

What can CBDC designers learn from asking potential users?

Results from a survey of Austrian residents.

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Central Bank Digital Currencies



Central banks around the globe are exploring **central bank digital currency** issuance.

Context



Austria

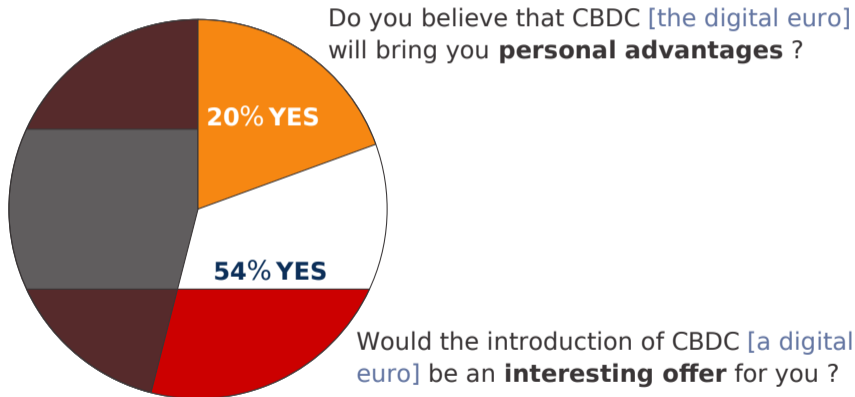


9 million residents, e 50 000 GDP per capita
 $N = 2006$, age 16+, CATI/CAWI, summer 2021

The views expressed here are those of the authors and do not necessarily represent the views of the Oesterreichische Nationalbank or the Eurosystem.

A Hard Sell ?

N = 2006 respondents



Framing the Unknown

Austria, 2021: CBDC is a hypothetical technology.

Respondents' lack of direct experience makes our method prone to framing biases.

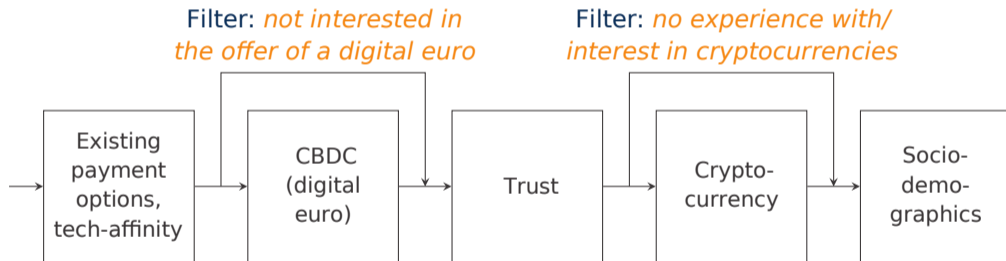
We reassure all participants of:

- A “digital euro” would be issued by the central bank.
- It would complement cash, never replace it.
- One digital euro would have the same value as one euro in cash.
- Digital euro payments would be free of charge, secure, and convenient.

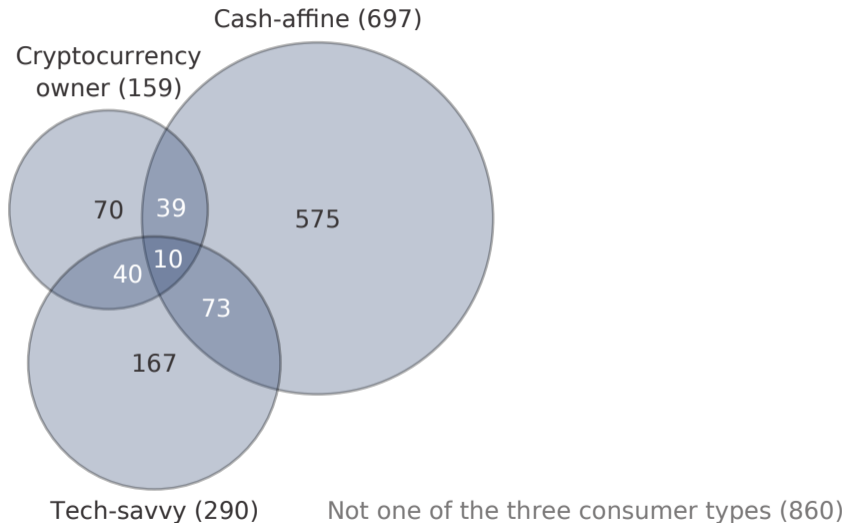
CBDC

Structure of the Questionnaire

Data collected as part of the OeNB Barometer 2021/1 survey.



Special Consumer Types



“Cash should keep its current relevance.”

(full sample)

| | | | | |
|--------------------------------|------------|------------|-----------|-----------|
| Cash-affine | 0.344 *** | | 0.329 *** | 0.220 *** |
| Tech-savvy | -0.107 *** | | -0.074 ** | -0.080 ** |
| Cryptocurrency owner | -0.111 ** | | -0.088 * | -0.085 * |
| Age group 36-65 | | 0.155 *** | 0.117 *** | 0.117 *** |
| Age group 66+ | | 0.138 *** | 0.083 ** | 0.087 ** |
| Female | | 0.042 * | 0.031 | 0.019 |
| Academic | | -0.110 *** | -0.069 * | -0.045 |
| Urban | | -0.014 | 0.008 | 0.014 |
| High net income | | -0.061 * | -0.031 | -0.035 |
| Hoarding of cash important | | | | 0.206 *** |
| Anonymity of cash important | | | | 0.264 *** |
| Trust in central bank | | | | -0.022 |
| Trust in people | | | | -0.084 * |
| <i>Mean dependent variable</i> | 0.646 | 0.644 | 0.646 | 0.647 |
| <i>Observations</i> | 1975 | 1991 | 1975 | 1736 |

Average marginal effects from logit regressions. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. $p\text{-}R^2 \approx 0.3$.

Interest in the Introduction of a Digital Euro

(full sample)

| | | | | |
|--------------------------------|------------|------------|------------|------------|
| Cash-affine | -0.288 *** | | -0.262 *** | -0.223 *** |
| Tech-savvy | 0.232 *** | | 0.178 *** | 0.168 *** |
| Cryptocurrency owner | 0.152 *** | | 0.106 * | 0.137 ** |
| Age group 36-65 | | -0.185 *** | -0.152 *** | -0.149 *** |
| Age group 66+ | | -0.268 *** | -0.208 *** | -0.223 *** |
| Female | | -0.053 * | -0.029 | -0.022 |
| Academic | | 0.150 *** | 0.111 *** | 0.084 ** |
| Urban | | 0.055 * | 0.035 | 0.028 |
| High net income | | 0.073 ** | 0.041 | 0.030 |
| Hoarding of cash important | | | | -0.108 *** |
| Anonymity of cash important | | | | -0.109 ** |
| Trust in central bank | | | | 0.080 *** |
| Trust in people | | | | 0.042 |
| <i>Mean dependent variable</i> | 0.542 | 0.540 | 0.542 | 0.548 |
| <i>Observations</i> | 1984 | 2006 | 1984 | 1738 |

Average marginal effects from logit regressions. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. $p\text{-}R^2 \approx 0.3$.

Probing Token vs Account Based Access

Q1 Cash-like digital euro (context)

“Suppose that the digital euro works very similar to cash. Payments are not linked to your identity and are hard to trace. However, in case you lose such a digital euro or if you fall victim to theft, the monetary loss is irrevocable. Under such conditions, would you use a digital euro?”

Q2 Account-like digital euro (context)

“And now suppose that the digital euro functions like a debit card with an account. Such payments can be linked to your identity and are traceable, but the risk of loss is very low. Under such conditions, would you use a digital euro?”

Q3 Preferences cash-like vs. account-like

*“And which **of these variants** would you prefer: Would you rather disclose your identity and open an account to keep the risk of loss low, or would you prefer a cash-like digital euro?”*

Original question wording in German. See Figure 4 in the paper for marginal distributions.

Preference for Token-based Access

(subset interested in a digital euro)

| | | | | |
|--------------------------------|-----------|------------|------------|------------|
| Cash-affine | 0.079 * | | 0.073 * | 0.054 |
| Tech-savvy | 0.073 * | | 0.044 | 0.043 |
| Cryptocurrency owner | 0.135 *** | | 0.101 * | 0.080 |
| Age group 36-65 | | -0.089 ** | -0.076 ** | -0.053 |
| Age group 66+ | | -0.197 *** | -0.183 *** | -0.155 *** |
| Female | | -0.110 *** | -0.093 ** | -0.070 * |
| Academic | | 0.066 | 0.059 | 0.065 |
| Urban | | 0.024 | 0.028 | 0.019 |
| High net income | | -0.002 | -0.004 | -0.005 |
| Hoarding of cash important | | | | -0.000 |
| Anonymity of cash important | | | | 0.089 * |
| Trust in central bank | | | | -0.065 * |
| Trust in people | | | | 0.097 |
| Risk averse | | | | -0.093 ** |
| <i>Mean dependent variable</i> | 0.261 | 0.259 | 0.261 | 0.259 |
| <i>Observations</i> | 940 | 945 | 940 | 853 |

Average marginal effects from logit regressions. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. $p\text{-}R^2 \approx 0.15$.

Importance of Offline Functionality

(subset interested in a digital euro)

| | | | | |
|--------------------------------|----------|-----------|----------|----------|
| Cash-affine | -0.059 * | | -0.063 * | -0.081 * |
| Tech-savvy | 0.119 ** | | 0.114 ** | 0.123 ** |
| Cryptocurrency owner | 0.005 | | -0.002 | 0.038 |
| Age group 36-65 | | -0.045 | -0.040 | -0.036 |
| Age group 66+ | | -0.130 ** | -0.115 * | -0.103 * |
| Female | | 0.034 | 0.043 | 0.041 |
| Academic | | 0.050 | 0.045 | 0.023 |
| Urban | | -0.008 | -0.012 | -0.010 |
| High net income | | -0.007 | -0.012 | -0.029 |
| Hoarding of cash important | | | | 0.023 |
| Anonymity of cash important | | | | 0.024 |
| Trust in central bank | | | | 0.081 ** |
| Trust in people | | | | 0.035 |
| <i>Mean dependent variable</i> | 0.790 | 0.789 | 0.790 | 0.793 |
| <i>Observations</i> | 1000 | 1007 | 1000 | 897 |

Average marginal effects from logit regressions. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. $p-R^2 \approx 0.15$.

Importance of Person-to-Person Functionality

(subset interested in a digital euro)

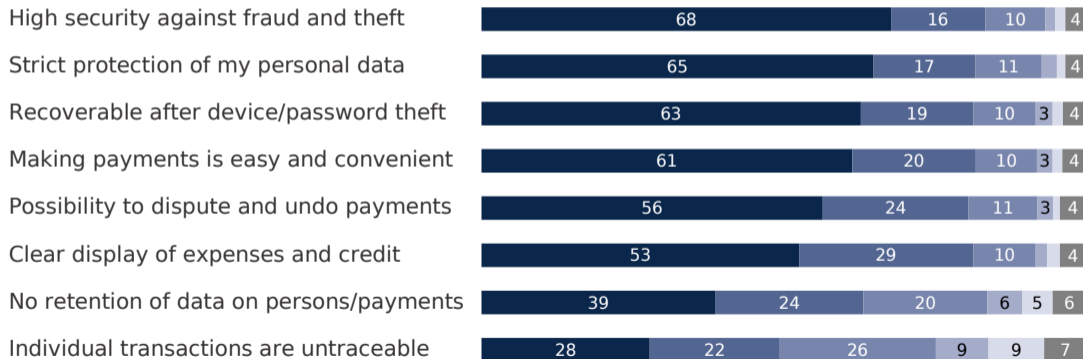
| | | | | |
|--------------------------------|------------|------------|------------|------------|
| Cash-affine | -0.157 *** | | -0.162 *** | -0.182 *** |
| Tech-savvy | 0.142 *** | | 0.104 ** | 0.099 * |
| Cryptocurrency owner | 0.205 *** | | 0.175 ** | 0.215 *** |
| Age group 36-65 | | -0.157 *** | -0.145 *** | -0.150 *** |
| Age group 66+ | | -0.300 *** | -0.271 *** | -0.260 *** |
| Female | | -0.062 * | -0.037 | -0.032 |
| Academic | | 0.047 | 0.036 | 0.010 |
| Urban | | 0.047 | 0.041 | 0.047 |
| High net income | | 0.029 | 0.008 | 0.002 |
| Hoarding of cash important | | | | 0.053 |
| Anonymity of cash important | | | | -0.124 ** |
| Trust in central bank | | | | 0.058 |
| Trust in people | | | | 0.066 |
| <i>Mean dependent variable</i> | 0.571 | 0.573 | 0.571 | 0.573 |
| <i>Observations</i> | 1001 | 1007 | 1001 | 905 |

Average marginal effects from logit regressions. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. $p\text{-}R^2 \approx 0.2$.

Importance of CBDC Attributes

“How important are the following attributes of a digital euro to you ?”

■ 1 - Very important
■ 5 - Not important at all
■ Don't know



% of respondents who indicated at least some interest in the digital euro, $N = 1083$.

Privacy: Strict Protection of Personal Data

(subset interested in a digital euro)

| | | | | |
|--------------------------------|--------|-----------|-----------|-----------|
| Cash-affine | -0.026 | | -0.020 | -0.045 |
| Tech-savvy | -0.018 | | 0.014 | 0.013 |
| Cryptocurrency owner | -0.024 | | 0.002 | 0.038 |
| Age group 36-65 | | 0.104 *** | 0.099 *** | 0.071 ** |
| Age group 66+ | | 0.106 *** | 0.103 *** | 0.068 * |
| Female | | 0.095 *** | 0.095 *** | 0.065 ** |
| Academic | | 0.046 | 0.042 | 0.041 |
| Urban | | -0.009 | -0.011 | -0.008 |
| High net income | | -0.022 | -0.024 | -0.036 |
| Hoarding of cash important | | | | 0.042 |
| Anonymity of cash important | | | | 0.068 * |
| Trust in central bank | | | | 0.106 *** |
| Trust in people | | | | -0.093 * |
| Risk averse | | | | 0.097 *** |
| <i>Mean dependent variable</i> | 0.848 | 0.846 | 0.848 | 0.849 |
| <i>Observations</i> | 1039 | 1045 | 1039 | 929 |

Average marginal effects from logit regressions. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. $p\text{-}R^2 \approx 0.2$.

Privacy: Individual Transactions Untraceable

(subset interested in a digital euro)

| | | | | |
|--------------------------------|----------|--------|----------|-----------|
| Cash-affine | 0.064 | | 0.060 | -0.013 |
| Tech-savvy | 0.055 | | 0.060 | 0.033 |
| Cryptocurrency owner | 0.153 ** | | 0.165 ** | 0.165 ** |
| Age group 36-65 | | -0.037 | -0.023 | -0.034 |
| Age group 66+ | | 0.018 | 0.050 | 0.044 |
| Female | | -0.008 | 0.015 | 0.001 |
| Academic | | -0.007 | -0.015 | 0.000 |
| Urban | | -0.013 | -0.009 | -0.013 |
| High net income | | -0.028 | -0.033 | -0.046 |
| Hoarding of cash important | | | | 0.095 ** |
| Anonymity of cash important | | | | 0.231 *** |
| Trust in central bank | | | | -0.017 |
| Trust in people | | | | -0.029 |
| Risk averse | | | | -0.061 |
| <i>Mean dependent variable</i> | 0.531 | 0.530 | 0.531 | 0.533 |
| <i>Observations</i> | 1002 | 1007 | 1002 | 903 |

Average marginal effects from logit regressions. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. $p\text{-}R^2 \approx 0.15$.

Upshot

- Potential disconnect between policy makers' ambitions and consumers' demand for CBDC in regions with developed electronic payment options.
- Call for more user-centric, empirically founded CBDC design
- Caveat: social benefits of CBDC (stability, privacy) not evident to potential users.
- Widespread adoption of a digital euro is far from certain.