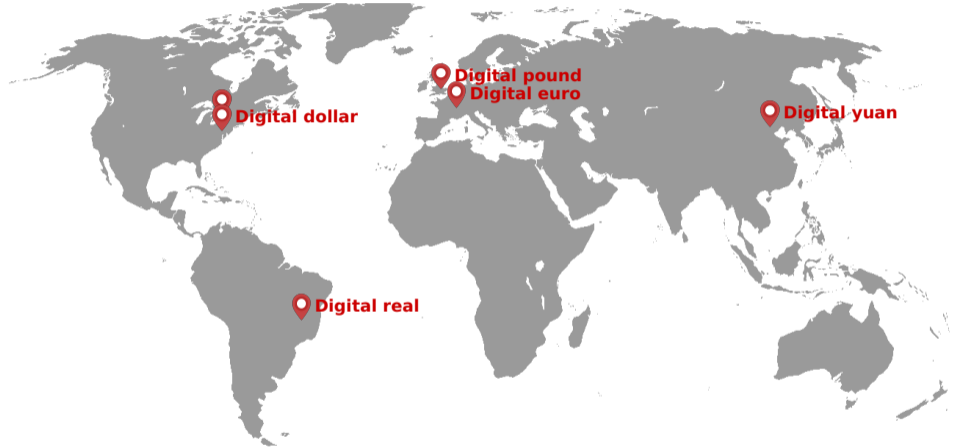# What Can CBDC Designers Learn from Asking Potential Users?
Results from a Survey of Austrian Residents

Svetlana Abramova, Rainer Böhme, Helmut Elsinger, Helmut Stix, Martin Summer

Central Bank Digital Currencies

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

Context

Austria

9 million residents, € 50 000 GDP per capita

$N = 2006$, age 16+, CATI/CAWI, summer 2021

A Hard Sell?

$N = 2006$ respondents

Do you believe that CBDC [the digital euro] will bring you **personal advantages**?

20% YES

54% YES

Would the introduction of CBDC [a digital euro] be an **interesting offer** for you?
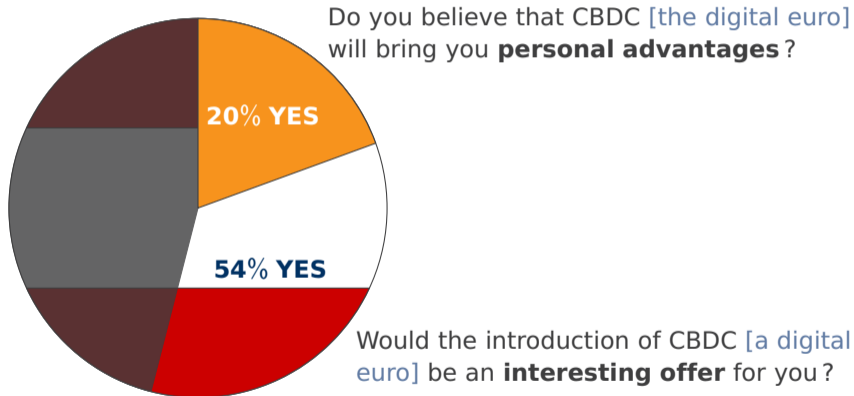
Framing the Unknown

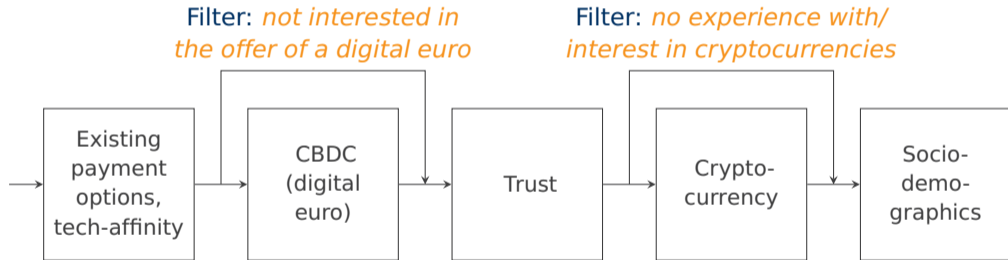**Austria, 2021: CBDC is a hypothetical technology.**

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.

Structure of the Questionnaire

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

Filter: *not interested in the offer of a digital euro*

Filter: *no experience with/ interest in cryptocurrencies*

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Existing payment options, tech-affinity → CBDC (digital euro) → Trust → Crypto-currency → Socio-demo-graphics
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Special Consumer Types

Cash-affine (697)

Cryptocurrency owner (159)

70   39   575

40   10

73

167

Tech-savvy (290)   Not one of the three consumer types (860)
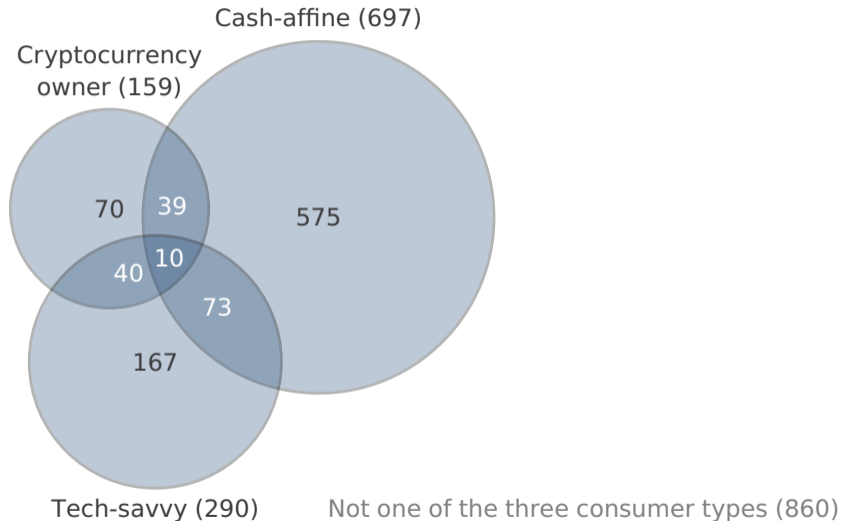
"Cash should keep its current relevance."

(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 *
Mean dependent variable	0.646	0.644	0.646	0.647
Observations	1975	1991	1975	1736

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

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
Mean dependent variable	0.542	0.540	0.542	0.548
Observations	1984	2006	1984	1738

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

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)

	(1)	(2)	(3)	(4)
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 **
Mean dependent variable	0.261	0.259	0.261	0.259
Observations	940	945	940	853

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 Offline Functionality

(subset interested in a digital euro)

	(1)	(2)	(3)	(4)
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
Mean dependent variable	0.790	0.789	0.790	0.793
Observations	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
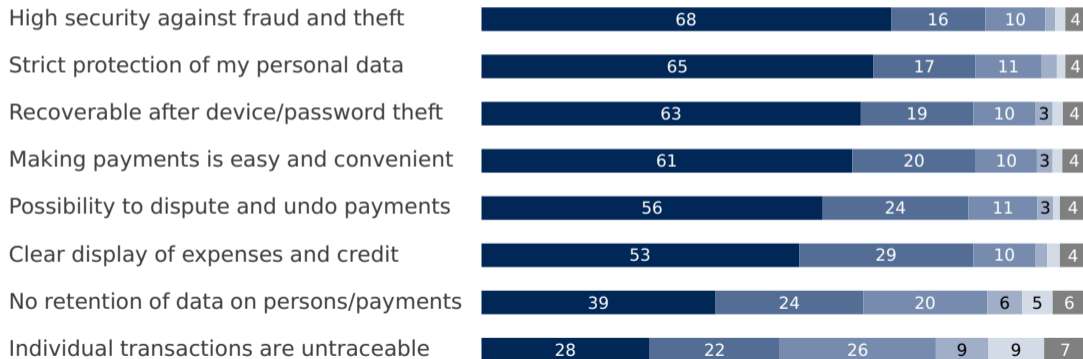
(subset interested in a digital euro)

	(1)	(2)	(3)	(4)
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
Mean dependent variable	0.571	0.573	0.571	0.573
Observations	1001	1007	1001	905

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

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

Attribute	1				5	Don't know
High security against fraud and theft	68	16	10			4
Strict protection of my personal data	65	17	11			4
Recoverable after device/password theft	63	19	10	3		4
Making payments is easy and convenient	61	20	10	3		4
Possibility to dispute and undo payments	56	24	11	3		4
Clear display of expenses and credit	53	29	10			4
No retention of data on persons/payments	39	24	20	6	5	6
Individual transactions are untraceable	28	22	26	9	9	7

% 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 ***
Mean dependent variable	0.848	0.846	0.848	0.849
Observations	1039	1045	1039	929

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

Privacy: Individual Transactions Untraceable

(subset interested in a digital euro)

	(1)	(2)	(3)	(4)
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
Mean dependent variable	0.531	0.530	0.531	0.533
Observations	1002	1007	1002	903

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

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: <u>social</u> benefits of CBDC (stability, privacy) not evident to potential users.
- Widespread adoption of a digital euro is far from certain.

Research Impact

> *"The digital euro is a necessary step to ensure that the EU monetary system keeps up with digital advances. It will be **widely accessible** and **easy to use** while **preserving privacy** – just like cash."*
>
> *F. Panetta (European Central Bank)*
> *V. Dombrovskis (European Commission)*

Key design requirements:

- Available to everyone, everywhere, and for free
- Online and offline payments ✓
- High data privacy standards ✓
- Cash remains important. ✓

Legislative proposal establishing the legal framework for a possible digital euro, 28 June 2023

Thank You for Your Interest !

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