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Consumer Attitudes towards a Central Bank Digital Currency

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Dimitris Georgarakos, Geoff Kenny, Luc Laeven, Justus Meyer

Disclaimer

The views expressed in this paper are those of the authors and do not necessarily reflect the views of the European Central Bank. The authors are not part of the digital euro project and do not contribute to it.

A digital euro

"We need to prepare our currency for the future […].

We envisage a digital euro as a digital form of cash that can be used for all digital payments, free of charge, and that meets the highest privacy standards. It would coexist alongside physical cash, which will always be available, leaving no one behind."

Christine Lagarde (18 October 2023, launch of the Digital euro preparation phase)

Convenience (secure means of payment, universally accepted, no fees); *support Europe's strategic autonomy* (more competitive payments landscape, resilient to non-European payment providers); *central bank money in electronic format*

Consumer payment attitudes

- Rapidly changing payment landscape in Europe
  → Use of cash ↓ (72% in 2017 to 59% in 2022, *ECB SPACE*)
  → Use of non-cash payments ↑ (also: perceived non-cash acceptance ↑, e.g. *ECB CES*)

- CBDC could be a new asset class / new means of payment for consumers

- However, concerns whether consumers will use a CBDC

Too much use: financial stability concerns, i.e., disintermediation / potentially de-stabilising allocation of wealth into CBDC away from traditional bank deposits

vs.

Too little use: considerable investment in payment system

What we do

- **Awareness** *vs.* Propensity to **adopt** (also, **preferences** *vs.* **beliefs**)

    - What is the **effect of information/ communication** about key CBDC features on the propensity to **adopt**?
    - What are the **main reasons discouraging** digital euro adoption?

- How would consumers **allocate their funds** across existing **financial assets** and the **digital euro** from a **positive wealth shock**?

- What are the **effects of different holding limits** on the propensity to adopt the digital euro and the fraction of **liquid holdings** allocated to it?

What we find (preview)

- Brief and practical **information/ communication** about the key features of the digital euro **affect significantly the propensity to adopt** it… *but*:
    - Effects largely **fade** away with time
    - Consumers **interested in learning more** mainly educated/ **financially literate**
    - **Habit persistence** towards **existing payment methods**
- Allocate to **digital euro** only **a small fraction** from an assumed positive wealth shock (+ €10k); rest of portfolio broadly unaffected
- Holding limits within the range of €1,000 to €10,000 have **minimal impact on the composition of consumers' liquid asset portfolios**; **no bunching** at €3,000+

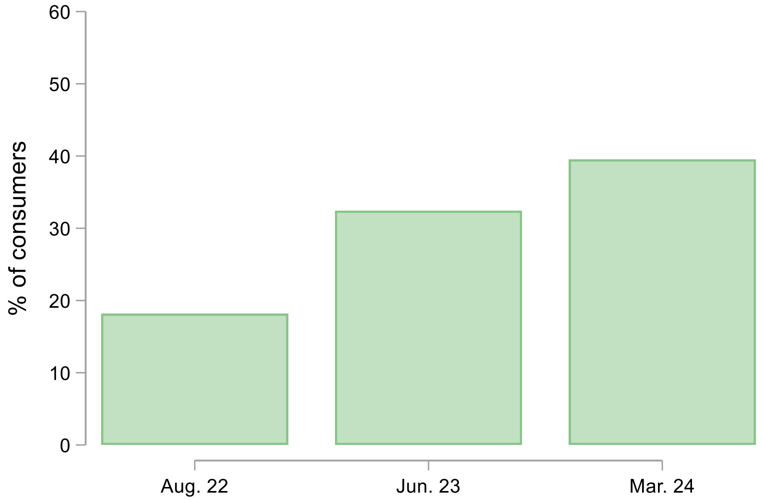
Consumer Expectations Survey

- Monthly internet panel from the ECB Consumer Expectations Survey (CES) eleven largest EA countries; ~ 19,000 households
- Flexible survey design, large number of observations, online nature make the CES suitable for our research purposes
- For a description see: *Georgarakos and Kenny (2022, JME)* and *ECB Evaluation Report (ECB OP, 2021)*

  - August 2022 / June 2023: measure awareness and propensity to adopt a D-€
  - March 2024: 10 min special-purpose survey following the regular survey wave
  - June 2024: few follow up questions

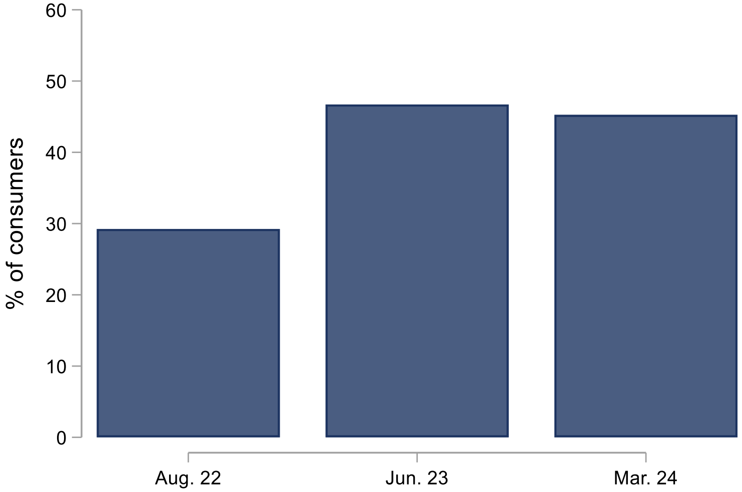
Awareness & propensity to adopt a digital euro: some divergence over time

(a) Consumers' awareness: digital euro



Have you ever heard of the digital euro? *[Don't know; No; Yes]*

(b) Propensity to adopt a digital euro



The ECB 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 would use the digital euro to (i) make in-person day-to-day payments, (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. Respondents answer on a 5-point-scale [very unlikely; unlikely; neither likely nor unlikely; likely; very likely]*

Different characteristics correlate with awareness/adoption

Covariate	Awareness	Propensity to adopt
Age		-
Income		+
College Degree	+	+
Hand-to-mouth	-	
Financially Literate	+	
Female	-	-

Communication, preferences and beliefs

Identifying the effect of information/ communication

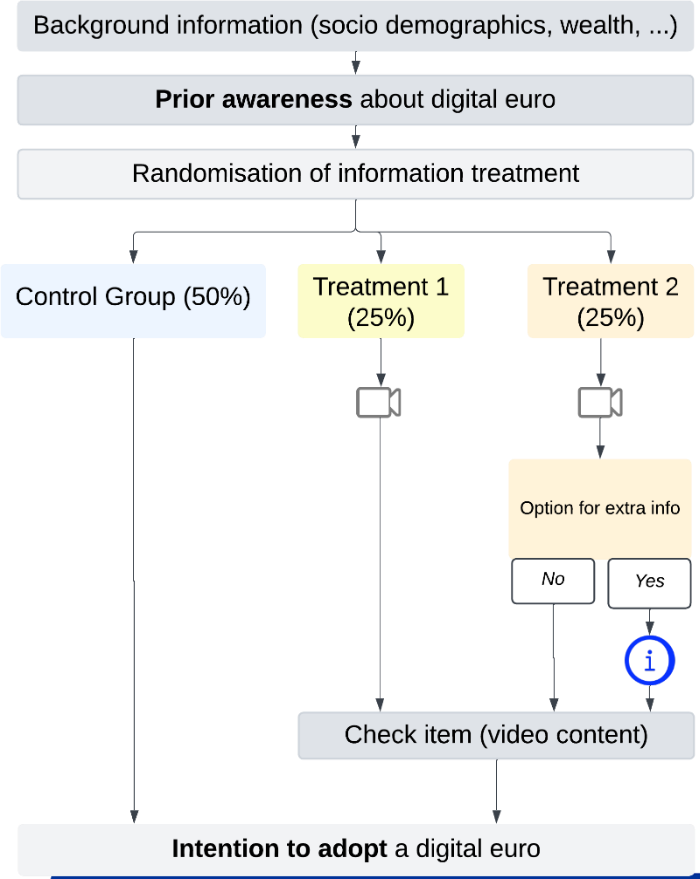
- $Prob(P_{iz}) = Prob(\alpha_{c,s} + \beta_1 c_i + \gamma_1 X_i + \varepsilon_{iz} > 0)$

- Effects on propensity to adopt are **endogenous**:
  - adoption *correlates with unobserved* time-varying factors which in turn correlate with info acquisition
  - consumers more prone to receive info *because* they are more likely to adopt

- **RCT** showing a **video treatment**; 50% treated

- Half of treated respondent are subsequently given the chance to learn more

Design of the RCT



Information treatment: “The Digital Euro - Easy, Safe, Fast, Reliable”

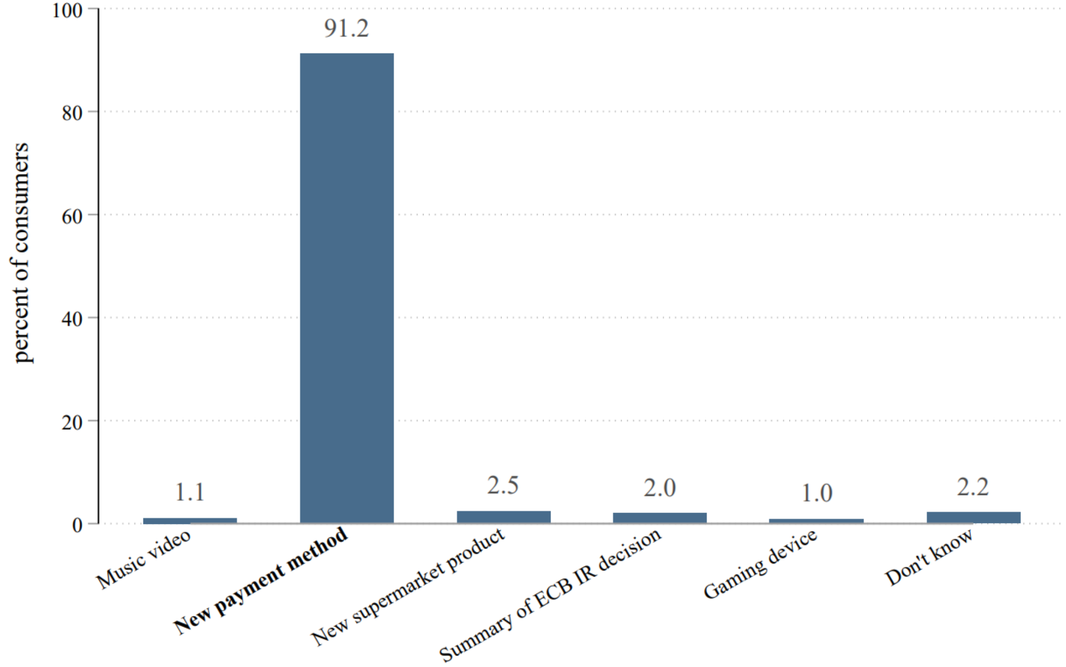



- 1:33 minutes, released on 18.10.2023, ~12.000 views as of March 2024 (before CES fieldwork)
- Depicts different use cases (retail, peer-to-peer, online)
- Balanced demographics (age, gender)

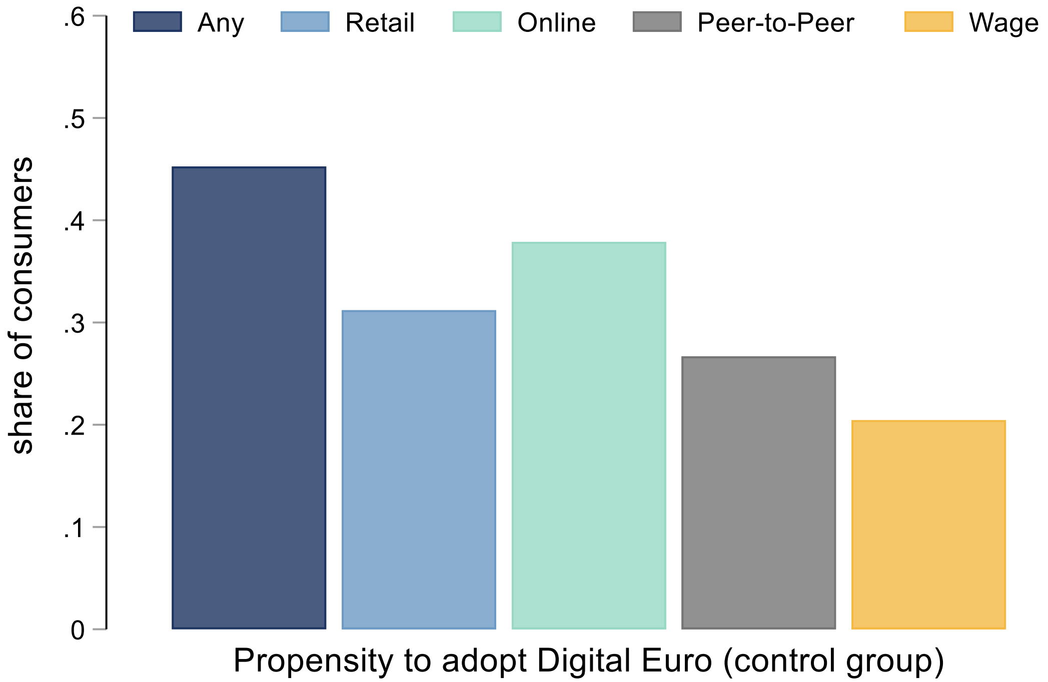
- We used AI tool to dub the video (~8 CES languages + EN), + feedback from translators and survey company (subtitles were added for accessibility in local language, too)
- Video is embedded in survey, no leaving the screen (reduce break-off rate, no impact on YT views)
- Minimum screen time (1:33 minutes < average view time: ~ 1.58 minutes)
- No issues reported during fieldwork (regular check-in with survey company)

Attention check

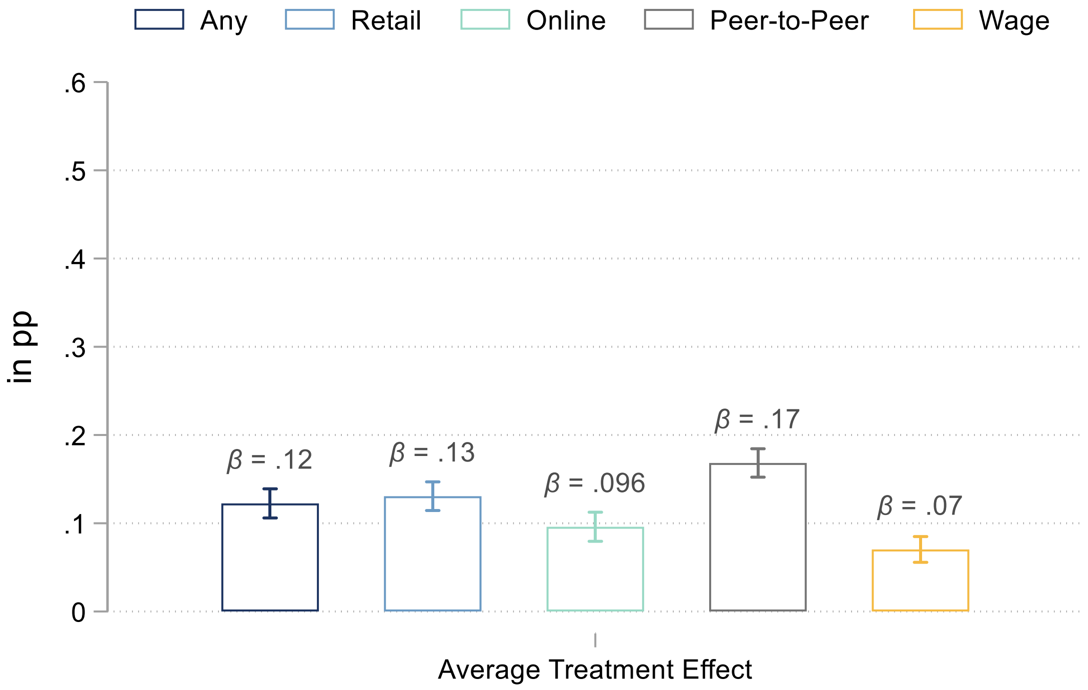
“Think back to the video you just saw. What would you say was the main topic of that video?”



Propensity to adopt: **control group**



Propensity to adopt: **video treatment effects**



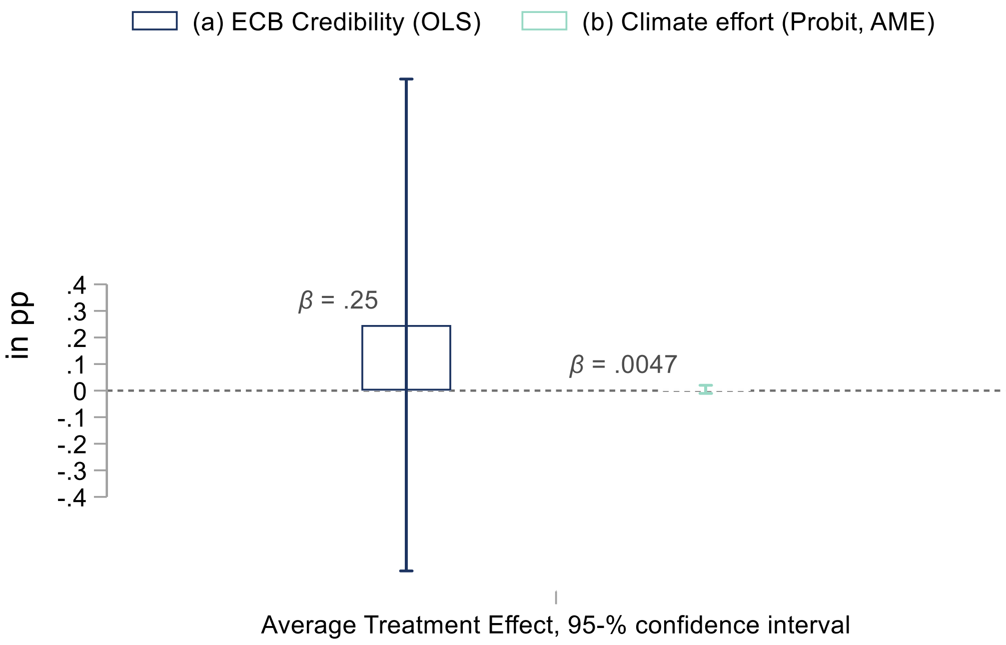
Survey demand effects?

(a): *"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?"*

[slider 0 to 100]

(b): ***"****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."*

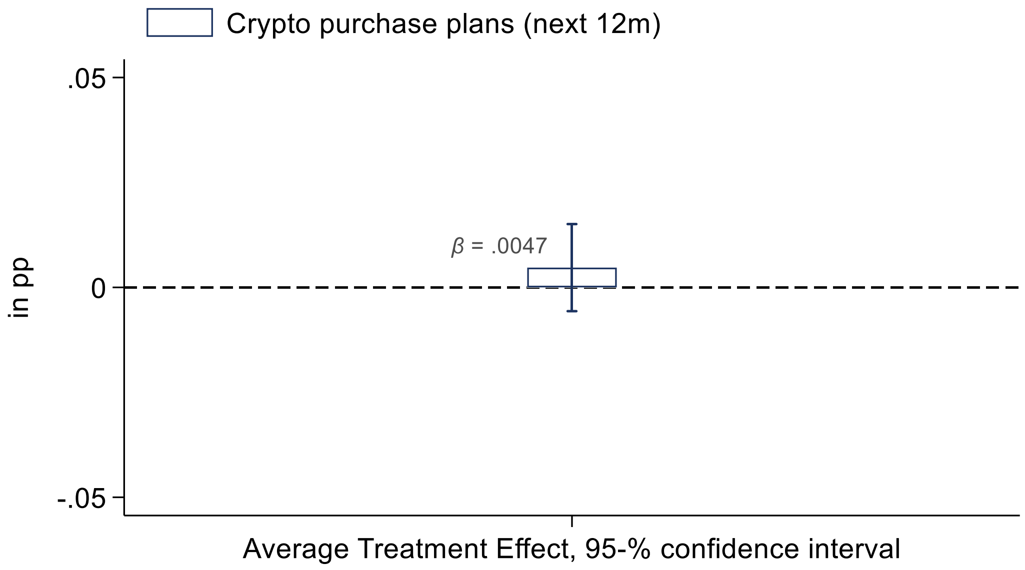
[strongly disagree; disagree; neither agree nor disagree; **agree**; **strongly agree**]



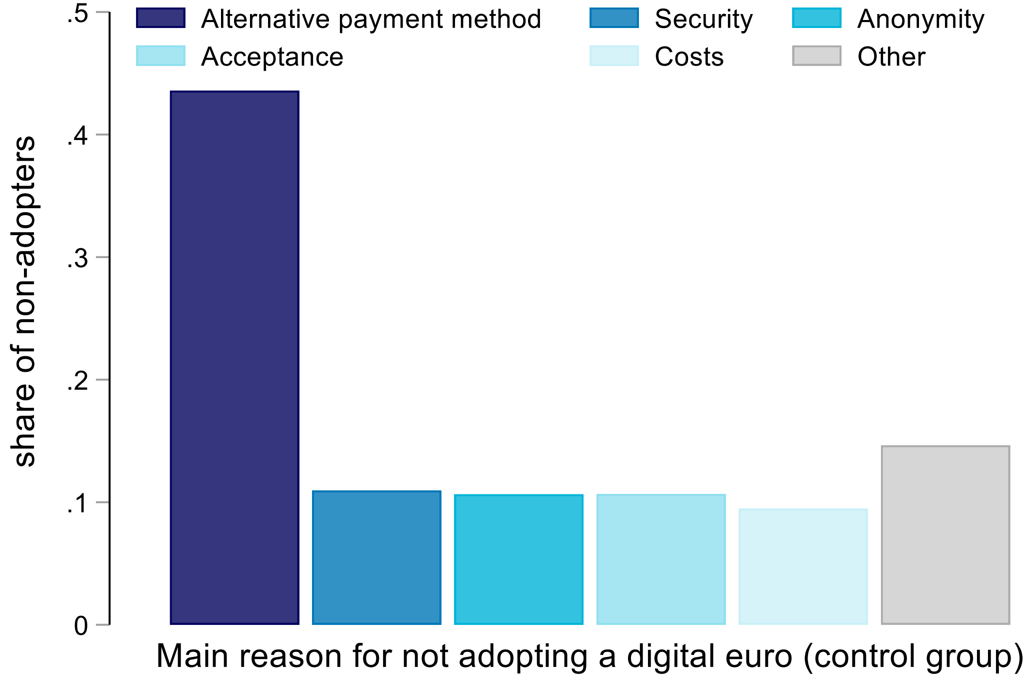
Spillover effects to existing “digital assets”?

We ask: *“In the next 12 months, do you (or a member of your household) plan to buy / buy more crypto-assets?*

[*Yes; No*]

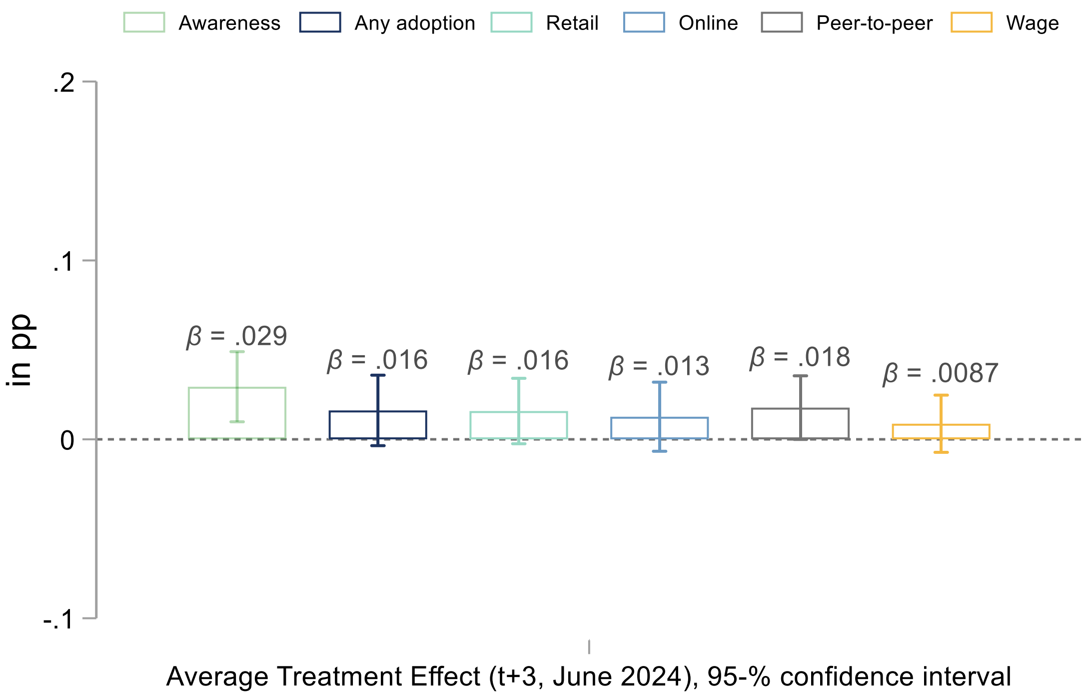


Reasons for not adopting a digital euro



- 43% (of non-adopters) prefer another form of payment

Persistence of effects over time: June 2024 (t+3)



Additional information option: **Digital Euro FAQ**

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FAQs on a digital euro

Updated on 2 December 2024

Purpose and benefits of the digital euro

- Why would Europe need the digital euro?
- How could the digital euro contribute to Europe's strategic autonomy?
- Why would people want to use the digital euro?
- Would the digital euro replace cash?
- What value would the digital euro offer merchants?
- What value would the digital euro offer intermediaries?

Implementation and functionality

- How would the digital euro work?
- Who would be able to use the digital euro?
- How private would the digital euro be?
- How would the ECB ensure that the digital euro is inclusive?
- How would the ECB ensure that digital euro payments work in the same way throughout the euro area?
- Would the digital euro be an alternative currency within the Eurosystem?

Who chooses to receive additional info?

Covariate	Chooses to see additional info	Confirms reading info
CBDC awareness (yes)	+	+
Age: 35-49		
Age: 50-64	-	
Age: 64+	-	-
College degree	+	+
Income		
Hand-to-mouth		-
Financially literate	+	+
Female	-	-

- High education/ FL (low info acquisition cost groups)

Portfolio allocation

Wealth shock: Question wording

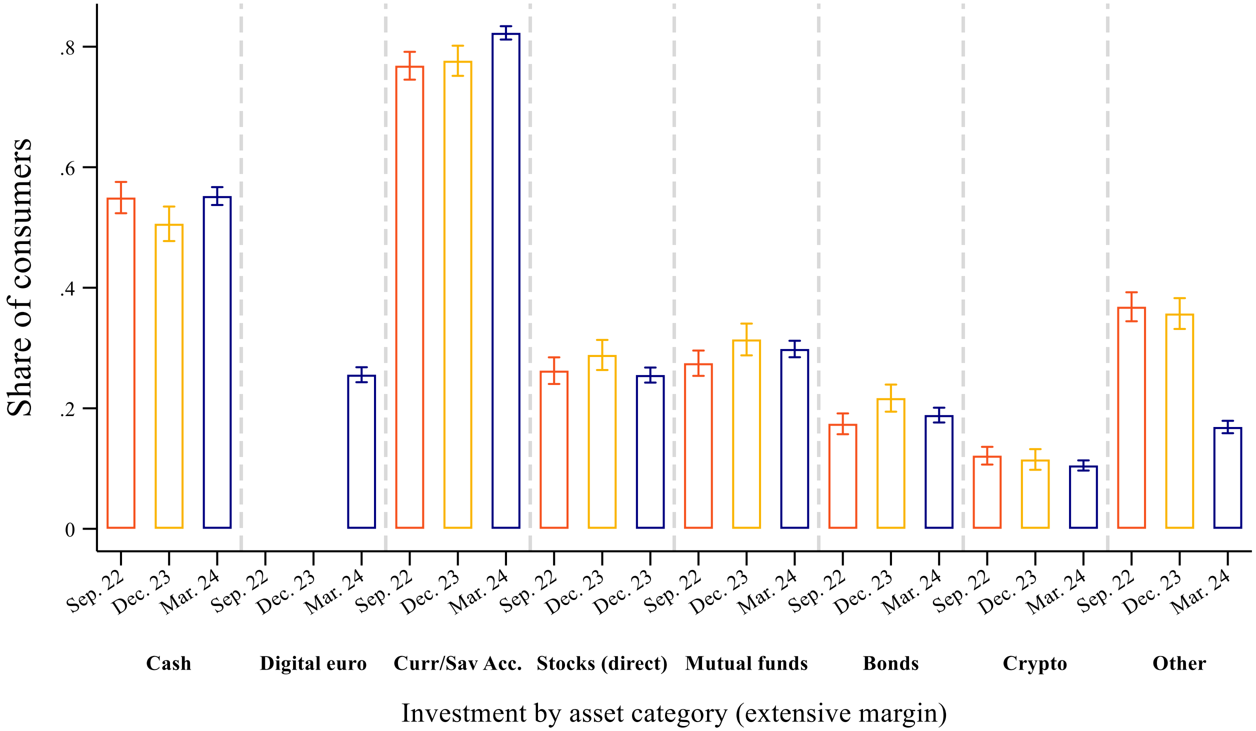
Imagine that you receive a one-off windfall of €10,000 to store in cash, save or invest in financial assets. Please indicate in which of the following asset categories you would store/save/invest this amount.

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).

Cash/physical money at home	500	€
Digital euro in an application or digital wallet on a mobile device	2500	€
Current accounts or savings accounts	150	€
Individual stocks or shares in publicly traded companies	3500	€
Mutual funds and collective investments (including exchange-traded funds (ETFs))	3000	€
Government or corporate bonds	0	€
Crypto-assets (e.g. bitcoin)	350	€
Other financial assets (e.g. retirement assets) not included above	0	€
Total (the values should total to €10,000)	10000	€

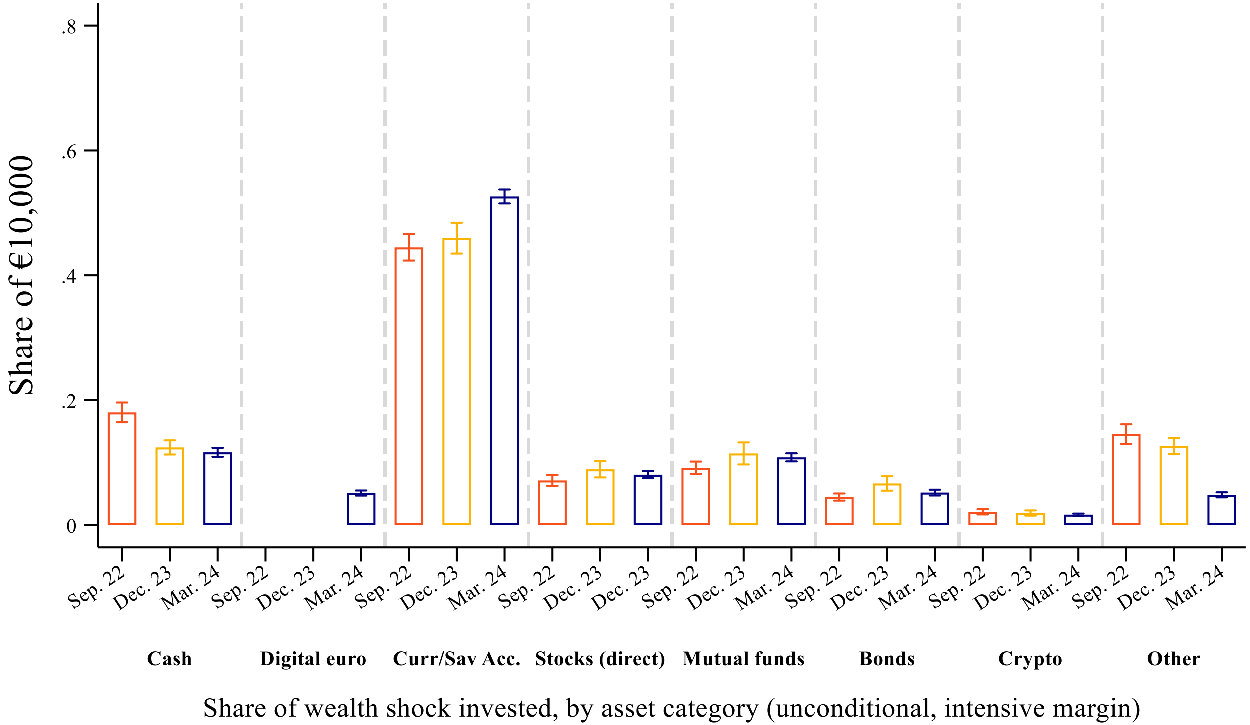
- Emulates the portfolio allocation question used in other survey experiments (*AER*, Coibion et al. 2024)

Wealth shock: Extensive margin, cross-surveys



- 27% of consumers would allocate, at least part of the €10,000 windfall into a digital euro

Wealth shock: Intensive margin (unconditional)



- The intended allocation towards the digital euro is about 5.1% on average/ does not significantly crowd out other asset categories

Holding limits

Holding limits

Collect info about liquid wealth holdings (beginning of survey, pre video treatment): **cash**, **current** and **savings** accounts, **crypto**

Imagine that a digital euro is introduced with a holding limit of {Z} 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 randomise: *{Z}* €1,000, €3,000, €5,000, €10,000, €50,000, €120,000

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

Allocation of liquid wealth: **Extensive margin**

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

Note: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country and sampling dummies used in the block randomisation (not reported). Demographic and economic characteristics included cover age, education, gender, household size, income and financial literacy, hand-to-mouth. Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Allocation of liquid wealth: **Intensive margin**

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

Note: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country and sampling dummies used in the block randomisation (not reported). Demographic and economic characteristics included cover age, education, gender, household size, income and financial literacy, hand-to-mouth. Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

Conclusions

- Elicit consumers' propensity to adopt a digital euro

➢ **Short, concise communication can shift beliefs and affect the propensity to adopt**

  - However, for such communication to be effective it needs to be *targeted* and *well-designed*
  - Many consumers display strong preferences towards another (existing) payment instrument – *habit persistence*
  - Communication effects *dissipate* fast, which may imply the need for *repeated* communication
  - *How to reach out* successfully to *all* consumers remains an open question

- Consumers would allocate overall 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

- **Different holding limits**, at least over the range between €1,000 and €10,000, have **quite small effects** on the composition of consumers liquid asset holdings ; **no bunching** at €3,000+

Thank you!

dimitris.georgarakos@ecb.europa.eu

Awareness & propensity to adopt a digital euro (CES)

Awareness

Have you ever heard of the digital euro? [Don’t know; No; ***Yes****]*

Propensity to adopt

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?

[very unlikely; unlikely; neither likely nor unlikely; ***likely; very likely****]*

I would use the digital euro to …

- make **in-person day-to-day payments** (e.g. in shops, including supermarkets or restaurants)
- for **online purchases**
- in **peer-to-peer transactions** (e.g. with family and friends)
- to **receive my salary / wage** in digital euro

Literature

- Financial stability implications of a CBDC
  - Risks of disintermediation (Whited et al. 2022, Ahnert et al. 2023)
  - Sometimes based on assumptions far away from what central banks actually communicate (Bindseil and Senner 2024, ECB WP)
  - Di Maggio et al. (2024, NBER) highlight shifts from deposits into CBDC during the Indian CBDC pilot

- Studies predicting consumer demand generally point to a (surprisingly?) low adoption rate
  - Li (2022, JME) ~ up to 50% of liquid assets could be invested into CBDC
  - Nocciola and Zamora-Pérez (2024, ECB WP) ~ 7% low demand for CBDC, usage depends on adoption (network effects), central banks could influence adoption by *reducing switching costs* or *increase utility*
  - Lambert et al. (2024, ECB WP) ~ 2%-9% of LQA with EUR 3,000 holding limit

- Surveys asking consumers about CBDC and features
  - Bijlsma et al., (2023, JoFS) / Abramova (2022, WP) ~ many sociodemographics correlate with propensity to adopt; increasing in privacy, safety and renumeration;
  - Bidder et al. (2024, BBk WP) ~ substantial fraction of consumers would adopt CBDC in portfolio (~ 50%), holding limits help to limit risks of disintermediation in crisis times
- Not much work on role of effective communication in influencing adoption & creating demand
- Little empirical work on holding limits (Bidder et al. 2024 closest)

➢ **Final verdict** on the adoption and impact of a CBDC : **more data, more research!**

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Reserve slides

Offline usage

We ask: *"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?"

We find:

- Offline use in control group: ~ 33%
- A positive and sizable effect of the information treatment of about 13% (+4.3 pp)

- Communicating about features of the digital euro that point to the similarity to cash might be one factor that will encourage adoption

Additional information option to treatment group 2

- Ten items from the ECB digital euro FAQ as of mid-February 2024 (we use official translations from the ECB webpage)

- Order of displaying categories randomised to avoid primacy bias

- The items shown to respondents (% indicating reading), average indicates *3 items*:
  - Why would Europe need a digital euro? (~36%)
  - Would a digital euro replace cash? (~36%)
  - Who would be able to use a digital euro? (~32%)
  - Would people have to pay to use a digital euro? (~34%)
  - How would a digital euro work? (~34%)
  - How private would a digital euro be? (~32%)
  - How would the European Central Bank ensure that a digital euro is inclusive? (~30%)
  - How would the European Central Bank ensure that people can pay with digital euro in the same way throughout the euro area? (~29%)
  - What would be the link between instant payments and a digital euro? (29%)
  - How would a digital euro be different from stablecoins and crypto-assets? (31%)

Wealth shock: Regression – extensive margin

Treatment effects on extensive margin

	Probit, average marginal effects							
Dep. var.	*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

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

- D-€ : negative age gradient; non-complex, non-information demanding, and a low-risk instrument

Wealth shock: Regression – intensive margin

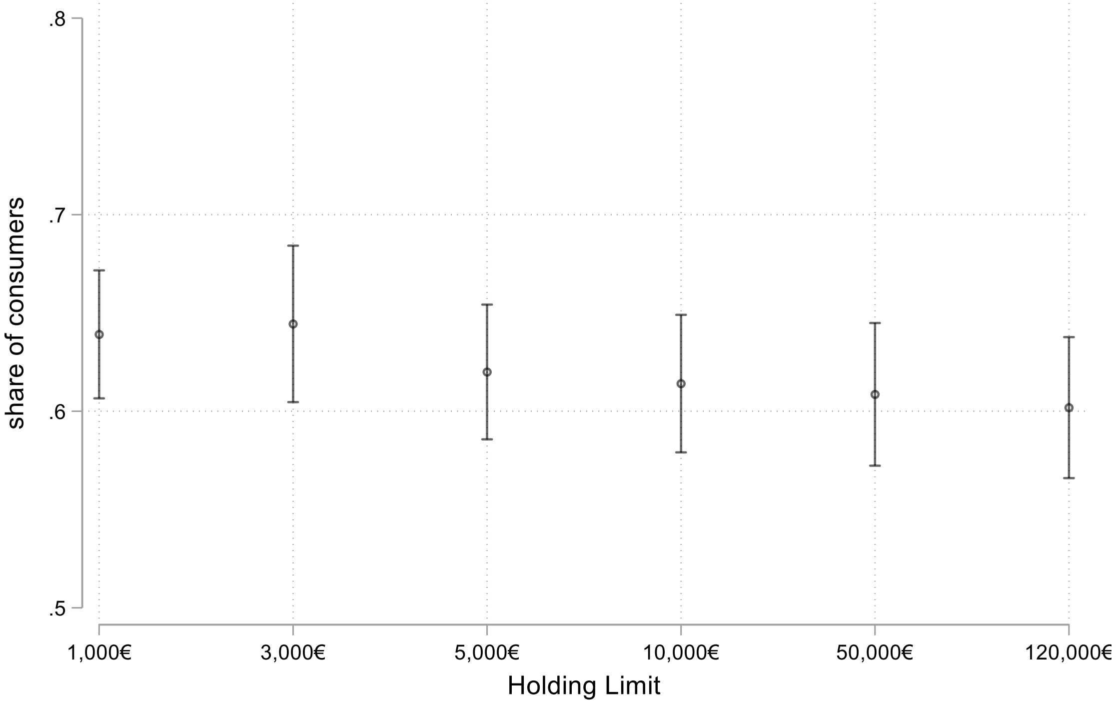
Treatment effects on intensive margin

	Tobit, average marginal effects							
Dep. var.	*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

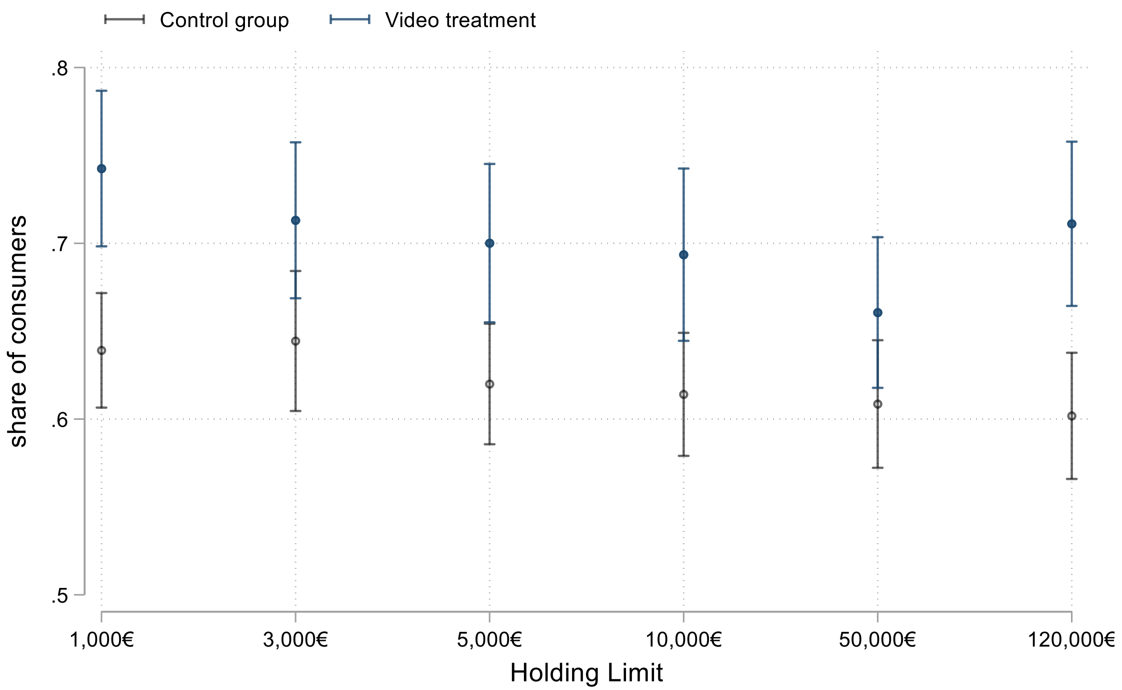
Note: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country dummies (not reported), and the full set of control variables used throughout. Robust standard errors in parentheses. Statistical significance level: *** p<.01, ** p<.05, * p<.1.

- Focused communication on D-€ unlikely to trigger investment into other assets (e.g. crypto)

Percentage that would allocate in D-€ by holding limit

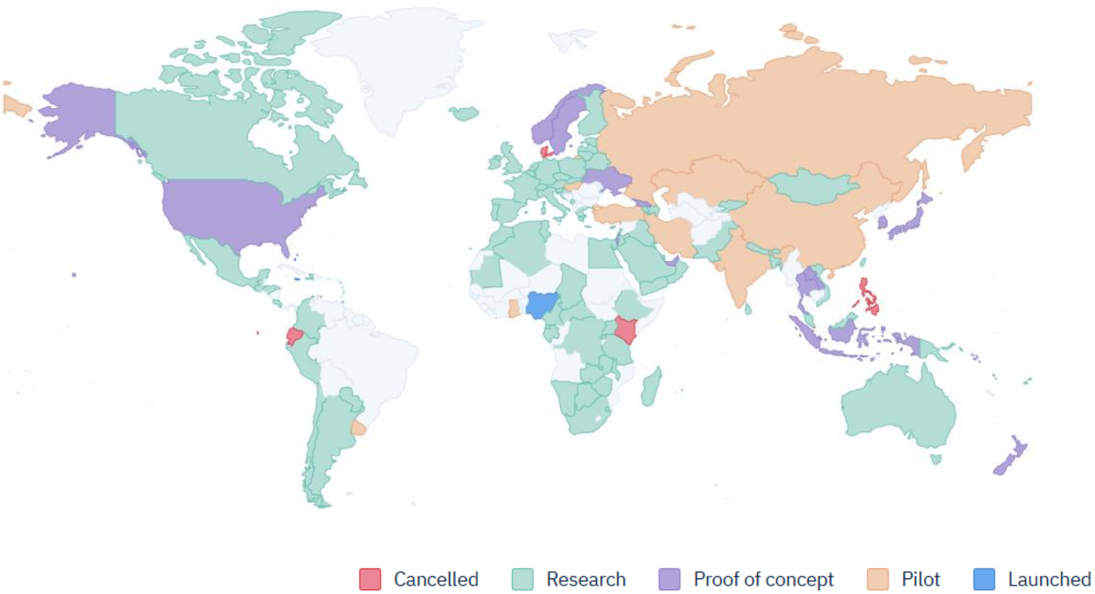


Percentage that would allocate in D-€ by holding limit: control and video treatment group



Most central banks investigate or pilot a retail CBDC

- Ongoing digitalisation in personal finances (apps, robo-advice, crypto)
- Spread of private-sector *digital asset* ventures; geopolitical challenges



Source: CBDC tracker (https://cbdctracker.org/), November 2024 update (retail CBDC only).

Video RCT: **Background information**

Protocol for video processing:

1) Source video: The video was obtained for EN (screen filming, with subtitles) on 02.02.2024.
2) Translations: The eight language-translated scripts were obtained from the ECB YouTube channel
3) Dubbing / Voice Over and subtitles in local languages (no changes to video content)
   - **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 which allows for commercial use.
   - **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.
   - 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 licensing of the music used in the original video at the time of conducting the research.
4) Testing with local language experts of translations and video dubbing
5) Web embedding in the CES survey platform (see following screenshots)

Video RCT: **Web implementation** (Screenshots)

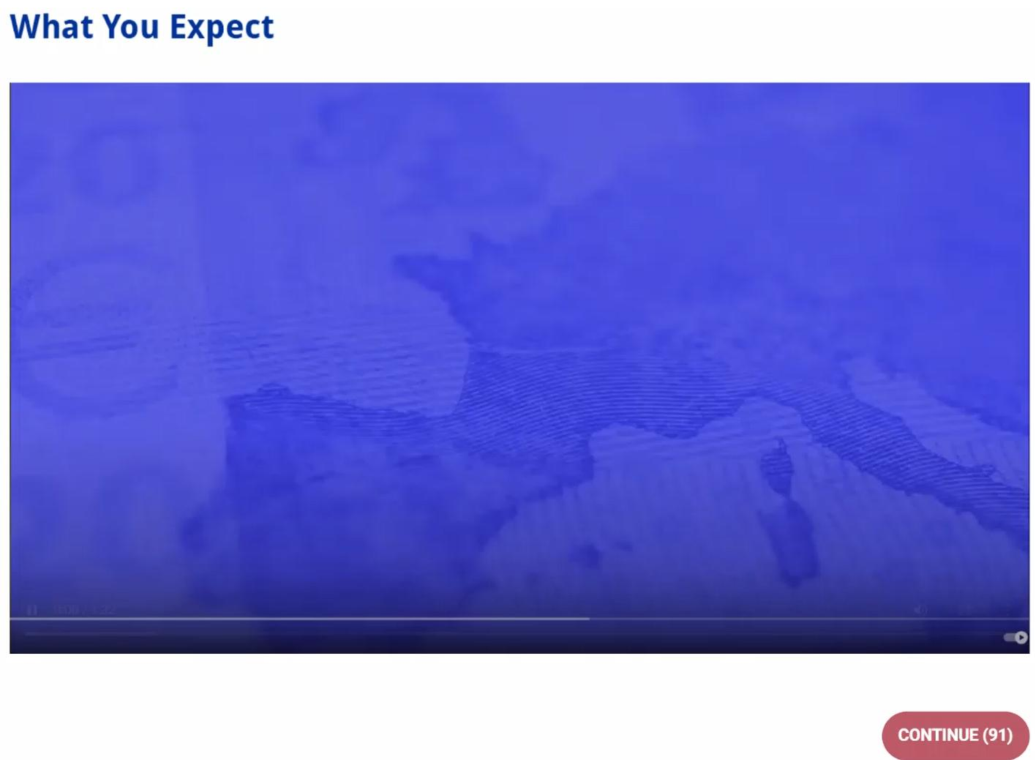
Screen (1)

What You Expect

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.

CONTINUE

Screen (2)



Additional information option: **Digital Euro FAQ**

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FAQs on a digital euro

Updated on 2 December 2024

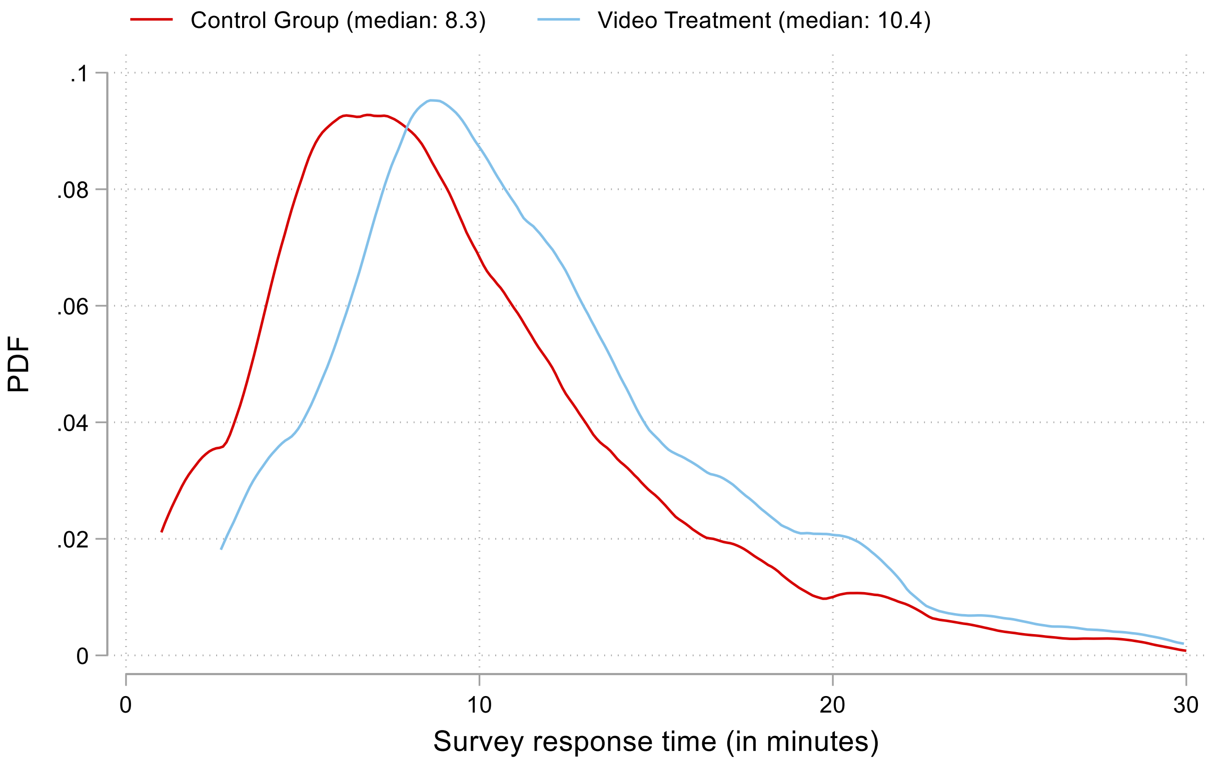
Purpose and benefits of the digital euro

- Why would Europe need the digital euro?
- How could the digital euro contribute to Europe's strategic autonomy?
- Why would people want to use the digital euro?
- Would the digital euro replace cash?
- What value would the digital euro offer merchants?
- What value would the digital euro offer intermediaries?

Implementation and functionality

- How would the digital euro work?
- Who would be able to use the digital euro?
- How private would the digital euro be?
- How would the ECB ensure that the digital euro is inclusive?
- How would the ECB ensure that digital euro payments work in the same way throughout the euro area?
- Would the digital euro be an alternative currency within the Eurosystem?

Experimental integrity and robustness: **Survey response time**



Additional results (details): **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 + Q/A 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

Note: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country 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.

Experimental integrity and robustness: **Balance Statistics (Video)**

		Control	Treatment 1: Video	Treatment 2: Video + Q&A	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		4681 (46.8%)	2331 (46.9%)	2315 (46.4%)	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
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%)		

Note: 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.

Experimental integrity and robustness: **Balance Statistics (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+ Q/A)	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
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%)		

Propensity to adopt: Question wording (Screenshot)

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?

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.

I would use the digital euro to make in-person day-to-day payments (e.g. in shops, including supermarkets or restaurants)

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

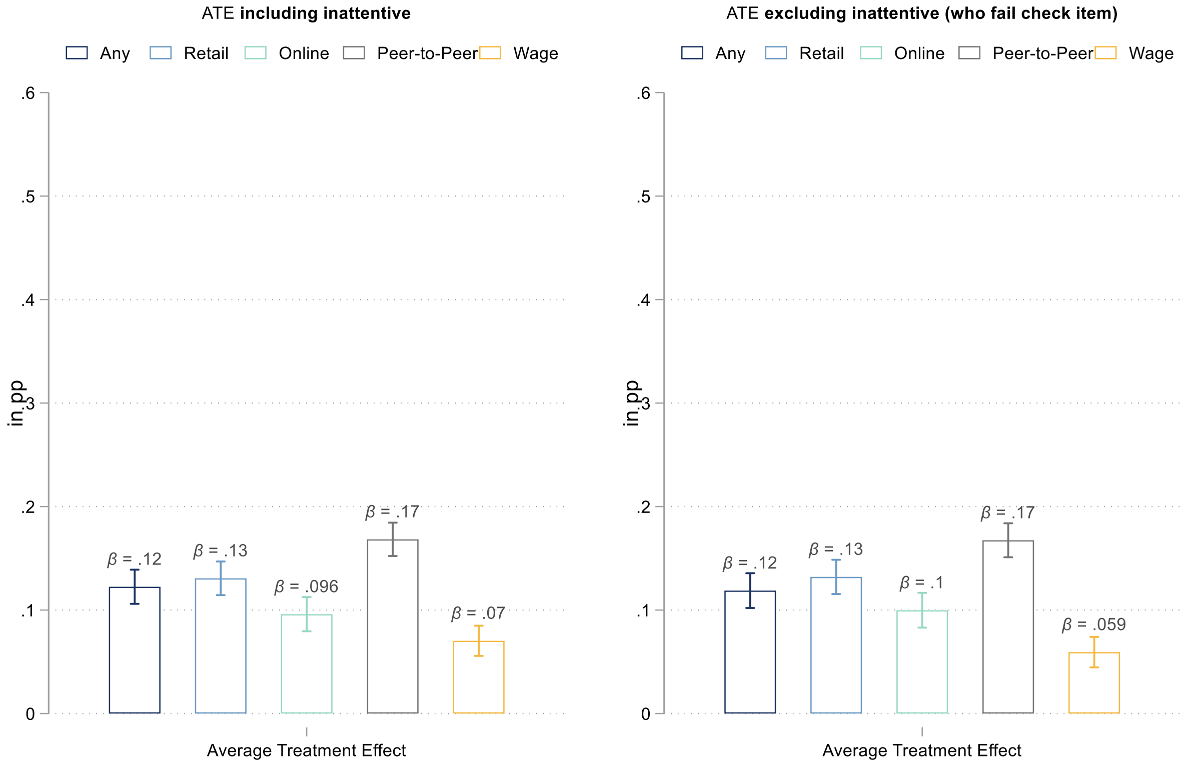
I would use the digital euro for online purchases

I would use the digital euro in peer-to-peer transactions (e.g. with family and friends)

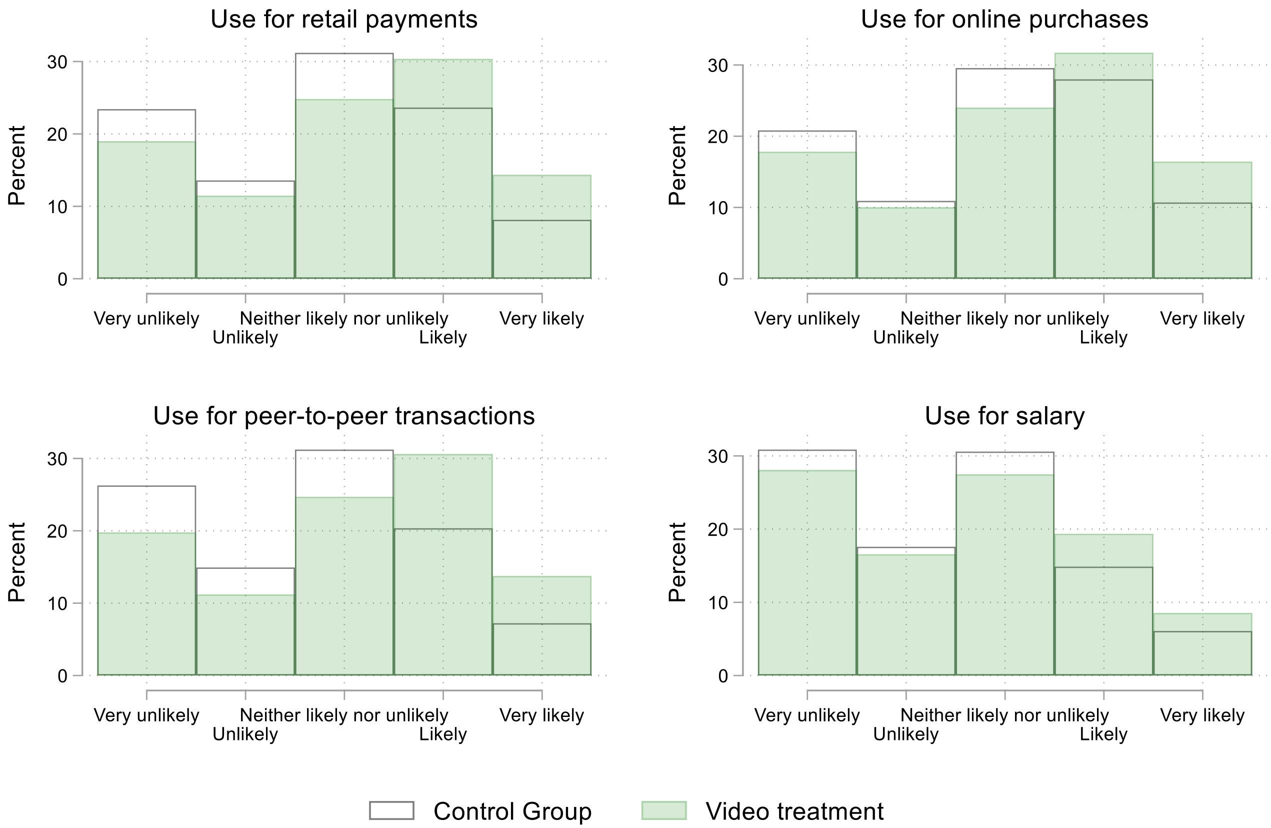
I would use the digital euro to receive my salary / wage in digital euro

CONTINUE

Experimental integrity and robustness: **Excluding the inattentive**



Experimental integrity and robustness: **Video effects (categorical)**



Experimental integrity and robustness: **Average Treatment Effects**

	Probit, average marginal effects			
Dep. Var.	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	0.12***	0.12***	0.13***	0.09***
	(0.007)	(0.008)	(0.008)	(0.008)
Video Treatment + Q/A	0.13***	0.12***	0.13***	0.09***
	(0.008)	(0.008)	(0.008)	(0.008)
Pseudo R-Squared	0.07	0.06	0.06	0.06
No. of observations	19,828	19,828	19,513	19,828

Note: Data are drawn from the ECB Consumer Expectations Survey (CES) in March 2024. All regressions include country 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.

Experimental integrity and robustness: **Attrition**

	Probit, average marginal effects		
	Respondent participates in March 2024 and wave t+ x (0/1)		
	(1)	(2)	(3)
Dep. Var.	April 2024 (t+1)	May 2024 (t+2)	June 2024 (t+3)
Treatment (base: control)			
Video	-0.00	0.00	-0.00
	(0.007)	(0.007)	(0.008)
Video + Q/A option	-0.01	-0.01	-0.01
	(0.007)	(0.007)	(0.008)
Control variables	No	No	No
Pseudo R-Squared	0.05	0.05	0.07
No. of observations	19,966	19,966	19,966

Wealth Shock: 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.

Cash/physical money at home;
Digital euro in an application or digital wallet on a mobile device;
Current accounts or savings accounts; Individual stocks or shares in publicly traded companies; Mutual funds and collective investments (including exchange-traded funds (ETFs); Government or corporate bonds; Crypto-assets (e.g. Bitcoin); Other financial assets (e.g. retirement assets) not included above

What do we understand as a (retail) CBDC?

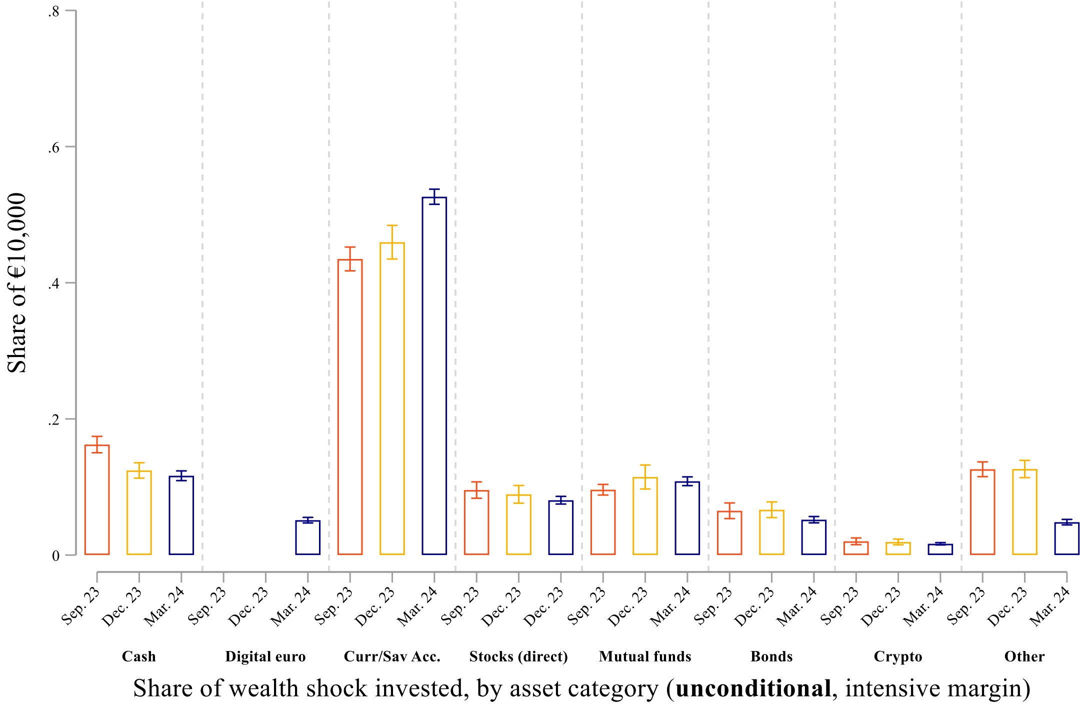
Broadly defined, a retail CBDC is a digital, general-purpose, central bank liability that can be used by households and nonfinancial businesses as a means of payment, store of wealth, or both.

(Infante et al. 2024, literature review in: Annual Review of Financial Economics)

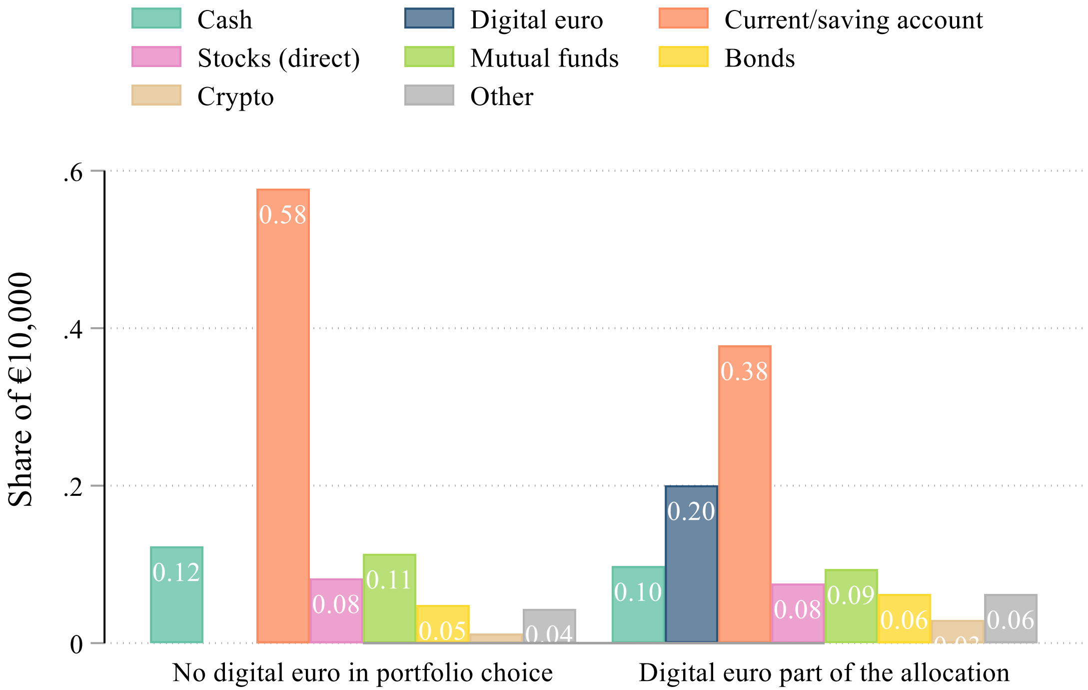
Similarly, from the ECB digital euro webpage:

[The digital euro] "would be a central bank digital currency, an electronic equivalent to cash. And it would complement banknotes and coins, giving people an additional choice about how to pay."

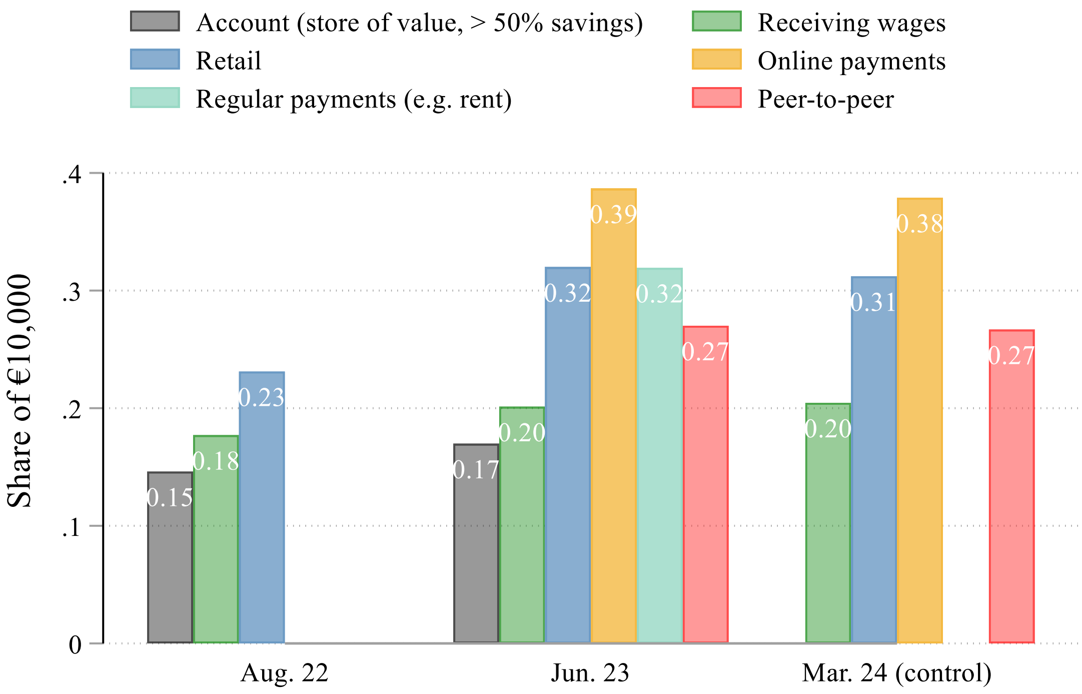
Wealth shock: Unconditional portfolio shares



Wealth shock: Portfolio allocation by D-€



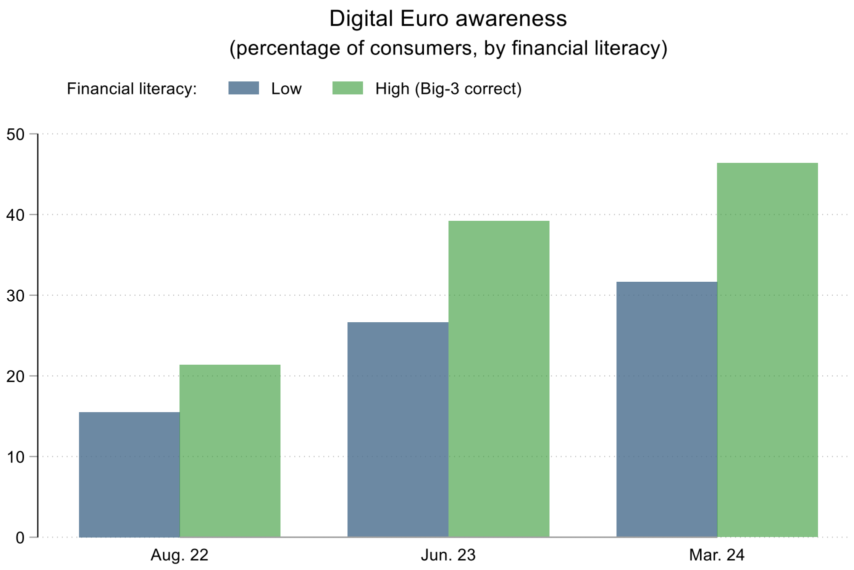
Descriptive overview on openness to dimensions

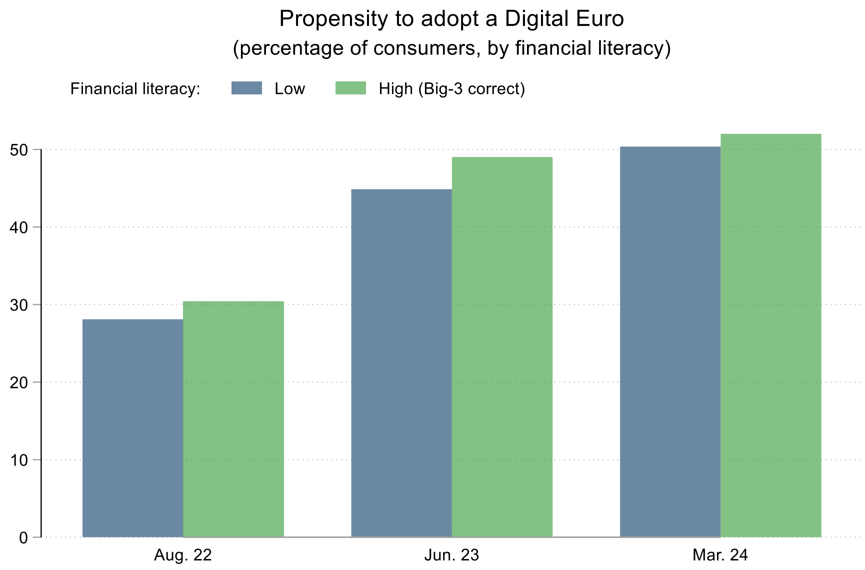


Consumers close to the holding limit

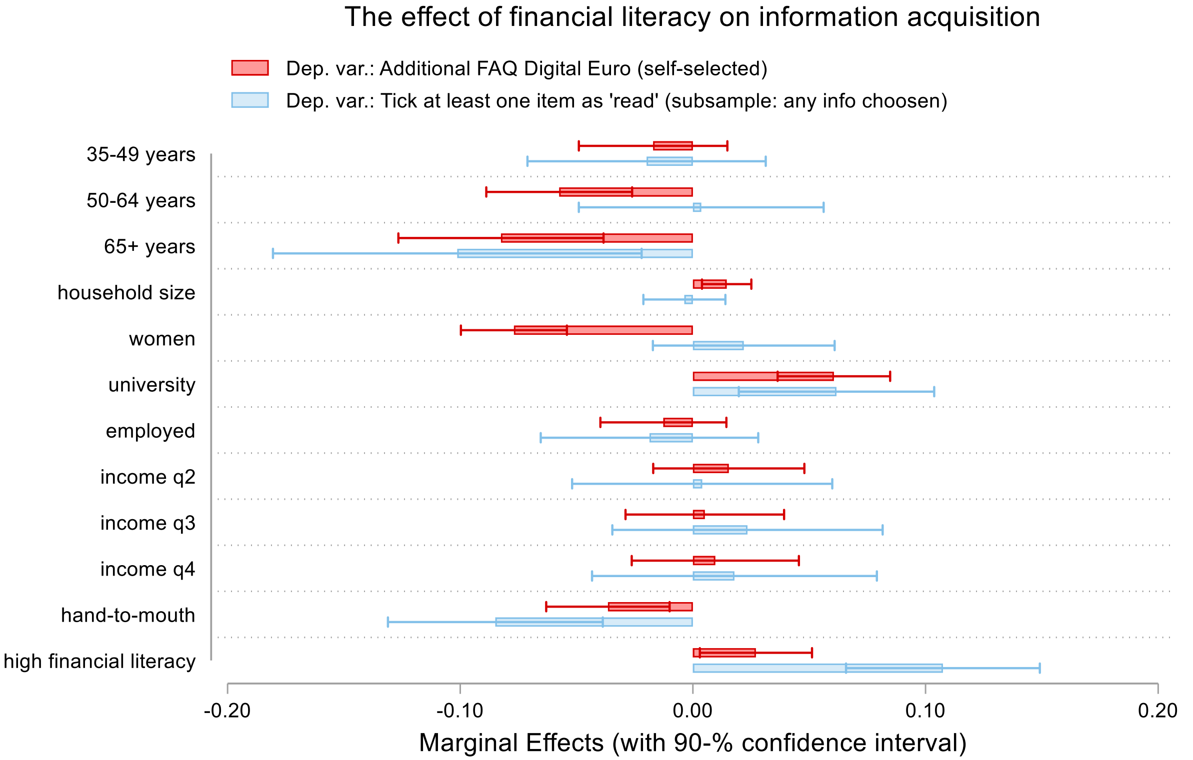
	Share of consumers allocating more than 90% of the assigned limit (0,1)					
	OLS (Linear Probability Model)					
	Control group		Video treatment		Pooled sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var. mean (control only)	0.09					
Holding limit (base category: €3,000)						
€1,000	0.100***	0.110***	0.114***	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)

Awareness and adoption, by financial literacy



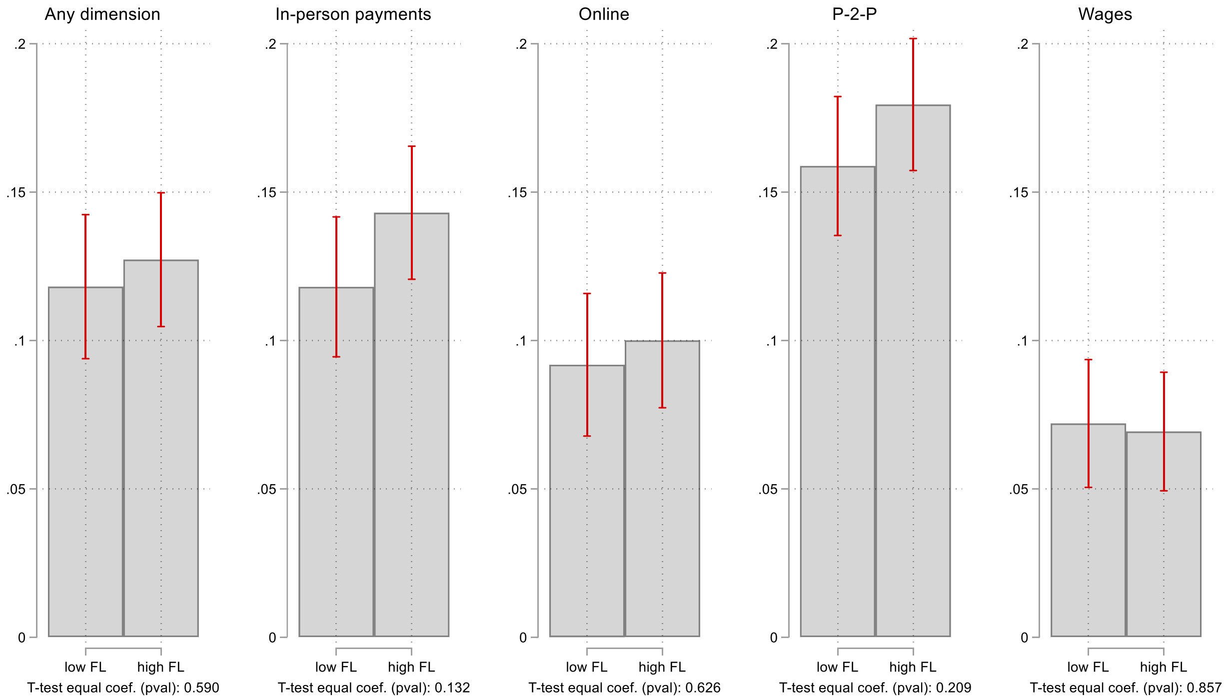


Factors associated with choosing additional info



Treatment heterogeneity, by financial literacy

Average marginal effects (probit model, 95-% CIs)



Note: The Figure shows a decomposition of treatment effects per dimension. We evaluate average marginal effects from a probit model. FL is interacted both with country and sample type dummies to account for block-randomization.