	0.009**	0.009*	0.007*	0.006	0.017***	0.016***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Women	-0.067***	-0.054***	-0.055***	-0.040***	-0.043***	-0.031***	-0.072***	-0.060***
	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.008)	(0.008)
University education	0.041***	0.038***	0.037***	0.033***	0.031***	0.028***	0.029***	0.026***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)
Employed	-0.018	-0.018	-0.034***	-0.033***	-0.023**	-0.023**	-0.024**	-0.024**
	(0.011)	(0.011)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)	(0.010)
2nd income quartile	0.047***	0.048***	0.042***	0.042***	0.056***	0.056***	0.026**	0.026**
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)
3rd income quartile	0.052***	0.052***	0.051***	0.052***	0.049***	0.049***	0.017	0.018
	(0.015)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.013)	(0.013)
4th income quartile	0.096***	0.095***	0.105***	0.104***	0.096***	0.096***	0.054***	0.054***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.014)	(0.014)
Hand-to-mouth	-0.019*	-0.011	-0.030***	-0.021*	-0.007	-0.000	0.003	0.011
	(0.011)	(0.011)	(0.011)	(0.011)	(0.010)	(0.011)	(0.010)	(0.010)
High financial literacy	0.013	0.006	0.030***	0.023**	0.014	0.008	-0.013	-0.018**
	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)
Pseudo R-Squared	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.05
No. of observations	9,936	9,936	9,936	9,936	9,936	9,936	9,936	9,936

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies and sample type dummies (not reported). Robust standard errors are in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B3. Persistence of information treatment effects on awareness, information acquisition and adoption of a digital euro

	Probit, average marginal effects													
					Propensity to adopt a digital euro (0/1)									
	Digital euro Awareness, (0/1)		**Information acquisition (March to June), (0/1)**		**Any use**		**Retail**		**Online**		**Peer-to-peer**		**Wages**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Mean of dep. var. (control group)	0.56		0.12		0.42		0.28		0.36		0.24		0.19	
Video treatment (t-3)	0.029***	0.032***	-0.000	-0.002	0.016	0.015	0.016*	0.014	0.013	0.012	0.018*	0.017*	0.009	0.008
	(0.010)	(0.010)	(0.008)	(0.008)	(0.010)	(0.010)	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.008)	(0.008)
Control variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Pseudo R-Squared	0.04	0.07	0.02	0.05	0.04	0.06	0.03	0.05	0.04	0.05	0.02	0.05	0.02	0.03
No. of observations	10,461	10,388	5,962	5,926	10,458	10,385	10,458	10,385	10,458	10,385	10,458	10,385	10,458	10,385

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in June 2024. All regressions include country dummies (not reported). In addition to whether respondents had heard about the digital euro (awareness), those who had heard about it were asked whether they looked actively for any information on it. Columns (2), (4), (6), (8), (10), (12) and (14) include the same set of control variables as used in Table 1. Robust standard errors are in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B4. Treatment effect on the share of offline payments

	OLS	
	Share of payments using offline technology, 0 to 100	
	(1)	(2)
Mean of dep. var. (control group)	32.86	32.96
Treatment (base: control group)		
Video treatment	4.350***	4.344***
	(0.537)	(0.537)
Video treatment + FAQ option	3.367***	3.303***
	(0.534)	(0.534)
Control variables	No	Yes
Adjusted R-Squared	0.02	0.03
No. of observations	19,948	19,810

Notes: The table depicts marginal effects from an OLS regression on respondents reported percentage of offline payments (0 to 100) when asked "*If you had to use the digital euro in some of your transactions, what fraction (in percent) of your total payments would you make offline?*". Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies, sample type dummies (not reported), and the control variables indicated are the same set of variables used in Table 1 (columns 2 and 4). Robust standard errors are in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B5 - Portfolio allocation from a wealth shock (full results)

(a) Treatment effects on extensive margin

Probit, average marginal effects

Allocate any money into … (0/1)

	Cash	Digital euro	Bank accounts	Stocks	Mutual Funds	Bonds	Crypto	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean of dep. var. (control group)	0.55	0.26	0.82	0.26	0.30	0.19	0.11	0.17
Video treatment	0.014*	0.130***	0.019***	-0.003	-0.001	-0.005	0.006	-0.001
	(0.008)	(0.008)	(0.006)	(0.007)	(0.008)	(0.007)	(0.005)	(0.007)
Socio-Demographics								
Age 35 to 49	-0.010	-0.058***	-0.016*	-0.091***	-0.079***	-0.027***	-0.048***	-0.021**
	(0.011)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.006)	(0.008)
Age 50 to 64	-0.011	-0.060***	-0.015*	-0.124***	-0.103***	-0.024***	-0.098***	-0.039***
	(0.011)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.006)	(0.009)
Age > 64	0.008	-0.105***	0.008	-0.125***	-0.107***	-0.015	-0.103***	-0.082***
	(0.016)	(0.013)	(0.012)	(0.011)	(0.012)	(0.012)	(0.005)	(0.011)
Household size	0.020***	0.018***	-0.001	0.006*	0.002	0.006**	0.009***	-0.001
	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Women	0.009	-0.024***	0.041***	-0.067***	-0.041***	-0.036***	-0.040***	0.018***
	(0.008)	(0.008)	(0.006)	(0.007)	(0.007)	(0.006)	(0.005)	(0.007)
University education	-0.050***	-0.010	0.004	0.028***	0.026***	0.013*	-0.004	0.000
	(0.009)	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)	(0.006)	(0.007)
Employed	0.047***	0.009	0.026***	0.017**	0.030***	0.015*	0.021***	0.039***
	(0.010)	(0.009)	(0.007)	(0.009)	(0.009)	(0.008)	(0.006)	(0.008)
2nd income quartile	-0.069***	-0.005	0.013	-0.001	0.012	-0.000	-0.024***	-0.030***
	(0.012)	(0.011)	(0.009)	(0.011)	(0.011)	(0.009)	(0.007)	(0.009)
3rd income quartile	-0.082***	-0.008	0.001	-0.016	0.016	-0.010	-0.034***	-0.033***
	(0.012)	(0.011)	(0.009)	(0.011)	(0.012)	(0.010)	(0.007)	(0.009)
4th income quartile	-0.150***	-0.001	-0.025**	0.021*	0.057***	-0.004	-0.016**	-0.032***
	(0.013)	(0.012)	(0.010)	(0.012)	(0.012)	(0.010)	(0.008)	(0.010)
Hand-to-mouth	0.032***	-0.020**	-0.057***	-0.041***	-0.077***	-0.037***	0.012**	0.014*
	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.007)	(0.006)	(0.008)
High financial literacy	-0.024***	-0.017**	0.009	0.025***	0.101***	0.040***	-0.005	-0.019***
	(0.009)	(0.008)	(0.006)	(0.008)	(0.008)	(0.007)	(0.006)	(0.007)
Pseudo R-Squared	0.06	0.06	0.03	0.04	0.07	0.07	0.07	0.04
No. of observations	14,638	14,638	14,638	14,638	14,638	14,638	14,638	14,638

(b) Treatment effects on intensive margin

Tobit, average marginal effects

Share of total wealth shock (€10,000) allocated in … (conditional on investment)

	Cash	Digital euro	Bank accounts	Stocks	Mutual Funds	Bonds	Crypto	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean of dep. var. (control group)	0.21	0.20	0.64	0.32	0.36	0.28	0.16	0.29
Video treatment	0.002	0.031***	-0.002	-0.003	-0.002	-0.003	0.001	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Socio-Demographics								
Age 35 to 49	0.008***	-0.011***	0.008**	-0.024***	-0.018***	-0.005*	-0.014***	-0.004
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Age 50 to 64	0.002	-0.010***	0.010***	-0.032***	-0.021***	0.001	-0.032***	-0.008***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Age > 64	0.006	-0.023***	0.018***	-0.035***	-0.024***	0.005	-0.040***	-0.024***
	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
Household size	0.005***	0.005***	-0.003**	0.001	-0.001	0.001	0.003***	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Women	-0.001	-0.006***	0.024***	-0.022***	-0.013***	-0.010***	-0.014***	0.007***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
University education	-0.016***	-0.004*	0.003	0.008***	0.010***	0.004*	-0.002	-0.000
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Employed	0.009***	-0.003	-0.006*	-0.001	0.008***	0.004*	0.007***	0.014***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
2nd income quartile	-0.023***	0.002	0.011***	0.002	0.006*	0.003	-0.007***	-0.011***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
3rd income quartile	-0.027***	-0.000	0.011***	-0.001	0.009***	0.000	-0.010***	-0.011***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
4th income quartile	-0.043***	0.003	-0.004	0.010***	0.024***	0.004	-0.003	-0.010***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Hand-to-mouth	0.032***	0.002	-0.010***	-0.010***	-0.027***	-0.015***	0.006***	0.004*
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
High financial literacy	-0.016***	-0.008***	-0.011***	0.005**	0.035***	0.016***	-0.000	-0.006***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Pseudo R-Squared	0.08	0.07	0.04	0.04	0.09	0.09	0.08	0.03
No. of observations	14,638	14,638	14,638	14,638	14,638	14,638	14,638	14,638

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies and sample type dummies and the full set of control variables reported Table 1 (not reported). Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B6 - Portfolio allocation from a wealth shock and cash on hand

(a) Treatment effects on extensive margin

Probit, average marginal effects

Allocate any money into … (0/1)

	Cash	Digital euro	Bank accounts	Stocks	Mutual Funds	Bonds	Crypto	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean of dep. var. (control group)	0.55	0.26	0.82	0.26	0.30	0.19	0.11	0.17
Video treatment	0.008	0.136***	0.015*	0.002	0.009	0.002	0.001	-0.007
	(0.011)	(0.011)	(0.008)	(0.010)	(0.010)	(0.009)	(0.007)	(0.009)
Socio-Demographics								
Age 35 to 49	-0.008	-0.051***	-0.013	-0.101***	-0.080***	-0.042***	-0.043***	-0.009
	(0.015)	(0.013)	(0.012)	(0.012)	(0.012)	(0.011)	(0.008)	(0.011)
Age 50 to 64	-0.003	-0.048***	-0.008	-0.136***	-0.107***	-0.043***	-0.090***	-0.033***
	(0.015)	(0.014)	(0.012)	(0.012)	(0.012)	(0.011)	(0.008)	(0.012)
Age > 64	0.011	-0.081***	0.009	-0.137***	-0.117***	-0.027*	-0.096***	-0.076***
	(0.021)	(0.018)	(0.015)	(0.014)	(0.015)	(0.015)	(0.007)	(0.014)
Household size	0.015***	0.026***	-0.008**	0.009**	0.009**	0.009**	0.013***	-0.001
	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
Women	0.020*	-0.029***	0.040***	-0.066***	-0.036***	-0.029***	-0.037***	0.018**
	(0.011)	(0.010)	(0.008)	(0.009)	(0.010)	(0.008)	(0.007)	(0.009)
University education	-0.059***	0.000	-0.004	0.019*	0.021**	0.009	0.001	-0.002
	(0.011)	(0.011)	(0.008)	(0.010)	(0.010)	(0.009)	(0.007)	(0.009)
Employed	0.022*	0.004	0.017*	0.017	0.026**	0.012	0.022***	0.025**
	(0.013)	(0.012)	(0.010)	(0.011)	(0.012)	(0.010)	(0.008)	(0.010)
Cash on hand								
Quartile 2	0.014	0.034**	0.085***	0.014	0.034**	0.009	0.008	0.012
	(0.016)	(0.015)	(0.012)	(0.014)	(0.014)	(0.012)	(0.010)	(0.013)
Quartile 3	-0.039**	0.030*	0.072***	0.067***	0.104***	0.045***	-0.006	0.017
	(0.017)	(0.016)	(0.013)	(0.015)	(0.015)	(0.014)	(0.011)	(0.014)
Quartile 4	-0.089***	0.022	0.015	0.101***	0.154***	0.052***	-0.010	0.017
	(0.018)	(0.017)	(0.015)	(0.016)	(0.016)	(0.014)	(0.011)	(0.014)
Hand-to-mouth	0.025*	-0.009	-0.050***	0.001	-0.017	-0.005	0.017*	0.025**
	(0.014)	(0.013)	(0.011)	(0.013)	(0.013)	(0.011)	(0.009)	(0.012)
High financial literacy	-0.038***	-0.028***	0.009	0.016	0.091***	0.044***	-0.008	-0.030***
	(0.011)	(0.011)	(0.008)	(0.010)	(0.010)	(0.009)	(0.007)	(0.009)
Pseudo R-Squared	0.06	0.07	0.04	0.04	0.08	0.07	0.07	0.04
No. of observations	8,445	8,445	8,445	8,445	8,445	8,445	8,445	8,445

(b) Treatment effects on intensive margin

Tobit, average marginal effects

Share of total wealth shock (€10,000) allocated in … (conditional on investment)

	Cash	Digital euro	Bank accounts	Stocks	Mutual Funds	Bonds	Crypto	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean of dep. var. (control group)	0.21	0.20	0.64	0.32	0.36	0.28	0.16	0.29
Video treatment	0.001	0.033***	-0.004	-0.000	0.001	-0.002	0.001	-0.006**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Socio-Demographics								
Age 35 to 49	0.008*	-0.009***	0.010**	-0.031***	-0.017***	-0.011***	-0.012***	0.001
	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
Age 50 to 64	0.003	-0.007**	0.015***	-0.040***	-0.022***	-0.006	-0.030***	-0.007*
	(0.004)	(0.003)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
Age > 64	0.006	-0.016***	0.023***	-0.041***	-0.029***	0.000	-0.040***	-0.023***
	(0.006)	(0.005)	(0.006)	(0.005)	(0.005)	(0.006)	(0.004)	(0.006)
Household size	0.005***	0.007***	-0.006***	0.002*	0.002	0.002*	0.005***	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Women	0.001	-0.008***	0.025***	-0.022***	-0.013***	-0.008***	-0.014***	0.007**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
University education	-0.017***	0.000	0.003	0.005	0.009***	0.003	-0.000	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Employed	0.005	-0.004	-0.005	0.001	0.007*	0.004	0.009***	0.009**
	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)
Cash on hand								
Quartile 2	-0.018***	0.004	0.022***	-0.001	0.008*	0.003	0.002	0.003
	(0.005)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
Quartile 3	-0.039***	0.002	0.007	0.017***	0.034***	0.016***	-0.000	0.005
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)
Quartile 4	-0.046***	-0.002	-0.014**	0.031***	0.053***	0.021***	-0.002	0.006
	(0.006)	(0.004)	(0.006)	(0.005)	(0.005)	(0.005)	(0.004)	(0.005)
Hand-to-mouth	0.026***	0.000	-0.022***	0.000	-0.007*	-0.003	0.008***	0.009**
	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
High financial literacy	-0.021***	-0.010***	-0.005	0.003	0.032***	0.018***	-0.003	-0.009***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Pseudo R-Squared	0.08	0.07	0.04	0.05	0.09	0.09	0.09	0.03
No. of observations	8,445	8,445	8,445	8,445	8,445	8,445	8,445	8,445

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies and sample type dummies and the full set of control variables reported Table 1 (not reported). Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B7. Treatment effects on adoption (extensive margin) across different survey questions

	Probit, average marginal effects			
	Choose to adopt digital euro (all 3 questions), 0/1	Use digital euro for any purpose, 0/1	Allocate wealth in digital euro from wealth shock, 0/1	Reallocate any liquid wealth in digital euro, 0/1
	(1)	(2)	(3)	(4)
Mean of dep. var. (control group)	0.18	0.45	0.26	0.62
Video Treatment	0.125***	0.122***	0.130***	0.086***
	(0.008)	(0.008)	(0.008)	(0.008)
Video Treatment + FAQ	0.137***	0.122***	0.127***	0.089***
	(0.008)	(0.008)	(0.008)	(0.008)
Control variables	Yes	Yes	Yes	Yes
Pseudo R-Squared	0.07	0.06	0.06	0.06
No. of observations	19,513	19,828	19,513	19,828

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies and sample type dummies (not reported), and the same control variables indicated in Table 1 (columns 2 and 4). Robust standard errors are in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B8. Holding limits and wealth reallocation (robustness, under top-coded liquid asset bands)

	Share of liquid wealth reallocated to digital euros					
	Tobit model, average marginal effects					
	Control group		Video treatment		Pooled sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Mean of dep. var. (control only)	0.14					
Holding limit (base category: €3,000)						
€1,000	-0.010***	-0.010***	-0.002	-0.003	-0.009***	-0.009***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.002)	(0.002)
€5,000	-0.003	-0.003	0.009*	0.009**	0.000	0.001
	(0.003)	(0.003)	(0.005)	(0.005)	(0.002)	(0.002)
€10,000	0.004	0.005	0.006	0.006	0.004	0.004*
	(0.003)	(0.003)	(0.005)	(0.005)	(0.002)	(0.002)
€50,000	0.009**	0.010**	0.014***	0.014***	0.011***	0.011***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.003)	(0.003)
€120,000	0.007*	0.007*	0.020***	0.021***	0.011***	0.011***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.003)	(0.003)
Control variables	No	Yes	No	Yes	No	Yes
Pseudo R-Squared	0.08	0.09	0.18	0.19	0.11	0.12
No. of observations	8,778	8,724	4,336	4,313	17,464	17,357

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies and sample type dummies (not reported). Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1. The share of liquid assets is calculated including crypto assets as: € digital euro / € [Cash + Bank Acc. + Stocks + Crypto]. Different from Table 5 the upper bounds of the reported ranges for each asset category are used (as opposed to a random point in the interval in Table 5).

Table B9. Portfolio reallocation (amounts) across different holding limits

	Control Group		Video treatment		Pooled sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Holding limit	Median € allocation (in €)	> 90% of limit (share of consumers)	Median € allocation (in €)	> 90% of limit (share of consumers)	Median € allocation (in €)	> 90% of limit (share of consumers)
1,000 €	100	0.22	300	0.25	200	0.23
3,000 €	500	0.11	500	0.11	500	0.11
5,000 €	300	0.12	500	0.11	500	0.11
10,000 €	400	0.06	500	0.05	500	0.06
50,000 €	200	0.02	500	0.01	345	0.02
€120,000	200	0.01	1000	0.02	500	0.01

Notes: The table depicts in columns (1), (3) and (5) the median euro allocation (unconditional) of consumers into digital euro grouped by the respective randomly assigned holding limit scenario and by treatment assignment. Columns (2), (4) and (6) show the share of consumers who allocate more than 90% of the limit into digital euro, e.g., someone who would report to allocate €9500 under a holding limit of €10,000 would be classified as close to the holding limit – we do not condition in any way on their actual self-reported liquid asset holdings in this table. Authors' calculations are based on the ECB Consumer Expectations Survey (CES) March 2024 data – population-weighted statistics based on the control group.

Table B10. Consumers close to the holding limit

	Share of consumers allocating more than 90% of the assigned limit (0,1)					
	OLS (Linear Probability Model)					
	Control group		Video treatment		Pooled sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var. mean (control only)	0.09					
Holding limit (base category: €3,000)						
€1,000	0.100***	0.110***	0.114***	0.102***	0.104***	0.107***
	(0.013)	(0.015)	(0.018)	(0.020)	(0.010)	(0.012)
€5,000	-0.009	-0.010	-0.016	-0.019	-0.011	-0.013
	(0.011)	(0.012)	(0.015)	(0.017)	(0.009)	(0.010)
€10,000	-0.053***	-0.059***	-0.068***	-0.065***	-0.057***	-0.060***
	(0.010)	(0.011)	(0.013)	(0.016)	(0.008)	(0.009)
€50,000	-0.092***	-0.099***	-0.091***	-0.093***	-0.092***	-0.098***
	(0.009)	(0.010)	(0.012)	(0.014)	(0.007)	(0.008)
€120,000	-0.104***	-0.111***	-0.098***	-0.109***	-0.101***	-0.110***
	(0.008)	(0.009)	(0.012)	(0.013)	(0.007)	(0.008)
Financial crisis likely (next 12m)		-0.006		0.005		-0.003
		(0.018)		(0.025)		(0.014)
Holding limit # Financial crisis likely (next 12m)						
1,000€ # Financial crisis likely (next 12m)		-0.042		0.046		-0.010
		(0.028)		(0.042)		(0.024)
5,000€ # Financial crisis likely (next 12m)		0.009		0.014		0.012
		(0.025)		(0.036)		(0.020)
10,000€ # Financial crisis likely (next 12m)		0.025		-0.012		0.014
		(0.022)		(0.030)		(0.018)
50,000€ # Financial crisis likely (next 12m)		0.036*		0.010		0.027
		(0.021)		(0.028)		(0.017)
120,000€ # Financial crisis likely (next 12m)		0.033*		0.043		0.037**
		(0.020)		(0.030)		(0.016)
Control variables	No	Yes	No	Yes	No	Yes
Adjusted R-2	0.07	0.07	0.08	0.08	0.08	0.08
No. of observations	9,936	9,933	4,937	4,937	14,873	14,870

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. Columns (2), (4) and (6) make use of a question asked to respondents each month about "*What is the probability that there will be a financial crisis affecting the financial system and the economy in your country in the next 12 months?*". We define people who expect a likelihood of more than 50% as those expecting a financial crisis to be "likely". To simplify the interpretation of interaction effects we choose to report results from a linear probability model. All regressions include country dummies and sample type dummies (not reported). Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B11. Balance statistics and random assignment of information treatment

		Control	Treatment 1: Video	Treatment 2: Video + FAQ	P-value	Test
Number of Observations (March 2024)		10,005	4,968	4,993		
Variable						
Time spent on regular monthly (in minutes), median (IQR)		10.73 (7.38, 16.28)	10.85 (7.32, 16.42)	10.78 (7.43, 16.21)	0.81	Kruskal-Wallis
Has heard info about ECB month before		5324 (53.2%)	2637 (53.1%)	2678 (53.6%)	0.84	Pearson's chi-squared
CBDC awareness prior to survey		4025 (40.2%)	1967 (39.6%)	2031 (40.7%)	0.54	Pearson's chi-squared
Probability of a financial crisis next 12 months, median (IQR)		30 (10, 50)	30 (10, 50)	30 (10, 50)	0.94	Kruskal-Wallis
Age (in years), median (IQR)		48 (38, 59)	48 (37, 59)	48 (37, 58)	0.41	Kruskal-Wallis
Household size, median (IQR)		2 (2, 4)	2 (2, 4)	2 (2, 4)	0.56	Kruskal-Wallis
Women		4877 (48.8%)	2506 (50.5%)	2467 (49.5%)	0.14	Pearson's chi-squared
University education		5744 (57.4%)	2908 (58.5%)	2840 (56.9%)	0.23	Pearson's chi-squared
Employed		6391 (63.9%)	3107 (62.5%)	3128 (62.6%)	0.17	Pearson's chi-squared
Income (thsd.), median (IQR)		33.6 (21.6, 48)	34 (21.6, 48.612)	32.88 (21.12, 49)	0.32	Kruskal-Wallis
Hand-to-mouth		2999 (30.0%)	1541 (31.0%)	1418 (28.4%)	0.016	Pearson's chi-squared
High financial literacy		5238 (52.7%)	2621 (53.0%)	2616 (52.7%)	0.92	Pearson's chi-squared
Country	BE	514 (5.1%)	273 (5.5%)	258 (5.2%)	0.76	Pearson's chi-squared
	DE	1581 (15.8%)	811 (16.3%)	794 (15.9%)		
	ES	1676 (16.8%)	826 (16.6%)	811 (16.2%)		
	FR	1651 (16.5%)	812 (16.3%)	818 (16.4%)		
	IT	1678 (16.8%)	801 (16.1%)	860 (17.2%)		
	NL	477 (4.8%)	239 (4.8%)	241 (4.8%)		
	AT	450 (4.5%)	218 (4.4%)	255 (5.1%)		
	FI	506 (5.1%)	265 (5.3%)	248 (5.0%)		
	EL	495 (4.9%)	222 (4.5%)	229 (4.6%)		
	IE	423 (4.2%)	244 (4.9%)	227 (4.5%)		
	PT	554 (5.5%)	257 (5.2%)	252 (5.0%)		

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. Statistics are population weighted. P-values are obtained from a t-test for continuous variables and Pearson test for categorical variables. The number of observations differs across variables.

Table B12. Testing for survey demand effects of the information treatment

	OLS		Probit, average marginal effects	
	Perceived probability of price stability, over the next 3 years (likelihood, 0 to 100)		**ECB takes climate-related risks into consideration for monetary policy** (0/1)	
	(1)	(2)	(3)	(4)
Mean dep. var (control only)	41.87	41.88	0.29	0.29
Video treatment	0.247	0.373	0.005	0.005
	(0.472)	(0.461)	(0.008)	(0.008)
Control variables	No	Yes	No	Yes
R-Squared	0.01	0.07	0.00	0.01
No. of observations	14,970	14,870	14,973	14,873

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies and sample type dummies (not reported). Columns (2) and (4) include the same control variables included in Table 1. Columns (1) and (2) report an adjusted R-Squared, columns (3) and (4) a pseudo R-Squared. Robust standard errors are in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B13. Testing for spillover effects of the information treatment to crypto assets

	Probit, average marginal effects	
	Plans to purchase crypto assets, over the next 12 months (0/1)	
	(1)	(2)
Mean dep. var (control only)	0.10	0.10
Video treatment	0.005	0.004
	(0.005)	(0.005)
Control variables	No	Yes
Pseudo R-Squared	0.01	0.06
No. of observations	14,972	14,872

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. Respondents were asked "In the next 12 months, do you (or a member of your household) plan to buy / buy more crypto-assets?" (see Appendix C for the detailed question wording). All regressions include country dummies and sample type dummies (not reported). Columns (2) includes the same control variables included in Table 1. Robust standard errors are in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B14. Effects of the video treatment on attrition

	Probit, average marginal effects		
	Respondent participates in March 2024 and wave t+ x (0/1)		
	(1)	(2)	(3)
	April 2024 (t+1)	May 2024 (t+2)	June 2024 (t+3)
Dep. var. mean (control only)	0.83	0.79	0.72
Treatment (base: control)			
Video	-0.003	0.004	-0.003
	(0.007)	(0.007)	(0.008)
Video + FAQ option	-0.008	-0.004	-0.009
	(0.007)	(0.007)	(0.008)
Control variables	Yes	Yes	Yes
Pseudo R-Squared	0.05	0.06	0.06
No. of observations	19,966	19,966	19,966

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies and sample type dummies (not reported) and the same control variables indicated in Table 1 (columns 2 and 4). Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Table B15. Balance statistics and random assignment of holding limits

Limit (randomly allocated):		1,000€	3,000€	5,000€	10,000€	50,000€	120,000€	P-value	Test
Number of Observations (March 2024)		3,318	3,328	3,324	3,338	3,323	3,335		
Variable									
Treatment group	Group A (control)	1656 (49.9%)	1641 (49.3%)	1727 (52.0%)	1701 (51.0%)	1646 (49.5%)	1634 (49.0%)	0.22	Pearson's chi-squared
	Group B (Video)	861 (25.9%)	842 (25.3%)	795 (23.9%)	788 (23.6%)	830 (25.0%)	852 (25.5%)		
	Group C (Video+ FAQ)	801 (24.1%)	845 (25.4%)	802 (24.1%)	849 (25.4%)	847 (25.5%)	849 (25.5%)		
Time spent on regular monthly (in minutes), median (IQR)		11 (7.3, 16)	11 (7.5, 16)	11 (7.4, 16)	11 (7.3, 16)	11 (7.6, 16)	11 (7.3, 16)	0.92	Kruskal-Wallis
Has heard info about ECB month before		1540 (46.4%)	1544 (46.4%)	1574 (47.4%)	1555 (46.6%)	1542 (46.4%)	1572 (47.1%)	0.95	Pearson's chi-squared
CBDC awareness prior to survey		1336 (40.3%)	1309 (39.3%)	1353 (40.7%)	1317 (39.5%)	1347 (40.5%)	1361 (40.8%)	0.72	Pearson's chi-squared
Probability of a financial crisis next 12 months, median (IQR)		30 (10, 50)	30 (10, 50)	30 (11, 50)	30 (10, 50)	30 (10, 50)	30 (12, 50)	0.77	Kruskal-Wallis
Age (in years), median (IQR)		49 (37, 59)	48 (38, 58)	48 (37, 58)	49 (38, 59)	48 (37, 59)	48 (37, 59)	0.045	Kruskal-Wallis
Household size, median (IQR)		2 (2, 3)	2 (2, 4)	2 (2, 4)	2 (2, 4)	2 (2, 4)	2 (2, 4)	0.97	Kruskal-Wallis
Women		1578 (47.7%)	1670 (50.3%)	1641 (49.4%)	1614 (48.4%)	1634 (49.2%)	1713 (51.4%)	0.039	Pearson's chi-squared
University education		1912 (57.6%)	1913 (57.5%)	1907 (57.4%)	1955 (58.6%)	1906 (57.4%)	1899 (56.9%)	0.85	Pearson's chi-squared
Employed		2091 (63.0%)	2101 (63.1%)	2146 (64.6%)	2096 (62.8%)	2072 (62.4%)	2120 (63.6%)	0.53	Pearson's chi-squared
Income (thsd.), median (IQR)		33 (22, 48)	33 (22, 48)	34 (22, 49)	34 (22, 50)	33 (22, 48)	34 (22, 48)	0.51	Kruskal-Wallis
Hand-to-mouth		1041 (31.4%)	1006 (30.2%)	983 (29.6%)	1027 (30.8%)	960 (28.9%)	941 (28.2%)	0.050	Pearson's chi-squared
High financial literacy		1715 (52.0%)	1725 (52.1%)	1754 (53.0%)	1743 (52.5%)	1742 (52.7%)	1796 (54.1%)	0.60	Pearson's chi-squared
Country	BE	162 (4.9%)	167 (5.0%)	177 (5.3%)	196 (5.9%)	176 (5.3%)	167 (5.0%)	0.42	Pearson's chi-squared
	DE	510 (15.4%)	548 (16.5%)	545 (16.4%)	554 (16.6%)	513 (15.4%)	516 (15.5%)		
	ES	579 (17.5%)	544 (16.3%)	505 (15.2%)	553 (16.6%)	563 (16.9%)	569 (17.1%)		
	FR	539 (16.2%)	541 (16.3%)	559 (16.8%)	560 (16.8%)	514 (15.5%)	568 (17.0%)		
	IT	547 (16.5%)	554 (16.6%)	577 (17.4%)	550 (16.5%)	575 (17.3%)	536 (16.1%)		
	NL	151 (4.6%)	152 (4.6%)	165 (5.0%)	160 (4.8%)	160 (4.8%)	169 (5.1%)		
	AT	130 (3.9%)	161 (4.8%)	163 (4.9%)	150 (4.5%)	156 (4.7%)	163 (4.9%)		
	FI	172 (5.2%)	168 (5.0%)	157 (4.7%)	169 (5.1%)	187 (5.6%)	166 (5.0%)		
	EL	174 (5.2%)	156 (4.7%)	142 (4.3%)	155 (4.6%)	172 (5.2%)	147 (4.4%)		
	IE	179 (5.4%)	156 (4.7%)	149 (4.5%)	138 (4.1%)	137 (4.1%)	135 (4.0%)		
	PT	175 (5.3%)	181 (5.4%)	185 (5.6%)	153 (4.6%)	170 (5.1%)	199 (6.0%)		

Notes: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. Statistics are population weighted. P-values are obtained from a t-test for continuous variables and Pearson test for categorical variables. The number of observations differs across variables.

Appendix C. Survey Questions

The below background information was collected from recruitment, background and monthly CES survey modules fielded before the special purpose module including the survey experiment.

Background information

The below information is collected once respondents join the survey the first time.

Variable: A1020
Filtering: All respondents
Question wording:
What is your gender?
Coding:
[Single response]

1	Male
2	Female
3	Other

Variable: B2101
Filtering: All respondents
Question wording:
What is the highest level of school you have completed, or the highest degree you have received?
Coding:
[Single response]

1	Primary or no education
2	Lower secondary education
3	High school diploma (or equivalent professional degree)
4	Some college but no academic degree (for example: no BA, BS)
5	Bachelor's Degree (for example: BA, BS) or equivalent professional degree
6	Master's Degree (for example: MA, MBA, MS, MSW) or equivalent
7	Doctoral Degree (for example: PhD) or equivalent

Scripting instruction: country-specific scale to be inserted (from excel file 'education'), recode to International Standard Classification of Education (ISCED, 2011) → add hidden variable 'ISCED' that contains this recode to 8 categories (see excel file)
Skipped notification: Please provide an answer to this question. Please be assured that the information you give us will be treated confidentially.
Hard check: respondent cannot proceed without answering

Variable: B1000
Filtering: All respondents
Question wording:
How many people – including children and yourself – normally live with you as members of this household? By household we mean everyone who usually lives at your main place of residence (including yourself) and, that shares a common budget (that is, excluding flatmates and lodgers).
Coding:
[Numeric]
Valid range: 1-20
Skipped notification: Please provide an answer to this question. Please be assured that the information you give us will be treated confidentially.
Hard check: respondent cannot proceed without answering

Introduction to B5020
The next section is more like a quiz. The questions are not designed to catch you out, so if you think you have the right answer, you probably do. If you don't know the answer, simply tick the "don't know" box.
Scripting instruction: Show on a separate screen

Variable: B5020
Filtering: All respondents
Question wording:
Suppose you had €100 in a savings account and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money to grow?
Coding:
[single response]

1	More than €102
2	Exactly €102
3	Less than €102
4	Don't know
-888	Skipped

Translation instruction: Placement of the euro symbol varies across countries. Please place the euro symbol (before or after value) as customary in the local context.
Scripting instruction: rotate 1 to 3 by random group
Skipped notification: [none] (respondents can move to next question without notification)
Hard/soft check: no

Variable: B5030
Filtering: All respondents
Question wording:
Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?
Coding:
[single response]

1	More than today
2	Exactly the same
3	Less than today
4	Don't know
-888	Skipped

Scripting instruction: rotate 1 to 3 by random group
Skipped notification: [none] (respondents can move to next question without notification)
Hard/soft check: no

Variable: B5040
Filtering: All respondents
Question wording:
Do you think the following statement is true or false?
Buying shares in a single company usually provides a safer return than buying shares in a mutual fund.
Coding:
[single response]

1	True
2	False
3	Don't know
-888	Skipped

Scripting instruction: rotate 1 to 2 by random group
Skipped notification: [none] (respondents can move to next question without notification)
Hard/soft check: no

Variable: B5050
Filtering: All respondents
Question wording:
Suppose you owe €1,000 on a loan and the interest rate you are charged is 20% per year, compounded annually. If you didn't pay anything off, at this interest rate, how many years would it take for the amount you owe to double?
Coding:
[single response]

1	Less than 2 years
2	At least 2 years but less than 5 years
3	At least 5 years but less than 10 years
4	At least 10 years
5	Don't know
-888	Skipped

Translation instruction: Placement of the euro symbol varies across countries. Please place the euro symbol (before or after value) as customary in the local context.
Scripting instruction: rotate 1 to 4 by random group
Skipped notification: [none] (respondents can move to next question without notification)
Hard/soft check: no

Variable: B7030
Filtering: All respondents
Question wording:
This question is about your household total **net** income. To respond, you may choose between your **monthly** or **yearly** household total **net** income.
Please note that any information you provide will remain strictly confidential.
We would be grateful for a response, as it assists us with our research.
Coding: [single response]

1	I prefer a question about my **monthly** household total net income.
2	I prefer a question about my **yearly** household total net income.

Skipped notification: Please provide an answer to this question. If you prefer not to answer the questions that follow (on the next screens), you will be able to choose the response option "prefer not to answer". Please be assured that the information you give us will be treated confidentially.
Hard check: respondent cannot proceed without answering

Variable: B7040
Filtering: All respondents
Question wording:
What was your household total **net** income (i.e. after tax and compulsory deductions) from all sources [SCRIPTER: if B7030=1, show: **over the past month** if B7030=2, show: **over the past 12 months**]?
If you don't know the exact figure, please give a best estimate.

Instruction: *Please consider the income of all household members, and from all sources: wages or salaries; income from self-employment or farming; pensions; unemployment/redundancy benefit; any other social benefits or grants; income from investment, savings, insurance or property; income from other sources.*

_____ €/month < if B7030=1 >
_____ €/year < if B7030=2 >
Coding:
[Numeric]

-666	Prefer not to answer
-999	Don't know

Valid range: 0 – 999999
Warning message:
- Show if monthly provided and value is above €10,000 OR if yearly provided and value is below €5,000.
- Show once, if respondent clicks "next" or changes to another implausible value, move to next question.
- Message, if yearly: you selected yearly income. If this is your household yearly total net income, please proceed by clicking "next".
- Message, if monthly: you selected monthly income. If this is your household monthly total net income, please proceed by clicking "next".

Skipped notification: Please provide an answer to this question. Please be assured that the information you give us will be treated confidentially.
Hard check: respondent cannot proceed without answering

Variable: B7050_1
Filtering: if B7030=1 and (B7040 = -666 or B7040 = -999)
Question wording:
Perhaps you can provide the approximate range instead. Which category best matches your household total **net** income (i.e. after tax and compulsory deductions) **over the past month**?

We would be grateful for a response and assure you that any information you provide will remain strictly confidential.

Coding: [single response]

1	Less than €500
2	€500-€999
3	€1,000-€1,499
4	€1,500-€1,999
5	€2,000-€2,499
6	€2,500-€2,999
7	€3,000-€3,999
8	€4,000-€4,999
9	€5,000-€6,999
10	€7,000-€9,999
11	€10,000 or more

-666	Prefer not to answer
-999	Don't know

Skipped notification: Please provide an answer to this question. If you prefer not to answer, you can select the option "Prefer not to answer" at the bottom of the list. Please be assured that the information you give us will be treated confidentially.
Hard check: respondent cannot proceed without answering
Translation instruction: Placement of the euro symbol varies across countries. Please place the euro symbol (before or after value) as customary in the local context.

Variable: B7050_2
Filtering: if B7030=2 and (B7040 = -666 or B7040 = -999)
Question wording:
Perhaps you can provide the approximate range instead. Which category best matches your household total **net** income (i.e. after tax and compulsory deductions) **over the past 12 months**?
We would be grateful for a response and assure you that any information you provide will remain strictly confidential.
Coding: [single response]

1	Less than €10,000
2	€10,000-€14,999
3	€15,000-€19,999
4	€20,000-€24,999
5	€25,000-€29,999
6	€30,000-€39,999
7	€40,000-€49,999
8	€50,000-€59,999
9	€60,000-€74,999
10	€75,000 or more

-666	Prefer not to answer
-999	Don't know

Skipped notification: Please provide an answer to this question. If you prefer not to answer, you can select the option "Prefer not to answer" at the bottom of the list. Please be assured that the information you give us will be treated confidentially.
Hard check: respondent cannot proceed without answering
Translation instruction: Placement of the euro symbol varies across countries. Please place the euro symbol (before or after value) as customary in the local context.

The below information is, at the time of writing, collected each month in the regular monthly CES module.

Variable: C7010
Filtering: **All respondents**
Question wording:
Please think about your available financial resources, including access to credit, savings, loans from relatives or friends, etc. Suppose that you had to make an unexpected payment equal to one month of your household income. Would you have sufficient financial resources to pay for the entire amount?
Question type: [single response]
Coding:

1	Yes
2	No

Skipped notification: Please provide an answer to this question. All your answers will be treated confidentially.
Hard check: respondent cannot proceed without answering

Variable: H2020
Filtering: **All respondents**
Question wording:
In the past month, have you seen or heard information about the European Central Bank (ECB) from any of the following sources?
Question type: [multiple response]

1	Newspapers and magazines
2	TV and radio
3	The ECB's websites and publications
4	The ECB's social media accounts, e.g. Twitter and LinkedIn
5	Websites and social media accounts not run by the ECB
6	Other sources not listed above
7	No, I didn't get any information

Coding:

0	No
1	Yes

Scripting instruction:
- randomize order of 1 – 5 (not 6 and 7)
- option 7 should be exclusive, that is when option 7 is selected all other options should be unselected.

Skipped notification: Please provide an answer to this question. Please be assured that there is no right or wrong answer.
Hard check: respondent cannot proceed without answering

The following information was collected on ad-hoc basis in selected months following the usually fielded monthly CES survey module.

In August 2022, respondents were asked in a 10 minute special purpose survey module following the regular 20 minute survey module the following questions on digital euro:

Variable: X7010
Filtering: All respondents
Question wording:
Have you heard of the digital euro?
Coding:
[Single response]

1	Yes
2	No
-999	Don't know

Scripting instruction: Randomize order of items 1 to 2, Version 1: Yes, No; Version 2: No, Yes. Please include a variable indicating the version (X7010version).
Skipped notification: Please provide an answer to this question. There is no right or wrong answer.
Hard check: respondent cannot proceed without answering

Variable: X7020_1-3
Filtering: All respondents
Question wording:
The European Central Bank (ECB) is thinking about the **possibility of introducing a digital euro**, which would be just like euro coins and banknotes, but in digital form. A digital euro would not replace cash but would give everyone an additional payment option. The digital euro would be fully backed by the ECB's commitment to keeping its value stable over time.

If a digital euro is introduced, what do you think is the likelihood that you would take the following decisions?

Instruction: *Please rate the likelihood of taking each decision on a scale from 1 to 5, where 1 is very unlikely and 5 is very likely.*
Coding:
[grid question]
[question items]

1	I would use digital euro in most **day-to-day transactions**
2	I would transfer **more than half of my current savings** into the digital euro
3	I would be happy for **my salary / wage** to be paid in digital euro

[response scale]

1	1 – Very unlikely
2	2 – Unlikely
3	3 – Undecided
4	4 – Likely
5	5 – Very likely

Scripting instruction:
- labelled slider for response scale
- Randomise the order items 1-3 appear.

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.
Hard check: respondent cannot proceed without answering

In June 2023, respondents were again asked in a 10 minute special purpose survey module following the regular 20 minute survey module the following questions on digital euro:

Variable: AI3010
Filtering: **All respondents**
Question wording:
Have you ever heard of the digital euro?
Question type: [single response]
Coding:

1	Yes
0	No
-999	Don't know

Scripting instruction:
- Randomize order of items 1 to 2, Version 1: Yes, No; Version 2: No, Yes. Please include a variable indicating the version (AI3010version).

Skipped notification: Please provide an answer to this question. There is no right or wrong answer
Hard check: Respondent cannot proceed without answering.

Half of the sample received then the following question:

Variable: AI3110
Label: Hypothetical Digital Euro - Usage
Filtering: **If AI3100 = 1**
Question wording:
Screen 1 – Info screen (minimum screen timer 6 seconds)
Currently, you can access money via coins and banknotes issued by the central bank and the money you hold on your current and savings accounts at commercial banks.

The European Central Bank (ECB) is considering whether to introduce a **digital euro**. It would be just like euro coins and banknotes, but in digital form. A digital euro would not replace cash. It would give everyone an additional payment option. The ECB would be committed to keeping its value stable over time.

With this digital euro, you would be able to make payments in different ways, just as you do with euro coins and banknotes or the money from your current account at a bank.

Screen 2 – Question screen
If a digital euro is introduced, how likely is it that you would take the following decisions?

Instruction: *Please rate the likelihood of using a digital euro for payments on a scale from 1 to 5, where 1 is very unlikely and 5 is very likely.*
Question type: [grid question]

1	I would use the digital euro to make in-person day-to-day payments (e.g. in shops, including supermarkets or restaurants)
2	I would transfer more than half of my current savings into the digital euro
3	I would be happy for my salary / wage to be paid in digital euro
4	I would use the digital euro for online purchases
5	I would use the digital euro for regular and recurring payments (e.g. rent or subscription fees)
6	I would use the digital euro in peer-to-peer transactions (e.g. with family and friends)

Coding:

1	1 – Very unlikely
2	2 – Unlikely
3	3 – Undecided
4	4 – Likely
5	5 – Very likely

Scripting instruction:

- labelled slider for response scale
- Randomise the order items 1-6 appear.

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.
Hard check: respondent cannot proceed without answering

The following information was collected after the monthly CES survey module in March 2024:

Pre-treatment (March 2024 special purpose module)

Variable: AL3110
Filtering: **All respondents**
Question wording:
Do you (or anyone in your household) currently **have any** of the following?
Instruction: *The info buttons give you an explanation of the terms.*
Question type: [grid question]

1	Current account
2	Savings account
3	Cash at home or in your wallet
4	Crypto-assets (e.g. Bitcoin)

Coding:

1	Yes
0	No

Scripting instruction:

- If the respondent clicks next without answering, show the question again, but add a "don't know" option. Show the skipped notification.

-666	Prefer not to answer
-999	Don't know

- Show info buttons: Display the following definitions when cursor goes on account category

Current account	An account where your salaries, pension or benefits are paid in. You can use it to make day-to-day payments or payments you have to make regularly.
Savings account	An account set up for accumulating savings (including long-term savings plans with a notice period). A savings account is not used to make day-to-day payments.
Crypto-assets (e.g. Bitcoin)	These are sometimes known as cryptocurrencies. They are a new type of asset for which ownership and transactions are recorded digitally by means of cryptography. Examples include Bitcoin, XRP, Litecoin and Ether.

Skipped notification: Please provide an answer to this question. All your answers will be treated confidentially.
Hard check: respondent cannot proceed without answering

Variable: AL3120
Filtering: **If at least one of AL3110_1-4=1**
Question wording:
How much do you and your household currently have in total in each of the following categories?
Instruction: *If you're not sure, please choose the answer that fits your best estimate for each category.*

Question type: [grid question]

1	Current accounts	<drop-down menu>
2	Savings accounts	<drop-down menu>
3	Cash at home or in your wallet	<drop-down menu>
4	Crypto-assets (e.g. Bitcoin)	<drop-down menu>

Coding AL3120_1:

- <drop-down menu> for category 1 only (current accounts)

-555	Negative balance (overdraft)
1	Up to €99
2	€100-€499
3	€500-€999
4	€1,000-€1,999
5	€2,000-€2,999
6	€3,000-€4,999
7	€5,000-€9,999
8	€10,000-€14,999
9	€15,000-€19,999
10	€20,000-€29,999
11	€30,000-€39,999
12	€40,000-€49,999
13	€50,000-€69,999

14	€70,000-€99,999
15	€100,000-€149,999
16	€150,000-€199,999
17	€200,000 or more

Coding AL3120_2:

- <drop-down menu> for category 2 only (savings accounts)

1	Up to €99
2	€100-€499
3	€500-€999
4	€1,000-€1,999
5	€2,000-€2,999
6	€3,000-€4,999
7	€5,000-€9,999
8	€10,000-€14,999
9	€15,000-€19,999
10	€20,000-€29,999
11	€30,000-€39,999
12	€40,000-€49,999
13	€50,000-€69,999
14	€70,000-€99,999
15	€100,000-€149,999
16	€150,000-€199,999
17	€200,000 or more

Coding AL3120_3:

- <drop-down menu> for category 3 only (cash at home or in your wallet)

1	Up to €99
2	€100-€299
3	€300-€499
4	€500-€699
5	€700-€999
6	€1,000-€1,999
7	€2,000-€2,999
8	€3,000-€4,999
9	€5,000 or more

Coding AL3120_4:

- <drop-down menu> for category 4 only (Crypto-assets (e.g. Bitcoin))

1	Up to €99
2	€100-€299
3	€300-€599
4	€600-€999
5	€1,000-€1,499
6	€1,500-€2,499

7	€2,500-€4,999
8	€5,000-€9,999
9	€10,000-€14,999
10	€15,000-€19,999
11	€20,000-€29,999
12	€30,000-€49,999
13	€50,000-€69,999
14	€70,000-€99,999
15	€100,000 or more

Scripting instruction:

- Generate a list of unfolding items (drop-down menu) depending on the categories AL3110_1-4 with yes answer.
- If the respondent clicks next without answering, show the question again, but add a "don't know" option (for each of the categories/dropdown menu). Show the skipped notification.

-666	Prefer not to answer
-999	Don't know

Skipped notification: Please provide an answer to this question. If you prefer not to answer, you can select the option "Prefer not to answer" at the bottom of the drop-down list. All your answers will be treated confidentially.

Variable: AL4110
Filtering: **All respondents**
Question wording:
Which of the following payment options do you use to pay for an amount of approximately €50 or less, for a day-to-day transaction (e.g. in shops, restaurants)?
Coding:
[Multiple response]

1	Debit or credit card (excluding contactless)
2	Contactless debit or credit card
3	Smartphone or smartwatch
4	Cash
5	Other (e.g. food voucher or other means)

Coding:

0	No
1	Yes

Skipped notification: Please provide an answer to this question. All your answers will be treated confidentially.
Scripting instruction: Randomize order of the items 1 to 4.
Hard check: respondent cannot proceed without answering

Variable: AL4410
Filtering: **All respondents**
Question wording:
Have you ever heard of the digital euro?
Question type: [single response]
Coding:

1	Yes
0	No
-999	Don't know

Scripting instruction:

- Randomize order of items 1 to 2, Version 1: Yes, No; Version 2: No, Yes. Please include a variable indicating the version (AL4410version).

Skipped notification: Please provide an answer to this question. There is no right or wrong answer
Hard check: Respondent cannot proceed without answering.

Treatment Information (March 2024 special purpose module)

Group	**Statement for screen:**
A	No additional screen
B	Video

	Screen 1: On the next screen, you will see a short video (less than 2 min). Please turn on your sound or connect your headphones (if possible) before proceeding. Don't worry if you cannot turn on your sound or if you do not have your headphones, subtitles will be available. Screen 2: {insert video} SCRIPTER: insert the following <insert video>:

Filename - To be provided later	*If Country=1 and language=11 (Dutch – Belgium)*
	If Country=1 and language=12 (French – Belgium)
	If Country=2 (France)
	If Country=3 (Germany)
	If Country=4 (Italy)
	If Country=5 (Netherlands)
	If Country=6 (Spain)
	If Country=7 (Austria)
	If Country=8 (Finland)
	If Country=9 (Greece)
	If Country=10 (Ireland)
	If Country=11 (Portugal)

C	Video + FAQ information Screen 1: On the next screen, you will see a short video (less than 2 min). Please turn on your sound or connect your headphones (if possible) before proceeding. Don't worry if you cannot turn on your sound or if you do not have your headphones, subtitles will be available. After watching the video, you will also have the possibility to learn more about the topic, if you choose to do so (not mandatory). Screen 2: {insert video} Scripting instruction - Same language specific insert of the video as above In addition, respondents should see the below questions (see filtering)

Variable: AL5001
Label: Digital euro - information Treatment (self-selection)
Filtering: **If AL5000 = 3**
Question wording:
If you want, you can learn more about the digital euro on the next screen. There we will show the answers to some of the most frequently asked questions about the digital euro.

Would you be interested to learn more about the digital euro?
Instruction: *Note that you can leave this info page whenever you like, to continue with the rest of the survey.*
Question type: [single response]
Coding:

1	**Yes**, I would like to learn more information about the digital euro
0	**No**, I would not like to learn more information about the digital euro

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.
Hard check: respondent cannot proceed without answering.
Technical filtering: If AL5000 = 3.

Variable: AL5002
Label: Digital euro - information Treatment (treatment text – FAQ)
Filtering**: If AL5001 = 1**
Question wording:

FAQ on a digital euro (Source: The European Central Bank Webpage)

Below you can learn more about the digital euro and its possible features.

Instruction: *Please go through the information according to your preference. After you have read an answer to a question, please tick the box underneath it.*

Question type: [multiple response]

Why would Europe need a digital euro?

1	Digitalisation is changing the way we pay. The use of cash to make payments is declining and the coronavirus (COVID-19) pandemic has accelerated the shift towards online shopping and digital payments. A digital euro would be an electronic form of cash for the digitalised world. It would give consumers the option to use central bank money in a digital format, complementing banknotes and coins. A digital euro would make people's lives easier by providing something that does not currently exist: a digital means of payment universally accepted throughout the euro area, for payments in shops, online or from person to person. Like cash, a digital euro would be risk-free, widely accessible, user-friendly and free for basic use. Moreover, a digital euro would strengthen the strategic autonomy and monetary sovereignty of the euro area by boosting the efficiency of the European payments ecosystem as a whole, fostering innovation and increasing its resilience to potential cyberattacks or technical disruptions, such as power outages.

Would a digital euro replace cash?

2	No. A digital euro would complement cash, not replace it. A digital euro would exist alongside cash in response to people's growing preference to pay digitally, in a fast and secure way. Cash would continue to be available in the euro area, as would the other private electronic means of payment currently being used.

Who would be able to use a digital euro?

3	As stated in the legislative proposal presented by the European Commission, a digital euro would be made available to people, businesses and public entities that reside or are established in a euro area Member State on a temporary or permanent basis. People who travel to the euro area for personal or professional purposes, or who used to reside or be established in a euro area country, might also have access to the digital euro. Moreover, people, businesses and public entities residing or established outside the euro area may access the digital euro by opening digital euro accounts with payment service providers established or operating in a country which is a Member of the European Economic Area or in a third country, subject to a prior agreement concluded between the EU and third countries, and/or arrangements concluded between the European Central Bank and national central banks in non-euro area Member States and in third countries.

Would people have to pay to use a digital euro?

4	A digital euro would be a public good. It would therefore be free for basic use by the people who want to use it. Nevertheless, supervised intermediaries, including banks, could use the basic functionalities of a digital euro as a basis to further develop their own platforms and solutions. These intermediaries could then potentially go on to offer their customers other value-added services at a cost.

How would a digital euro work?

5	A digital euro would allow people to make secure instant payments in physical and online stores and between individuals, irrespective of the euro area country they are in or the payment service provider they have an account with. The European Central Bank is currently exploring how this could work in practice. For instance, the Eurosystem would develop a dedicated digital euro app that everyone could have equal access to. Alternatively, intermediaries, including banks, could integrate digital euro services within their existing apps, which their customers are already familiar with. In any case, people without access to a bank account or digital devices would also be able to pay with a digital euro using a physical card provided by public intermediaries, such as post offices. In any case, a digital euro would offer both online and offline functionalities, anticipating situations of limited connectivity. When digital euro payments are made offline, personal transaction details would only be known to the payer and the payee.

How private would a digital euro be?

6	Privacy is one of the most important design features of a digital euro. The Eurosystem has no interest in people's personal payment data or payment habits. The Eurosystem would not be able to identify people based on their transactions. A digital euro would allow people to make online payments without sharing their data with third parties, other than those that are required to prevent illicit activities, in line with European regulations. Offline digital euro payments would provide an even higher level of privacy. Personal transaction details would only be known to the payer and the payee.

How would the European Central Bank ensure that a digital euro is inclusive?

7	A digital euro would be a public good, like banknotes and coins are today – but in a digital form. A digital euro would be free for basic use, via a mobile app or a physical card, by people who want to use it. A digital euro would also work offline, in case users have limited connectivity. The draft legislation presented by the European Commission establishes that credit institutions distributing a digital euro would be required to provide basic digital euro payment services when requested by their customers.

	Moreover, to ensure that everyone – including people with disabilities, those with functional limitations or limited digital skills, and elderly people – can pay using digital euro, public entities, such as post offices, will be identified in each euro area country. These entities would provide people vulnerable to digital financial exclusion with free support and access to digital euro services, such as face-to-face support and dedicated assistance when opening a digital euro account and using all basic digital euro services. Free access to the basic services of a digital euro would also be offered to people without a bank account. Moreover, a particular focus will be placed on the inclusion of vulnerable groups, such as individuals with no fixed address, asylum seekers or beneficiaries of international protection. A digital euro would be designed to accommodate the needs of everyone, leaving no one behind.

How would the European Central Bank ensure that people can pay with digital euro in the same way throughout the euro area?

8	Supervised intermediaries would be in charge of distributing a digital euro in the euro area. To ensure harmonious implementation, the Eurosystem is designing a digital euro scheme that consists of a single set of rules, standards and procedures for the standardisation of digital euro payments across the euro area, ensuring pan-European reach. This single set of rules, standards and procedures is currently being developed in close collaboration with market representatives, including users, retailers and intermediaries, by the Rulebook Development Group.

What would be the link between instant payments and a digital euro?

9	Today, consumers rarely have the option to use instant payments when paying in shops, which also means that merchants don't receive their money immediately. A digital euro would change that – all digital euro payments would be instant. The single set of rules, standards and procedures developed and, if approved, implemented for a digital euro would mean that instant payment solutions could be further developed to reach all euro area countries. This would reduce the dependence on private non-European companies that are currently dominating the payments sector.

How would a digital euro be different from stablecoins and crypto-assets?

10	A digital euro would be central bank money. This means that it would be backed by a central bank and designed to meet the needs of the people using it. As such it would be risk-free. Moreover, it would respect privacy and data protection. Central banks have a mandate to maintain the value of money, whether it be in physical or digital form. The stability and reliability of stablecoins ultimately depend on the entity that issues them and the credibility and enforceability of their pledge to maintain the money's value over time. Private issuers may also use personal data for commercial purposes. There is no identifiable entity that is liable for crypto-assets, which means that claims cannot be enforced.

Coding:

1	I have read this text.

- Fill with 0 if a box is not ticked

Scripting instruction:

- Show the header above an unfolding item for each header
- Randomise the order headers and items 1 to 10 appear
- For each item show the tickbox underneath the unfolding item text at the end
- People can tick as many items as they want and

Technical filtering: If AL5001 = 1

Post treatment (March 2024 special purpose module)

Variable: AL5010
Filtering: **Only asked for treated individuals**
Question wording:
Think back to the video you just saw.
What would you say was the **main topic** of that video?
Question type: [single response]
Coding:

1	A music video on a new European Anthem
2	A possible new payment method for euro area consumers
3	A new product available in supermarkets for consumers
4	A summary of recent interest rate decisions by the European Central Bank
5	A soon to be available new handheld gaming device
-999	Don't know

Skipped notification: Please provide an answer to this question. All your answers will be treated confidentially.
Scripting instruction:

- Randomise the order items 1 to 5 appear with the non-response option always ordered last.

Hard check: respondent cannot proceed without answering.

Variable: AL5020
Filtering: **All respondents**
Question wording:

The European Central Bank is considering the introduction of a digital euro. It would be a digital form of cash, issued by the central bank and available to everyone in the euro area.

If a digital euro is introduced, how likely is it that you would take the following decisions?

Instruction: *Please rate the likelihood of using a digital euro for payments on a scale from 1 to 5, where 1 is very unlikely and 5 is very likely.*
Question type: [grid question]

1	I would use the digital euro to make in-person day-to-day payments (e.g. in shops, including supermarkets or restaurants)
2	I would use the digital euro for online purchases
3	I would use the digital euro in peer-to-peer transactions (e.g. with family and friends)
4	I would use the digital euro to receive my salary / wage in digital euro

Coding:

1	1 – Very unlikely
2	2 – Unlikely
3	3 – Neither likely nor unlikely
4	4 – Likely
5	5 – Very likely

Scripting instruction:

- labelled slider for response scale
- Randomise the order items 1-4 appear.

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.
Hard check: respondent cannot proceed without answering

Variable: AL5210
Filtering: **All respondents**
Question wording:
Imagine that you receive a one-off windfall of €10,000 to store in cash, save or invest in financial assets. Please indicate in which of the following asset categories you would store/save/invest this amount.
Instruction: *You can allocate €10,000 by typing an amount in each box. (Note that your answers should total to €10,000 – if your total exceeds €10,000, you should first decrease the amount in one option before you increase the amount in another).*

1	Cash/physical money at home	
2	Digital euro in an application or digital wallet on a mobile device	
3	Current accounts or savings accounts	
3	Individual stocks or shares in publicly traded companies	
4	Mutual funds and collective investments (including exchange-traded funds (ETFs))	
6	Government or corporate bonds	
7	Crypto-assets (e.g. Bitcoin)	
8	Other financial assets (e.g. retirement assets) not included above	
	Total (the values should total to €10,000)	**€10,000**

Question type: [numeric grid]
Coding: numerical with range 0 – 10000
Translation instruction: Placement of the euro symbol varies across countries. Please place the euro symbol (before or after value) as customary in the local context.
Error message: Note that the amounts in the column should total to €10,000. Please check your answer or click "Next" if you are happy with your answer.
Skipped notification:
Please provide an answer to this question. All your answers will be treated confidentially.
Soft check: skipping notification shown once, if respondent clicks 'next' again, move to next question
Scripting instruction:

- Show info buttons: Display the following definitions when cursor goes on financial instruments (please note there might be two info buttons per response item).

Digital euro	A digital form of cash, issued by the central bank and available to everyone in the euro area.
Current accounts	An account used for receiving salaries, pensions and regular benefits and for making **day-to-day or frequent transactions**.
Savings accounts	An account set up for accumulating savings (including long-term savings plans with a notice period). A savings account is not used to execute day-to-day transactions.
Individual stocks or shares in publicly traded companies	These are typically traded on a stock exchange and held by investors directly. Stocks and shares refer to the ownership of part of a company. They give the owner of the stocks or shares the right to receive dividends from it.
Mutual funds and collective investments (including exchange-traded funds (ETFs))	Collective investment schemes, typically a portfolio (basket of assets) of stocks, bonds, other securities and/or real estate, that is often professionally managed.
Government or Corporate bonds	Securities which essentially are loans to the government or large corporations. A bond pays back the principal amount at a future date.
Crypto-assets (e.g. Bitcoin)	These are sometimes known as cryptocurrencies. A new type of asset for which ownership and transactions are recorded digitally by means of cryptography. Examples include Bitcoin, XRP, Litecoin and Ether.

Variable: AL6000
Filtering: **All respondents**
Question type: [Single value]
Coding:

1	Group A
2	Group B
3	Group C
4	Group D
5	Group E
6	Group F

Scripting instruction:

- Random assignment of groups, with equal groups for country (DE, FR, IT, ES, NL, BE, FI, PT, AT, IE, GR) x recruitment method (CATI/CAWI).

Group	Z (insert)
A	1,000 €
B	3,000 €
C	5,000 €
D	10,000 €
E	50,000 €
F	120,000 €

Translation instruction: Placement of the euro symbol varies across countries. Please place the euro symbol (before or after value) as customary in the local context.

Variable: AL6010
Filtering: **All respondents**
Question wording:
Imagine that a **digital euro** is introduced with a **holding limit of {L} euro** per person.

Taking into account the money you (your household) currently hold on your current and savings accounts and in cash, how much money would you allocate into your digital euro account?
Question type: [numeric]
___ €

Coding: numeric with range 0 to {L}
Scripting instruction:

- Please display the following error message if the value entered is above **{L}**: "Please review your answer. The maximum value you can allocate can be **{L}**."

Skipped notification: Please provide an answer to this question. All your answers will be treated confidentially.
Hard check: respondent cannot proceed without answering

Variable: AL6020
Label: Hypothetical digital euro - fraction offline/ online payments
Filtering: **All respondents**
Question wording:
A digital euro would offer both online and offline functionalities, anticipating situations of limited connectivity. When digital euro payments are made offline, payment information would only be known to the payer and the payee, providing the highest possible level of privacy.

If you had to use the digital euro in some of your transactions, what fraction (in percent) of your total payments would you make offline?

Instruction: *Use the slider below to indicate your response.*
Question type: [slider]

Coding: slider without anchoring with range: 0%-100%.

Scripting instruction:

- Please include anchor labels at 0%, 50% and 100%.
- If the respondent clicks next without answering, show the question again, but add a "don't know" option. Show the skipped notification.

-999	Don't know

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.
Hard check: respondent cannot proceed without answering
Technical filtering: All respondents

Variable: AL5110
Filtering: **If AL5020_1=1 OR AL5020_1=2 OR AL5020_1=3**
Question wording:
Earlier you said that it would not be likely that you adopt the digital euro for day-to-day payments.
Why is it **not likely** that you will **adopt a digital euro** for making in-person **day-to-day payments**?
Instruction: *Please choose only the most important reason.*
Question type: [single response]
Coding:

1	It will be **less secure** compared to alternative (non-cash) means of payment
2	It will have **lower degree of anonymity** or privacy compared to alternative (non-cash) means of payment
3	**Shops** currently not accepting alternative (non-cash) means of payment **will not accept it**
4	It will come with **additional transaction costs** compared to alternative (non-cash) means of payment

5	I **use alternative payment methods** that meet my needs
6	**Another reason** not listed above

Scripting instruction:

- Randomise the order of items 1 to 5, item 6 should always be ordered last.
- If the respondent clicks next without answering, show the question again, but add a "don't know" option. Show the skipped notification.

-666	Prefer not to answer
-999	Don't know

Skipped notification: Please provide an answer to this question. All your answers will be treated confidentially.
Hard check: Respondent cannot proceed without answering.

Variable: AL7010
Filtering: **All respondents**
Question wording:
In the next 12 months, do you (or a member of your household) plan to {if AL3110_4 = -666 or AL3110_4 = -999 or AL3110_4 = 0, SHOW: buy} {if AL3110_4 = 1, SHOW: buy more} crypto-assets?
Question type: [single response]
Coding:

1	Yes
0	No

Scripting instruction:

- If the respondent clicks next without answering, show the question again, but add a "don't know" option. Show the skipped notification.

Coding:

-666	Prefer not to answer
-999	Don't know

- Show info buttons. Display the following definition of crypto-assets

crypto-asset	These are sometimes known as cryptocurrencies. They are a new type of asset for which ownership and transactions are recorded digitally by means of cryptography. Examples include Bitcoin, XRP, Litecoin and Ether.

- Randomise the order of items 0 and 1. Include a variable indicating the version (AL7010version).

Skipped notification: Please provide an answer to this question. If you prefer not to answer, you can select the option "Prefer not to answer". All your answers will be treated confidentially.
Hard check: respondent cannot proceed without answering

Variable: AL7020
Filtering: **All respondents**
Question wording:
How likely do you think it is that **the European Central Bank will maintain price stability in the euro area economy over the next 3 years?**
Instruction: *Use the slider below to indicate your response.*
Question type: [slider]
Coding: slider without anchoring with range: 0-100.
Scripting instruction: If the respondent clicks next without answering, show the question again, but add a "don't know" option. Show the skipped notification.

-999	Don't know

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.
Hard check: respondent cannot proceed without answering

Variable: AL8010
Filtering: **All respondents**
Question wording:
Please indicate how much you agree with the following statement:

The European Central Bank works to better understand, monitor, and manage **climate-related risks** in monetary policy and investment operations, and in the financial system.

Question type: [single response]
Coding:

1	Strongly agree
2	Agree
3	Neither agree nor disagree
4	Disagree
5	Strongly disagree

Scripting instruction:

- Please change the order with two versions 1: "Strongly agree" to "Strongly disagree" and version 2, with inverse order: "Strongly disagree" to "Strongly agree". Save the version in AL8010version.

Skipped notification: Please provide an answer to this question. We appreciate your opinion.

Follow-up survey (June 2024)

Variable: AM1010
Label: Hypothetical digital euro – Awareness prior to survey
Filtering: **All respondents**
Question wording:
Have you ever heard of the digital euro?
Question type: [single response]
Coding:

1	Yes
0	No
-999	Don't know

Scripting instruction:
- Randomise order of items 1 to 2, Version 1: Yes, No; Version 2: No, Yes. Please include a variable indicating the version (AM1010_version).

Skipped notification: Please provide an answer to this question. There is no right or wrong answer
Hard check: Respondent cannot proceed without answering.
Technical filtering: All respondents

Variable: AM1020
Label: Hypothetical digital euro - Usage
Filtering: **All respondents**
Question wording:

The European Central Bank is considering the introduction of a digital euro. It would be a digital form of cash, issued by the central bank and available to everyone in the euro area.

If a digital euro is introduced, how likely is it that you would take the following decisions?

Instruction: *Please rate the likelihood of using a digital euro for payments on a scale from 1 to 5, where 1 is very unlikely and 5 is very likely.*
Question type: [grid question]

1	I would use the digital euro to make in-person day-to-day payments (e.g. in shops, including supermarkets or restaurants)
2	I would use the digital euro for online purchases
3	I would use the digital euro in peer-to-peer transactions (e.g. with family and friends)
4	I would use the digital euro to receive my salary / wage in digital euro

Coding:

1	1 – Very unlikely
2	2 – Unlikely
3	3 – Neither likely nor unlikely
4	4 – Likely
5	5 – Very likely

Scripting instruction:
- labelled slider for response scale
- Randomise the order items 1-4 appear.

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.
Hard check: respondent cannot proceed without answering
Technical filtering: All respondents

Variable: AM1030
Label: Digital euro - information acquisition (self-selection)
Filtering: **If AM1010 = 1**
Question wording:
During the last three months, have you actively searched for information about the digital euro?

Instruction: *Please consider any source of information, including TV/radio, newspapers or the internet.*
Question type: [single response]
Coding:

1	**Yes**
0	**No**

Scripting instruction:
- Please randomise the order the response options appear, version 1: Yes, I have actively looked for information on the digital euro; No, I have not actively looked for information on the digital euro, version 2: No, I have not actively looked for information on the digital euro; Yes, I have actively looked for information on the digital euro. Record the version in a separate variable: **AM1030_version**.

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.
Hard check: respondent cannot proceed without answering.
Technical filtering: If AM1010 = 1

Appendix D. Protocol for dubbing of the treatment video

Step 1 – Source Video

The video was obtained for EN (screen filming, with subtitles) on 02.02.2024.

https://www.youtube.com/watch?v=cNJis8BEieo

For record keeping this video was also kept by doing a screen filming with the EN subtitles.

Step 2 – Obtain translated textual input

The eight language-translated scripts were obtained from the ECB YouTube channel (see Table C1).

(Notes: EN uses the default subtitles from YouTube)

Note that the following CES sample countries received the same language as others:

- DE and AT both received one version of German (video + subtitles)
- BE-FR and FR both received one version of French (video + subtitles)
- BE-NL and NL both received the exact translation but different voice-overs because of feedback from local language experts on the accessibility (pronunciation) (video + subtitles)

This is akin to the translations used by the ECB webpage for these countries regarding country-specific webpages (e.g. the FAQ on the digital euro).

Step 3 – Dubbing / Voice Over and subtitles in local languages

The input for dubbing (voice-over) of the original video was the YouTube link above each time. At the time, no changes to the video were made compared to 02.02.2024.

The dubbing was done in two instances on 10.02.2024 (DE, ES, FR, GR, NL, and IT) and 14.02.2024 (the remaining languages: PT and FI).

Software: https://webapp.dubverse.ai/ (Version: 0.8.0), as of 10.02. and 14.02.2024.

Licence used: All dubbing was performed under the Pro licence (for a cost of 13 USD) which allows for commercial use.

Text (spoken word and subtitles): For all videos, language-specific edits to the Dubverse translation were made in their proprietary editing platform using the YouTube scripts from Step 2.

Voices: The voices in all countries were "Bella" an advanced dubbing voice Dubverse uses from "Elevenlabs"; Some countries used another voice, "Iris," due to the non-availability of previously mentioned voices (GR) and "Evelien" (NL, BE-NL).

The voice-over thereby mimics the female voice of the original EN video. Voices are very similar.

Background music: Different from the EN original (which has a soundtrack underlying it), we refrained from using background music due to potential issues with the licencing of the music used in the original video at the time of conducting the research.

Video content: The entire video was shown to respondents. No further edits were made to the video.

Step 4 – Testing with language experts

A team of native speakers was consulted for all languages to confirm the translation. Some corrections were made, as highlighted in yellow in the above overview table.

Step 5 – Web Implementation in the CES survey platform

Ipsos N.V. implemented the videos on the web platform. The ECB team and the team from Ipsos N.V. tested the survey links on multiple desktop and mobile devices, including the subtitles and voice-over. The implementation was without issues. No errors were identified before, during or after the fieldwork. No errors were raised by respondents who can provide feedback to Ipsos N.V. at the end of each round of the survey.

Table C1. Translated text used for the voice-over and video subtitles

	EN (Source)	DE	ES	FR	IT	NL	GR	PT	FI
Sript	0:00 Imagine a digital single payment solution 0:04 that could be used for any kind of payment 0:06 throughout the euro area. 0:09 Guess what? It could become a reality: 0:12 A digital euro 0:14 easy, safe, fast, reliable. 0:19 Digital money from the ECB at your fingertips, whenever you need it. 0:26 But how would it work? 0:28 Say you've gone for a meal with a friend and you want to split the bill. 0:32 Simple! 0:33 Open the digital euro wallet on your smartphone 0:36 Check your balance, enter the amount to pay your friend 0:40 Confirm your transfer 0:42 Your friend will receive the money instantly, free of charge. 0:46 It doesn't matter which country you're in or who your payment provider is. 0:50 Payments are still made instantly. Even offline. 0:53 It's also easy to use the digital euro at your favourite local shops. 0:58 Unlock your device, place it on the terminal, authenticate, 1:02	0:01 Stellen Sie sich eine einheitliche digitale Zahlungslösung vor, 0:03 die für jede Art von Zahlung 0:06 im gesamten Euroraum genutzt werden kann. 0:09 Genau das könnte Realität werden. 0:12 Ein digitaler Euro 0:14 einfach, sicher, schnell, zuverlässig. 0:19 Digitales Geld von der EZB, jederzeit verfügbar. 0:27 Wie würde das funktionieren? 0:28 Sie wollen sich im Restaurant die Rechnung teilen? 0:32 Ganz einfach! 0:33 Sie öffnen die Wallet für digitale Euro auf Ihrem Smartphone, 0:36 prüfen Ihr Guthaben und geben den Betrag ein. 0:40 Sie bestätigen die Überweisung. 0:42 Ihre Freundin erhält das Geld sofort, gebührenfrei. 0:46 Es spielt keine Rolle, in welchem Land Sie sind oder wer Ihr Zahlungsdienstleister ist. 0:50 Die Zahlungen werden sofort durchgeführt. Sogar offline. 0:54 Auch in Geschäften können Sie einfach mit dem digitalen Euro bezahlen. 0:58 Sie entsperren Ihr Gerät, halten es an das Zahlungsterminal, authentifizieren sich und bezahlen, online oder offline. 1:05 Sie können auch eine physische Karte verwenden. 1:09 Und was ist mit E-Commerce? 1:10 Bei Online-Käufen können Sie ebenfalls mit dem digitalen Euro bezahlen.	0:01 Imagina una solución de pago digital única 0:03 que pueda utilizarse para cualquier tipo de pago 0:06 en toda la zona del euro. 0:09 ¿Sabes qué? Podría hacerse realidad 0:12 Un euro digital 0:14 fácil, seguro, rápido, fiable. 0:19 Dinero digital del BCE a tu alcance siempre que lo necesites. 0:27 Pero, ¿cómo funcionaría? 0:28 Imagina que vas a comer con una amiga y quieres dividir la cuenta. 0:32 ¡Fácil! 0:33 Abre tu cartera de euros digitales en el móvil. 0:36 Comprueba tu saldo e introduce el importe que deseas pagar a tu amiga. 0:40 Confirma la transferencia 0:42 Tu amiga recibirá el dinero al instante sin costes adicionales. 0:46 No importa en qué país estés o quién sea tu proveedor de pagos. 0:50 Los pagos seguirán realizándose al instante. Incluso offline. 0:54 También es fácil utilizar el euro digital en tus tiendas favoritas. 0:58 Desbloquea tu dispositivo, acércalo al terminal, autentica y efectúa el pago, tanto online como offline. 1:05 Si lo deseas, también puedes usar una tarjeta física. 1:09 ¿Qué pasa con el comercio electrónico? 1:10 El euro digital también puede utilizarse para comprar en Internet.	0:01 Imaginez une solution de paiement numérique unique 0:03 utilisable pour tout type de paiement 0:03 dans l'ensemble de la zone euro. 0:09 Eh bien, cela pourrait bientôt voir le jour ! 0:12 Un euro numérique 0:14 simple, sûr, rapide et fiable. 0:19 Un euro numérique émis par la BCE, disponible à tout moment. 0:27 Comment cela fonctionnerait-il ? 0:28 Vous souhaitez partager l'addition de votre repas avec une amie ? 0:32 C'est facile ! 0:33 Vous ouvrez votre portefeuille en euros numériques sur votre smartphone, 0:36 vérifiez votre solde, entrez le montant à payer à votre amie, 0:40 et confirmez le virement. 0:42 Votre amie recevra le paiement instantanément et gratuitement 0:46 quel que soit le pays dans lequel vous vous trouvez ou votre prestataire de paiement. 0:50 Les paiements sont instantanés, même hors ligne. 0:54 Vous pourriez aussi utiliser l'euro numérique facilement chez vos commerçants de proximité. 0:58 Déverrouillez votre téléphone ou votre montre et authentifiez-vous sur le terminal de paiement. Puis effectuez votre transaction, en ligne ou hors ligne. 1:05 Si vous le souhaitez, vous pouvez également utiliser une carte physique. 1:09 Et pour les achats sur Internet ? 1:10 L'euro numérique serait aussi disponible pour vos achats en ligne.	0:01 Immagina una soluzione di pagamento digitale unica 0:03 utilizzabile per ogni tipo di pagamento 0:06 in tutta l'area dell'euro. 0:09 Sai che potrebbe diventare realtà? 0:14 Un euro digitale 0:19 facile, sicuro, veloce, affidabile. 0:19 Moneta digitale della BCE a portata di mano, ovunque e per ogni necessità. 0:27 Ma come funzionerebbe? 0:28 Sei al ristorante con amici e vuoi dividere il conto? 0:32 Semplice! 0:33 Apri il wallet in euro digitali sul tuo smartphone 0:36 controlla il saldo, inserisci l'importo da pagare 0:40 e conferma l'operazione. 0:42 La tua quota sarà trasferita all'istante, senza costi aggiuntivi. 0:46 Non importa in quale paese ti trovi o chi sia il tuo fornitore dei servizi di pagamento. 0:50 I pagamenti continueranno a essere istantanei, anche offline. 0:54 Potrai usare facilmente l'euro digitale anche nel tuo negozio di fiducia. 0:58 Sblocca il tuo dispositivo, posizionalo sul terminale, autenticati, effettua il pagamento, online oppure offline 1:05 Puoi anche usare una carta fisica. 1:09 E il commercio elettronico? 1:10 L'euro digitale è utilizzabile anche per gli acquisti online. 1:15	0:01 Stel je voor: één digitaal betaalmiddel 0:03 dat je kunt gebruiken voor elke betaling die je wil doen 0:06 overal in het eurogebied. 0:09 Nou ... dat zou zo maar eens werkelijkheid kunnen worden: 0:12 een digitale euro 0:14 gemakkelijk, veilig, snel en betrouwbaar. 0:19 Digitaal geld van de ECB binnen handbereik, wanneer je maar wil. 0:27 Maar hoe zou dat werken? 0:28 Stel, je gaat met iemand uit eten en wil de rekening delen. 0:32 Simpel! 0:33 Open de digitale europortemonnee op je smartphone. 0:36 Controleer je tegoed, vul het bedrag in en betaal. 0:40 Bevestig je betaling. 0:42 Je tafelgenoot ontvangt het geld direct, zonder kosten. 0:46 En het maakt niet uit in welk land je bent of welke bank je hebt. 0:50 Betalingen vinden meteen plaats. Zelfs offline. 0:54 Je kunt ook gemakkelijk met digitale euro's betalen in je favoriete lokale winkel. 0:58 Plaats je apparaat op de terminal, bevestig je identiteit en betaal, online of offline. 1:05 Als je wil, kun je ook een fysieke kaart gebruiken.	0:01 Φανταστείτε μια ψηφιακή ενιαία λύση πληρωμών 0:03 που θα μπορούσε να χρησιμοποιηθεί για οποιαδήποτε πληρωμή 0:06 σε όλη τη ζώνη του ευρώ. 0:09 Μπορείτε να μαντέψετε; Θα μπορούσε να γίνει πραγματικότητα: 0:12 Ψηφιακό ευρώ 0:14 Εύχρηστο, ασφαλές, γρήγορο, αξιόπιστο. 0:19 Ψηφιακό χρήμα από την ΕΚΤ στα χέρια σας, όποτε το χρειάζεστε. 0:27 Αλλά πώς θα λειτουργούσε; 0:28 Ας πούμε ότι έχετε πάει για φαγητό με φίλη και θέλετε να μοιραστείτε τον λογαριασμό. 0:32 Είναι απλό! 0:33 Ανοίξτε το πορτοφόλι ψηφιακού ευρώ στο έξυπνο κινητό σας. 0:36 Ελέγξτε το υπόλοιπό σας και συμπληρώστε το ποσό. 0:40 Επιβεβαιώστε τη μεταφορά των χρημάτων σας. 0:42 Η φίλη σας θα τα λάβει αμέσως, χωρίς χρέωση. 0:46 Δεν έχει σημασία σε ποια χώρα βρίσκεστε ή ποιον πάροχο πληρωμών έχετε. 0:50 Οι πληρωμές εκτελούνται άμεσα, ακόμα κι εκτός σύνδεσης. 0:54 Μπορείτε εύκολα να χρησιμοποιήσετε το ψηφιακό ευρώ στο αγαπημένο σας κατάστημα. 0:58 Ξεκλειδώστε τη συσκευή σας, τοποθετήστε την στο τερματικό, επιβεβαιώστε, κάντε την πληρωμή, σε σύνδεση ή εκτός σύνδεσης. 1:05	0:00 Imagine uma solução de pagamento digital única 0:04 utilizável para qualquer pagamento 0:07 no conjunto da área do euro. 0:09 Sabe que mais? 0:10 Pode vir a acontecer. 0:13 Um euro digital fácil, seguro, rápido, fiável. 0:19 Moeda digital do Banco Central Europeu ao seu alcance, quando precisar. 0:26 Mas como funcionaria? 0:29 Suponha que sai com alguém e quer dividir a conta. 0:33 É simples! 0:34 Abra a sua carteira de euros digitais no telemóvel, 0:37 verifique o saldo, indique o montante a pagar, 0:40 confirme a transferência. 0:42 O dinheiro é recebido de imediato, gratuitamente. 0:46 Não importa o país em que está ou qual é o seu prestador de serviços de pagamento. 0:50 Os pagamentos continuam a ser imediatos, mesmo sem ligação à Internet. 0:54 Também é fácil usar euros digitais na loja perto de si. 0:58 Basta desbloquear o dispositivo e colocá-lo no terminal, 1:01 autenticar-se e fazer o pagamento, com ou sem ligação à Internet. 1:05	0:00 0:01 Mitä jos kaikki maksut voisi hoitaa euroalueella samalla tavalla? 0:08 Eurosta kaavaillaan sähköistä versiota, joka nimettäisiin digitaaliseksi euroksi. 0:14 Sähköinen maksaminen olisi nopeaa, helppoa ja turvallista. 0:19 Euroopan keskuspankki pitäisi siitä huolta, kuten seteleistä ja kolikoistakin. 0:27 Rahaa olisi helppo siirtää esimerkiksi puhelinsovelluksella maassa kuin maassa. 0:34 Siirtosummaa valitessa pitäisi vain huolehtia, että digitaalisia euroja on tarpeeksi. 0:40 Kun maksun varmistaisi, se olisi jo saman tien perillä saajan sovelluksessa. 0:46 Eikä rahansiirto maksaisi mitään, pankista tai muusta palveluntarjoajasta riippumatta. 0:49 Pikamaksut onnistuisivat jopa ilman verkkoyhteyttä aina ja kaikkialla. 0:58 Maksupäätteellä joutuisi todennäköisesti varmuuden vuoksi vahvistamaan maksun. 1:06 Halutessaan sähköisiä euroja voisi käyttää puhelimen sijasta maksukortilla. 1:09 Digitaalisilla euroilla voisi tehdä ostoksia myös verkossa. 1:17 Tai ne voisi vaihtaa euroseteleiksi. Niiden arvo ei muuttuisi mihinkään. 1:22 Euroopalla olisi oma yhteinen sähköinen raha. 1:29 Euroopan keskuspankki Eurojärjestelmä Finnish For the finish video we entirely relied on the automated translation since the translation on Youtube is very different from the EN original.

	make the payment, online or offline 1:05 If you want, you can also use a physical card. 1:08 What about e-commerce? 1:10 The digital euro is also available when you're buying something online 1:15 Be it digital or physical, "a euro will always be a euro" 1:19 and have the same value irrespective of format. 1:22 Let's embrace the digital era with a digital euro English	1:15 Ob digital oder physisch, „ein Euro ist immer ein Euro", unabhängig von der Zahlungsart. 1:21 Mit dem digitalen Euro ins digitale Zeitalter!	1:15 Digital o físico, «un euro siempre será un euro» y tendrá el mismo valor independientemente de su formato. 1:21 Entremos en la era digital con un euro digital	1:15 Qu'il soit numérique ou physique, « un euro sera toujours un euro » et gardera la même valeur. 1:21 Passons à l'ère du numérique avec un euro numérique.	Che sia fisico o digitale, "un euro sarà sempre un euro" e avrà lo stesso valore indipendentemente dal formato. 1:21 Abbracciamo l'era digitale con un euro digitale! Italian	1:09 En hoe zit het met online winkelen? 1:10 Je kunt de digitale euro ook gebruiken voor je online aankopen. 1:15 En digitaal of fysiek: één euro is altijd één euro waard, ongeacht de vorm. 1:22 Laten we het digitale tijdperk omarmen met een digitale euro. Dutch	Μπορείτε επίσης να χρησιμοποιήσετε κάρτα σε φυσική μορφή. 1:09 Και με το ηλεκτρονικό εμπόριο τι γίνεται; 1:10 Είναι διαθέσιμο και για τις ηλεκτρονικές αγορές σας. 1:15 Είτε σε ψηφιακή είτε σε φυσική μορφή, «το ευρώ θα είναι πάντα το ευρώ» και θα έχει την ίδια αξία. 1:21 Μπαίνουμε στην ψηφιακή εποχή με το ψηφιακό ευρώ.	Se quiser, também pode usar um cartão físico. 1:09 E no comércio eletrónico? 1:11 O euro digital também pode ser usado para compras na Internet. 1:15 Seja digital ou físico, "um euro será sempre um euro" 1:19 e terá sempre o mesmo valor, independentemente do formato. 1:23 Abracemos a era digital, com um euro digital!	

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