



Research article

Can Central Bank Digital Currencies be green and sustainable?

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Supplementary

Annex

Table A.1. Dataset jurisdictions where retail CBDC is being explored, total reserves, Environmental Performance Index, electricity prices for businesses and households, renewable electricity production and CO₂ emissions.

Jurisdictions Where Retail CBDC Is Being Explored	Country/jurisdiction/monetary area	Total reserves (including gold, in U.S. dollar at current prices)	Environmental Performance Index	Electricity prices for businesses (kW/h, in U.S. dollar)	Renewable electricity production (% of total electricity production)	CO2 Emissions (metric tons per capita)	Electricity prices for households (kW/h, in U.S. dollar)
Where	Bahamas	2,609.42	56.2	0.301	0	6	0.31
central	China	3,306,839.41	28.4	0.088	23.93	7.8	0.076
banks (CBs)	Eastern Caribbean	1,681.89	50.82	0.053	6.36	2.9	0.052
have	Ghana	9,916.92	27.7	0.09	50.89	0.6	0.073
launched or	India	576,298.15	18.9	0.117	15.34	1.6	0.078
piloted (or	Jamaica	4,520.48	45.6	0.284	10.26	2.1	0.327
soon will)	Nigeria	35,563.95	28.3	0.048	18.2	0.5	0.03
	Uruguay	15,126.76	37.4	0.119	88.56	1.9	0.249

Where CBs have performed proofs of concepts or prototypes (or soon will)	Bahrain	4,774.9	42	0.077	0	22	0.048
	Bhutan	976.26	42.5	0.02	99.99	1.3	0.015
	Brazil	324,673.45	43.6	0.148	73.97	1.9	0.168
	Euro Area	1,184,866.32	61.9	0.457	28.72	5.5	0.47
	Hong Kong	424,025.43	28.4	0.175	0.28	7.8	0.183
	Hungary	4,1218.69	55.1	0.383	10.58	4.6	0.111
	<i>Iran</i>	7,685.46	34.5	0.046	5.1	7.1	0.002
	Israel	194,231.43	48.2	0.172	1.89	6.3	0.165
	Japan	1,227,573.26	57.2	0.234	15.98	8	0.243
	Kazakhstan	35,076.05	40.9	0.063	8.87	11.3	0.047
	Korea	423,365.99	46.9	0.099	72.8	11	0.109
	Laos	1,216.46	30.7	0.102	86.37	2.6	0.031
	New Zealand	14,399.55	56.7	0.296	80.08	6.2	0.186
	Norway	72,077.38	59.3	0.205	97.71	6.7	0.189
	Russia	581,709.96	37.5	0.076	15.86	11.2	0.052
	Sweden	64,288.79	72.7	0.205	63.26	3.2	0.433
Thailand	216,500.53	38.1	0.139	8.54	3.7	0.141	
Turkey	123,735.14	26.3	0.189	31.96	4.8	0.081	
Ukraine	28,505.93	49.6	0.108	4.38	3.8	0.039	
United States	706,644.22	51.1	0.146	13.23	13	0.174	
Where CBs are in advanced stages of research and development	Australia	56,701.9	60.1	0.296	13.64	14.8	0.234
	Canada	106,952.38	50	0.1	63.01	13.6	0.123
	Indonesia	137,222.36	28.2	0.073	16.25	2.1	0.095
	Singapore	296,628.74	50.9	0.315	1.82	7.7	0.236
	Mauritius	7,792.81	44.8	0.118	22.72	2.9	0.132
United Kingdom	176,409.97	77.7	0.449	24.84	4.6	0.493	

Source: own elaboration based on data from many sources (Atlantic Council, 2023; Auer et al., 2020; Kiff, 2023; Mikhalev et al., 2023; University of Yale, 2023; Globalpetrolprices, 2023a; Globalpetrolprices, 2023b; The World Bank, 2023a; The World Bank, 2023b).

Table A.2. Descriptive statistics.

	N	Minimum	Maximum	Average	Standard deviation	Variance	Skewness	Kurtosis
Statistician								
Total reserves (including gold, in U.S. dollar at current prices)	34	976.26	3306839.41	306229.7 159	616919.8 3969	38059008 8601.474	3.859	17.422
Environmental Performance Index	34	18.90	77.70	44.9476	13.69240	187.482	0.272	0.157
Electricity prices for businesses (kWh, U.S. dollar)	34	0.020	0.457	0.17032	0.115720	0.013	1.048	0.353
Renewable electricity production (% of total electricity production)	34	.00	99.99	31.6291	32.23611	1039.167	.970	-0.548
CO2 emissions (metric tons per capita)	34	.5	22.0	6.209	4.7778	22.827	1.360	2.253
Electricity prices for households, (kWh, U.S. dollar)	34	.002	.493	.15868	.128202	.016	1.193	.961
N valid (per list)	34							

Source: Own elaboration based on data from Table A.1 and analyzed using IBM SPSS Statistics 28.

Table A.3. Residual statistics.

	Minimum	Maximum	Average	Standard deviation	N
Predicted value	28.6164	70.3548	44.9476	10.67464	34
Residual	-16.90876	19.89273	.00000	8.57519	34
Predicted value	-1.530	2.380	.000	1.000	34
Residual deviation	-1.848	2.175	.000	.937	34

Source: own elaboration based on data from Table A.1 and analyzed using IBM SPSS Statistics 28.

Table A.4. Ranking % of total CBDCs that could be considered “green” by jurisdiction, from highest to lowest.

Country/jurisdiction/monetary area	% of total reserves considered “green” after model application	Total reserves considered “green” after model application (including gold, in USD at current prices)
Euro Area	70.36	833,678.7794
United Kingdom	70.33	124,074.8211
Sweden	60.71	39,031.6151
Australia	58.46	33,148.7609
Bahamas	54.88	1,432.0659
New Zealand	54.21	7,805.5134
Norway	53.00	38,199.5071
Jamaica	52.97	2,394.4326
Singapore	52.86	156,811.0837
Japan	51.79	635,801.5606
Uruguay	48.92	7,400.2904
United States	48.82	344,971.3702
Canada	48.71	52,096.0936
Hungary	46.77	19,278.6140
Korea	46.65	197,521.0089
Bahrain	45.76	2,184.9299
Hong Kong	45.31	192,119.0998
Brazil	44.51	144,526.9058
Israel	43.22	83,938.4954
Turkey	40.40	49,983.6772
Thailand	39.32	85,132.9684
Russia	38.80	225,675.1934
Mauritius	38.57	3,005.8413
China	38.45	1,271,553.1650
Kazakhstan	37.65	13,207.0122
Laos	37.15	451.9046
Ghana	34.81	3,452.1915
India	34.12	196,651.4452
Indonesia	34.00	46,655.6202
Bhutan	33.55	327.5446
Ukraine	32.63	9,302.1680
Iran	31.18	2,396.1935
Eastern Caribbean Central Bank	30.93	520.1803
Nigeria	28.62	10,178.4053

Source: own elaboration based on data from Table A.1 and analyzed using IBM SPSS Statistics 28.



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