# A new economic landscape for personal financial well-being

- ➤ **Changes in the financial markets and the financial technology**
  - ❖ **Capabilities:** Liquidity, financial inclusion, more opportunities
  - ❖ **Challenges:** Increased complexity, financial illiteracy, digital illiteracy
- ➤ **Changes in the pension landscape**
  - ❖ More choice and more individual accounts
  - ❖ Ageing, increasing life expectancy, and low interest rates
- ➤ **Changes in the labour markets**
  - ❖ 4th / 5th industrial revolution
  - ❖ Increased international mobility
- ➤ **Changes in the political sphere**
  - ❖ Tighter government budgets (Austerity, crisis, distrust)
  - ❖ Political choices (Referendums, devolution, public finance)
- ➤ **Covid-19 and post-Covid-19 era**
  - ❖ **Capabilities:** Expansionary fiscal policy, Teleworking, E-commerce, Online education
  - ❖ **Challenges:** Financial stress, financial resilience, job reallocation, debt

Blockchain all your problems
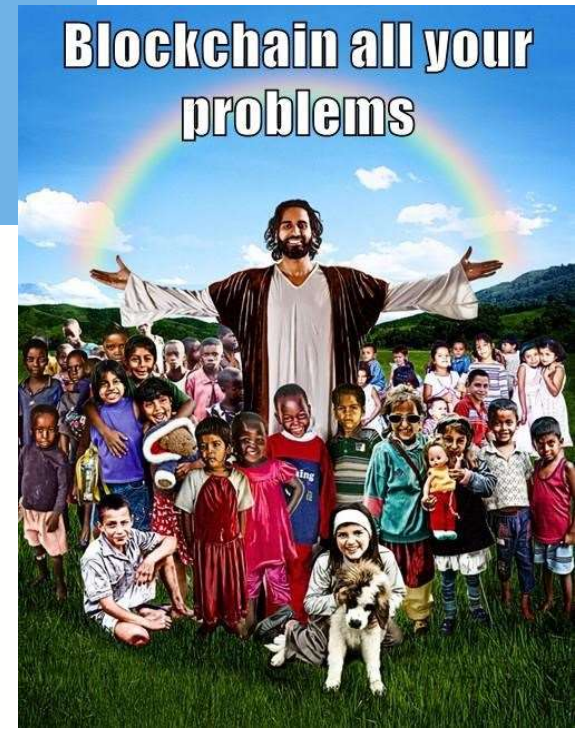
What triggered the fintech revolution?

- **Some ideas have been kicking around for a while**

- **A turning point for the financial world was the emergence in 2009 of bitcoin, a digital or crypto- currency**
  - Bitcoin relied on both cryptography and blockchain
  - Together with other technologies, they enable transactions to occur on a peer-to-peer level, without third-party verification

- **Also, since 2010, investment in fintech has shot up from$2 billion to $19 billion, accelerating transformation**

Motivation

- There are approximately 5,392 cryptocurrencies being traded with a total market capitalization around $400bn
  - July 2018: Over 1,800 cryptocurrencies with market capitalization >$300 billion
- Bitcoin, the largest cryptocurrency, accounts for around half of the total market capitalization.
  - The numerous online cryptocurrency exchanges and markets have had daily dollar volumes of around $50 billion.
- Over 300 "cryptofunds" have emerged (hedge funds that invest solely in cryptocurrencies), attracting around $10 billion in assets under management (Rooney and Levy, 2018).
  - At least 150 active cryptofunds (PwC, 2020)
- As of 2018, Bitcoin futures have commenced trading on the CME and CBOE, catering to institutional demand for trading and hedging bitcoin.

Volatility I

Legend: Cash, Govt. bonds, Gold, S&P, Real estate, Bitcoin
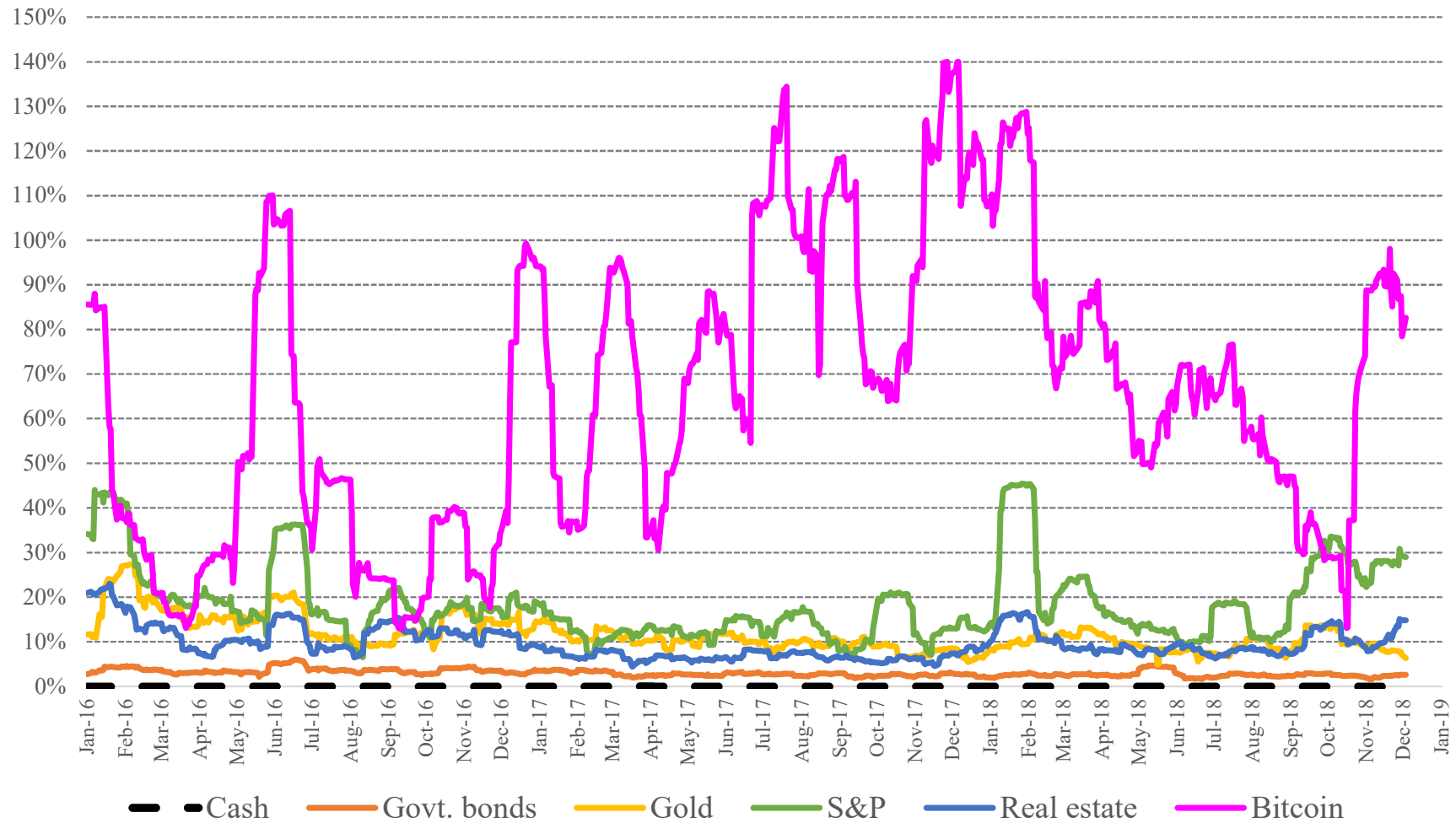
Volatility II
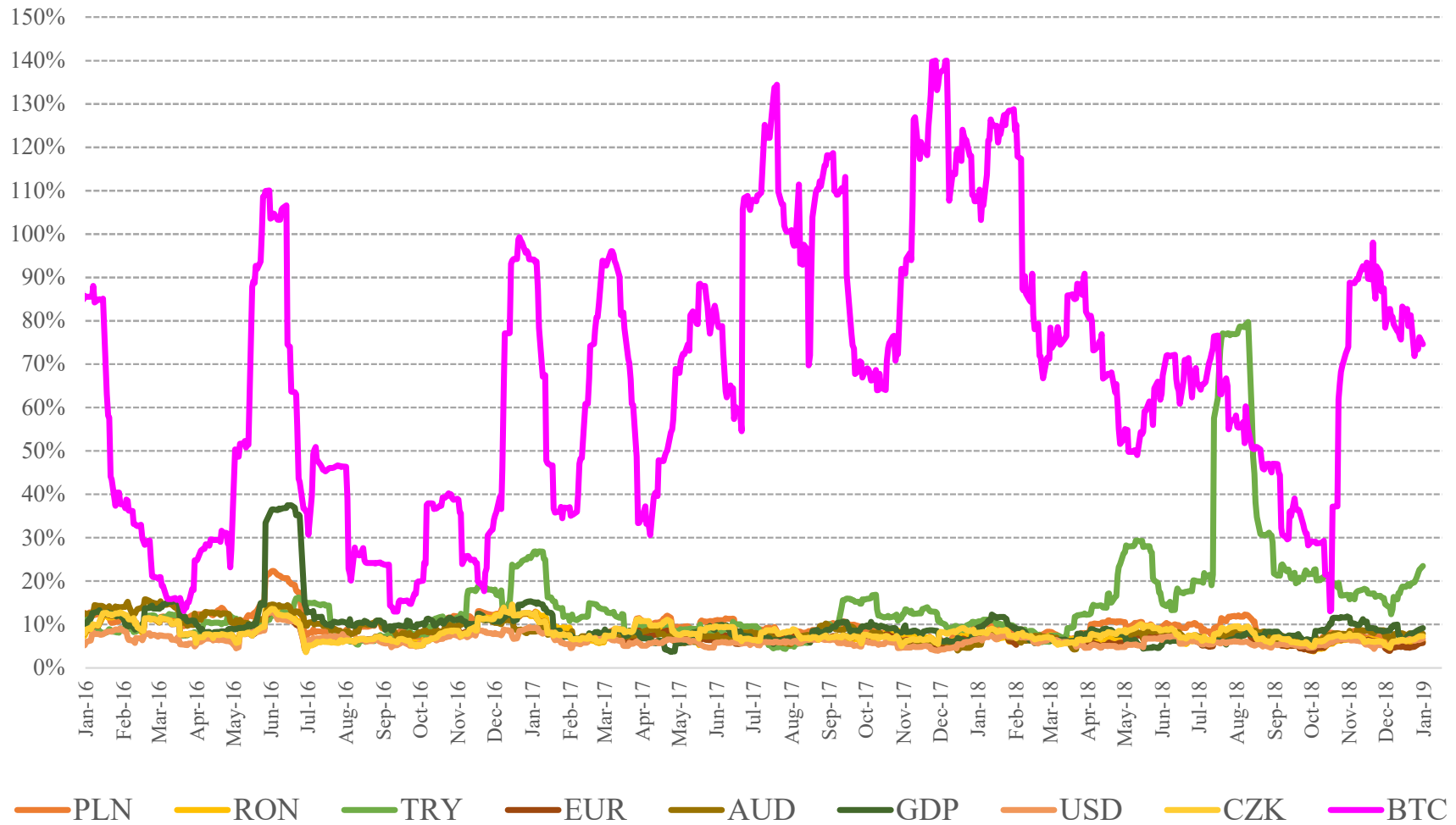
Concerns

- Central bank heads, such as the Bank of England's Mark Carney, have publicly expressed *concerns* about cryptocurrencies.

  - While cryptocurrencies have many potential benefits including faster and more efficient settlement of payments, regulatory concerns revolve around their use in illegal trade (*drugs, hacks and thefts, illegal pornography, and, even, murder-for-hire*), potential to fund *terrorism, launder money, and avoid capital controls*.

- There is little doubt that by providing a digital and anonymous payment mechanism, cryptocurrencies, such as bitcoin, have facilitated the growth of online "darknet" marketplaces in which illegal goods and services are traded.

  - In a recent study (Foley, et al., 2019, RFS) estimate that around *$76 billion of illegal activity per year* involves bitcoin (*46% of bitcoin transactions*), which is close to the scale of the U.S. and European markets for illegal drugs.

Who buys cryptocurrencies?

❖ We examine the demand attitudes to cryptocurrencies using *microdata from 15 countries of the ING Global Banking Survey*

❖ We generate a financial literacy proxy using data from the *S&P 2015 Global Financial-Literacy Survey*, and construct a composite index based on country scores overall and by gender, age and income group

❖ We examine the relationship between financial literacy and attitudes to cryptocurrencies, in terms of *owning, intending to own, not intending to own,* and *not having heard* of them (4 categories)

❖ We establish the *external validity* of our financial literacy proxy and findings, using a custom survey with the OECD in 3 Asian countries, namely the *OECD Consumer Insights Survey on Cryptoassets*

Who buys cryptocurrencies?

❖ We attempt to identify the ***moderating mechanisms*** in the relationship between financial literacy and attitudes to cryptocurrencies

- Technological literacy
- Age
- Financial advice
- Perceptions of risk and reward

Why should financial literacy matter?

- ❖ **Informed financial decisions** critical to *sound personal finance* (Bernheim, 1995, Lusardi & Mitchell, 2014; 2007a; 2007b; and 2008a; 2011; Lusardi & Tufano, 2008; Lusardi, 2009; Cole & Shastry, 2008) and the more efficient *allocation* of financial *resources*

  - ➢ Greater financial *stability*, less *fragility* (*e.g.* loan losses)

  - ➢ *Retirement planning decisions* (e.g. Lusardi and Mitchell, 2011, Klapper and Panos, 2011)

  - ➢ *Stock market* participation (van Rooij, *et al.*, 2011) and the frequency of stock trading (Graham, et al., 2009)

  - ➢ Financial inclusion and demand for formal *banking services* (Cole, *et al.*, 2008; Klapper, Lusardi and Panos, 2013)

  - ➢ Increased *saving rates, returns* to long-term saving (Stango & Zinman, 2008) & *lending* to poorest & vulnerable (Cole & Zia, 2010)

  - ➢ Choosing a low-fee investment portfolio (Choi, et al., 2010; Duarte and Hastings, 2012)

  - ➢ Portfolio diversification (von Gaudecker, 2015)

- ❖ Glaser, et al. (2014): '*we find strong indications that especially uninformed users approaching digital currencies are not primarily interested in an alternative transaction system but seek to participate in an alternative investment vehicle*'.

Research question

- ❖ **Should we expect the financially-literate to be in favour or against cryptocurrencies, such as the Bitcoin?**
  - ▪ If the more financially literate are more likely to invest (van Rooij, et al., 2011, JFE) have a more diversified asset portfolio and obtain higher asset returns (von Gaudecker, 2015, JF; Bianchi, 2018, JF), the answer should be *yes*.
  - ▪ If the more financially literate have access to better financial information, advisors (Calcagno and Monticone, 2015; Stolper, 2018) and more informed networks/peers (Chaliasos, et al., 2017, RFS), then the answer could be either *yes* or *no*
  - ▪ If the more financially literate are better positioned to evaluate risk, control sentiment (Baker and Wurgler, 2007, JEP) and urges, then the answer should be *no*
    - • Perceptions drive decision-making among low-literacy respondents and are associated with mistaken beliefs about financial products and less willingness to accept financial advice (Anderson, et al., 2017, JFE)

About the ING International Survey

The ING International Survey aims to gain a better understanding of how people around the globe spend, save, invest and feel about money. It is conducted several times a year, with reports hosted at www.ezonomics.com/iis. This online survey was carried out by Ipsos between 26 March and 6 April 2018.

Sampling reflects gender ratios and age distribution, selecting from pools of possible respondents furnished by panel providers in each country. European consumer figures are an average, weighted to take country population into account.

15
countries are compared in this report.

1,000
About 1,000 respondents were surveyed in each, apart from Luxembourg, with 500.

14,828
is the total sample size of this report.

Austria
Belgium
Czech Republic
France
Germany
Italy
Luxembourg
Netherlands
Poland
Romania
Spain
Turkey
United Kingdom
USA
Australia
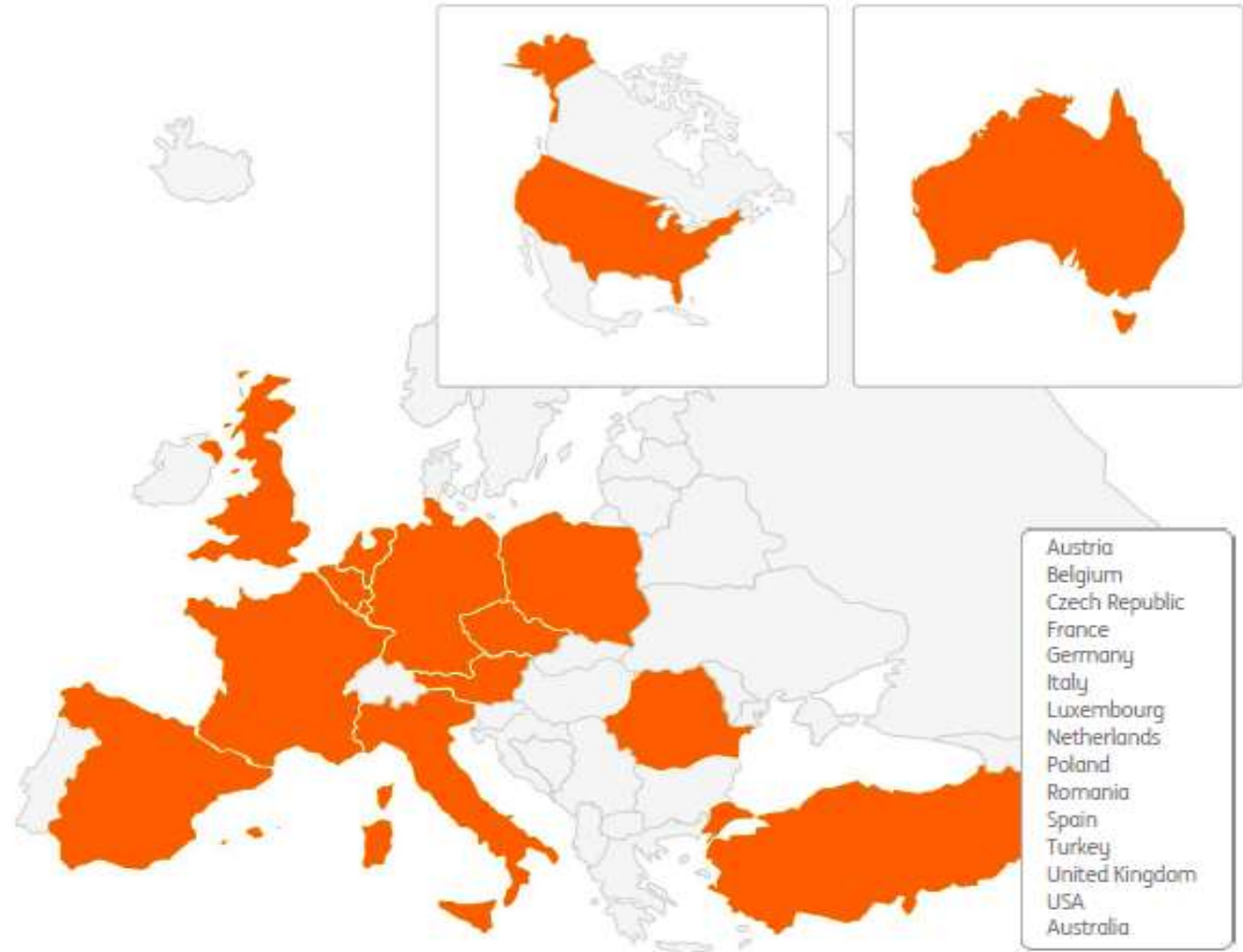
Who likes cryptocurrencies?

	Owning	Intending to own	Not intending to own	Not having heard of
All counties	9.31%	14.14%	42.48%	34.08%
Australia	7.12%	10.05%	53.44%	29.39%
USA	8.85%	12.12%	37.04%	41.99%
United Kingdom	7.22%	9.77%	46.09%	36.93%
Turkey	17.71%	24.39%	28.27%	29.63%
Romania	12.69%	24.81%	37.85%	24.65%
Czech Republic	9.57%	10.98%	49.37%	30.08%
Poland	11.78%	18.53%	47.11%	22.58%
Spain	10.49%	18.76%	38.13%	32.61%
Netherlands	8.33%	7.34%	39.95%	44.38%
Luxembourg	4.33%	9.84%	53.78%	32.04%
Italy	8.35%	17.99%	44.99%	28.67%
Germany	8.96%	14.46%	48.01%	28.58%
France	6.66%	11.21%	34.60%	47.54%
Belgium	5.04%	5.64%	27.85%	61.46%
Austria	8.97%	11.77%	58.37%	20.89%

Financial Literacy: S&P 2014 data

- With data on financial literacy from a survey of more than *150,000 people* in *140 economies* worldwide, the 2014 Standard & Poor's Ratings Services Global Financial Literacy Survey (S&P Global FinLit Survey) represents the most comprehensive global measure of financial literacy to date.

It measures people's knowledge of

Risk Diversification

Inflation

Numeracy

Interest Compounding

% of adults who are financially literate

- 55-75
- 45-54
- 35-44
- 25-34
- 0-24
- No data
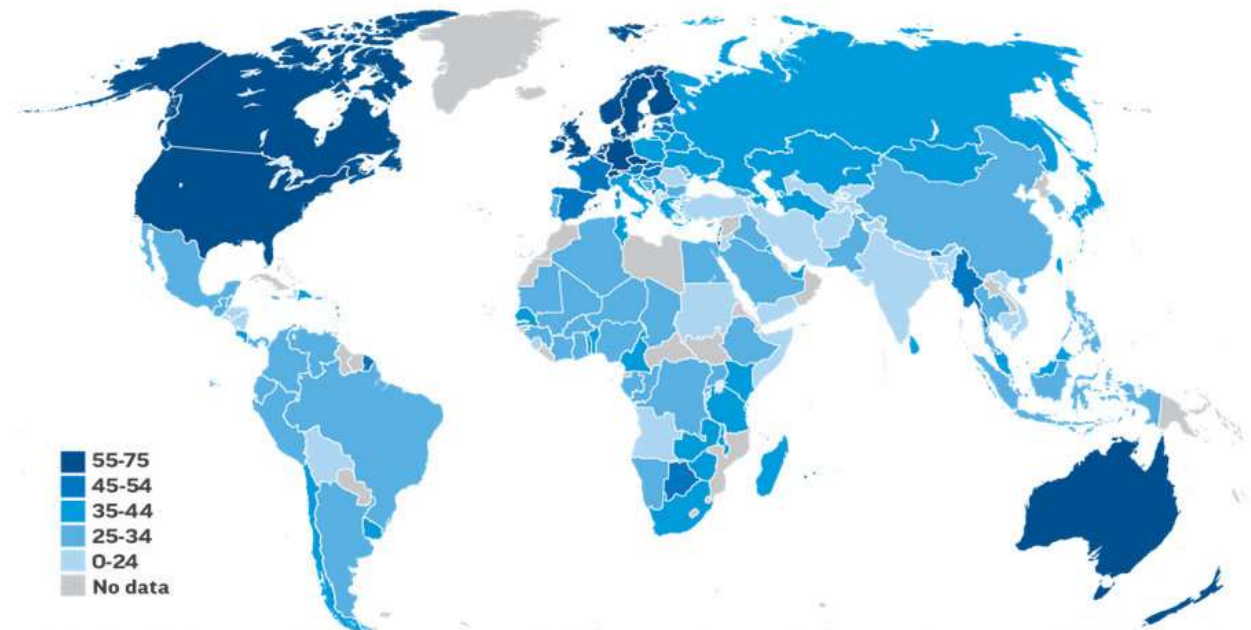
1 in 3 adults worldwide responded correctly to three topics out of four topics

Financial literacy proxies

Main proxy

- Matched country-level scores by: (1) gender; (2) age (15-34, 35-54, ≥55), and; (3) income (top60//bottom40)

Alternative proxies

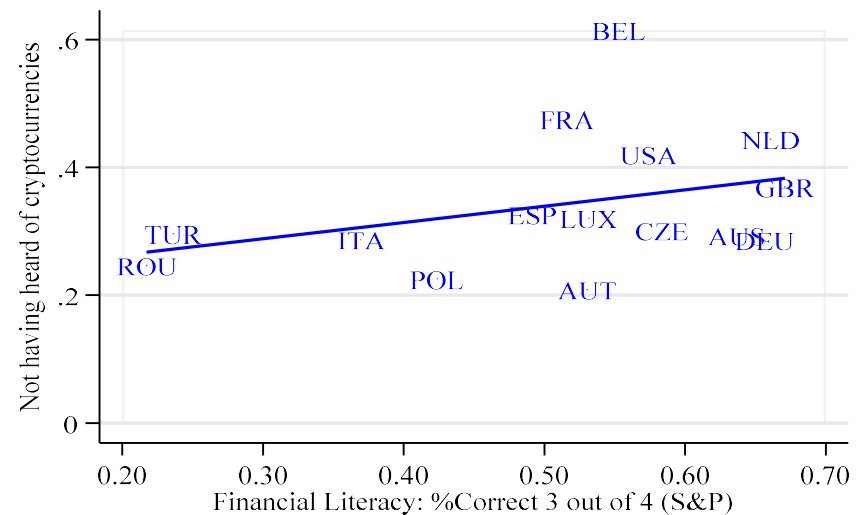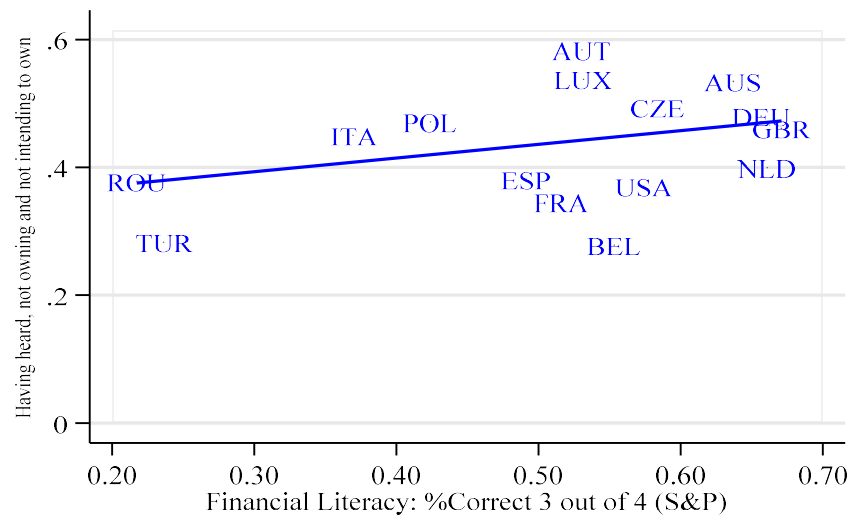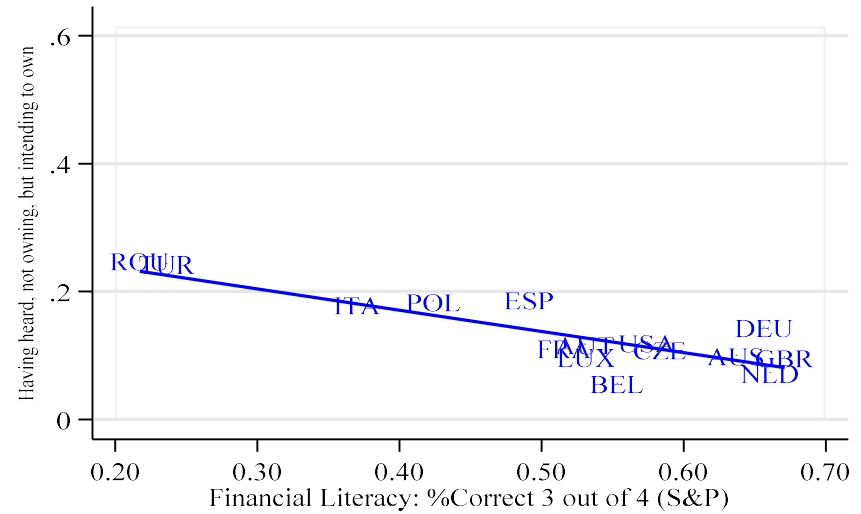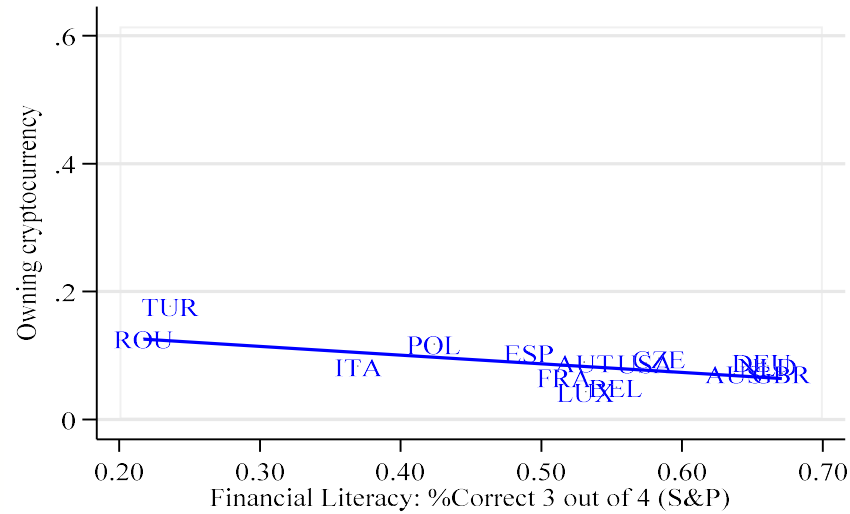- Logarithmic financial literacy

- $FL_i^1 = \prod \dfrac{FL_{gender}FL_{age}FL_{income}}{FL_{country}^2}$

- $FL_i^2 = \prod \dfrac{FL_{gender}FL_{age}FL_{income}}{FL_{country}^3}$

- FLH ≥ 50th percentile of FL_i by each country

Financial literacy and attitudes to cryptocurrencies

Data II: OECD 2019 Consumer Insights Survey on Cryptoassets

- We examine the external validity of our findings, using data from the OECD 2019 Consumer Insights Survey on Cryptoassets (OECD, 2019).
  - This is based on a custom questionnaire, designed to survey consumers/retail investors to collect data on their attitudes, behaviours and experiences towards digital financial assets, specifically digital (or crypto) currencies and initial coin offerings.

- Importantly, in included questions on the financial literacy of investors.
  - The financial literacy variable is calculated as the number of correct response in the following two questions: "An investment with a high return is likely to be high risk", and "High inflation means that the cost of living is increasing rapidly". The response categories involved "True", "False", and "I don't know".

- The survey of some 3,428 retail investors in **Malaysia, the Philippines,** and **Vietnam** is a selected sample entailing familiarity with cryptocurrencies.
  - 36.8% of the investors currently own some cryptocurrency, 14.6% previously owned, 31.1% never held any cryptocurrency, and 17.5% have never heard of cryptocurrencies.

Empirical strategy

- ❖ Dependent variable: Attitudes to cryptocurrencies (ING 2018 survey)
  - • Multinomial probit – 4 outcome categories (Own; Expect to own; Do not expect to own; Not having heard)
  - • Weighted estimation, with country-level representative weights
- ❖ Financial literacy proxy (S&P 2014 survey)
  - • Matched country-level scores by: (1) gender; (2) age (15-34, 35-54, ≥55), and; (3) income (top60//bottom40)
  - • The unit is the number of people who responded correctly to at least 3/4 questions
- ❖ Our main measure is the average figure by gender, age group, and income group, by country (180 profiles)
- ❖ Controls: Gender, age, marital & family status, education, labour-market status, real (PPP-deflated) equivalized household income per capita (3rd order polynomial), 15 country dummies

Financial literacy and attitudes to cryptocurrencies

	Own	*Intend to own*	*Not intend to own*	*Not having heard of*
	(1)	(2)	(3)	(4)
Financial literacy	**–0.300*** [0.116]**	**0.084 [0.135]**	**0.668*** [0.190]**	**–0.452*** [0.175]**
Technological literacy	0.120*** [0.012]	0.133*** [0.014]	–0.078*** [0.021]	–0.175*** [0.019]
Preference for cash/informality	–0.008 [0.019]	0.130*** [0.025]	–0.042 [0.028]	–0.080*** [0.024]
Inflectional FTR/risk tolerance	0.012** [0.006]	0.002 [0.006]	–0.042*** [0.009]	0.029*** [0.009]
Male	0.067*** [0.006]	0.049*** [0.007]	0.075*** [0.010]	–0.192*** [0.009]
Log(Household income per capita)	–0.015 [0.018]	–0.010 [0.020]	–0.078*** [0.030]	0.102*** [0.026]
Log(Household income per capita)^2	0.004 [0.005]	0.004 [0.006]	0.023*** [0.008]	–0.031*** [0.007]
Log(Household income per capita)^3	–0.001 [0.000]	–0.001 [0.000]	–0.002*** [0.001]	0.002*** [0.001]
Missing household income per capita	–0.039* [0.021]	–0.02 [0.023]	0.033 [0.032]	0.026 [0.027]
Age: 18-25	0.071*** [0.012]	0.073*** [0.014]	–0.160*** [0.019]	0.016 [0.017]
—"— 26-35	0.073*** [0.010]	0.051*** [0.011]	–0.156*** [0.015]	0.032** [0.014]
—"— 36-45	0.041*** [0.010]	0.026** [0.011]	–0.099*** [0.015]	0.032** [0.014]
—"— 46-55	0.027*** [0.010]	0.009 [0.011]	–0.056*** [0.014]	0.02 [0.013]
—"— 56-65	{Ref.}	{Ref.}	{Ref.}	{Ref.}
Pre-sixteen education	{Ref.}	{Ref.}	{Ref.}	{Ref.}
A-levels, GNVQ or college	0.021** [0.010]	–0.008 [0.011]	0.055*** [0.015]	–0.068*** [0.013]
Higher vocational education or HND	0.028** [0.011]	0.011 [0.012]	0.066*** [0.017]	–0.104*** [0.015]
University (Bachelors)	0.032*** [0.011]	0.020* [0.012]	0.120*** [0.017]	–0.172*** [0.015]
Higher university degree	0.055*** [0.011]	0.016 [0.013]	0.141*** [0.018]	–0.212*** [0.016]
Predicted probability	*0.0931*	*0.1412*	*0.4247*	*0.3410*
%Fin. literacy effect	***–39.46%***	***4.76%***	***22.70%***	***–18.83%***
#Observations		13,267		

Robustness I: Country Interactions

	Own	Intend to own	Not intend to own	Not having heard of
	(1)	(2)	(3)	(4)
Financial literacy	**–1.264****	**0.599**	**3.242*****	**–2.577****
	[0.607]	**[0.855]**	**[0.952]**	**[0.782]**
Fin. literacy*Austria	2.106***	-0.204	-2.790**	0.888
	[0.700]	[0.969]	[1.133]	[0.998]
Fin. literacy*Belgium	{Ref.}	{Ref.}	{Ref.}	{Ref.}
Fin. literacy*France	0.916	-0.762	-2.870***	2.715**
	[0.702]	[0.946]	[1.113]	[0.914]
Fin. literacy*Germany	1.096*	-0.535	-2.753***	2.192**
	[0.637]	[0.880]	[0.999]	[0.837]
Fin. literacy*Italy	0.643	-0.392	-2.819***	2.568**
	[0.639]	[0.883]	[1.003]	[0.840]
Fin. literacy*Luxembourg	1.696*	-0.949	-1.939	1.192
	[0.975]	[1.041]	[1.219]	[1.086]
Fin. literacy*Netherlands	1.310*	-0.038	-2.711***	1.439*
	[0.675]	[0.946]	[1.043]	[0.863]
Fin. literacy*Spain	0.796	-0.108	-1.654	0.965
	[0.708]	[0.951]	[1.158]	[0.987]
Fin. literacy*United Kingdom	1.817*	-2.185	-0.675	1.044
	[1.101]	[1.332]	[1.643]	[1.425]
Fin. literacy*Poland	0.804	-0.465	-2.144**	1.806*
	[0.674]	[0.917]	[1.072]	[0.931]
Fin. literacy*Romania	0.191	-1.519	-1.882	3.210**
	[0.774]	[1.014]	[1.295]	[1.135]
Fin. literacy*Czech Republic	1.381*	-0.577	-0.406	-0.398
	[0.725]	[0.989]	[1.160]	[1.006]
Fin. literacy*Turkey	0.344	-1.515	-1.722	2.893**
	[0.699]	[0.987]	[1.239]	[1.062]
Fin. literacy*Australia	1.042*	-0.469	-3.006***	2.434**
	[0.632]	[0.887]	[0.994]	[0.828]
Fin. literacy*USA	0.885	-0.232	-3.487***	2.833**
	[0.646]	[0.902]	[1.030]	[0.849]
Predicted probability	*0.0931*	*0.1413*	*0.4247*	*0.3409*
%Fin. literacy effect	***-73.97%***	***12.88%***	***83.58%***	***–59.98%***
#Observations		13,267		

	Own	Intend to own	Not intend to own	Not having heard of	First-stage equation Financial literacy
	(A$_1$)	(A$_2$)	(A$_3$)	(A$_4$)	(F$_1$)
Financial literacy	**–0.508*****	**0.297*****	**1.004*****	**-1.058*****	**–**
	[0.009]	**[0.006]**	**[0.008]**	**[0.008]**	
Technological literacy	0.133***	0.178***	–0.031	–0.170***	0.002*
	[0.017]	[0.015]	[0.021]	[0.020]	[0.001]
Inflectional FTR	0.023***	0.005	–0.039***	0.026***	0.001
	[0.008]	[0.007]	[0.009]	[0.009]	[0.000]
Preference for cash	–0.03	0.138***	–0.049*	–0.043*	–0.003***
	[0.027]	[0.026]	[0.029]	[0.025]	[0.001]
Male	0.054***	0.063***	0.097***	–0.181***	0.030***
	[0.007]	[0.007]	[0.009]	[0.008]	[0.000]
Log(Household income)	0.003	–0.011	–0.085***	0.098***	–0.007***
	[0.025]	[0.022]	[0.030]	[0.028]	[0.001]
Log(Household income)^2	–0.002	0.005	0.026***	–0.030***	0.001*
	[0.007]	[0.006]	[0.008]	[0.008]	[0.000]
Log(Household income)^3	0.001	–0.001	–0.002***	0.002***	0.000***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]
Missing household income	–0.048	–0.04	0.006	0.045	0.028***
	[0.029]	[0.024]	[0.031]	[0.028]	[0.001]
Mobile banking usage for efficient personal financial management	–	–	–	–	0.001*** [0.000]
Predicted probability	0.1464	0.1663	0.4651	0.3541	0.5137
%Fin. literacy effect	*-41.27%*	*17.86%*	*29.30%*	*-37.05%*	*–*

Additional statistics based on a linear probability IV model for cryptocurrency ownership (available upon request)

Test of excluded instruments F$_{(1, 13,225)}$	7.88***	(c) Anderson-Rubin Wald test: F$_{(2,1050)}$	0.42
(a) Kleibergen-Paap rk LM statistic χ$^2_{(2)}$	7.90***	(c) Anderson-Rubin Wald test: χ$^2_{(2)}$	0.42
(a) Kleibergen-Paap rk Wald statistic χ$^2_{(2)}$	7.91***	(c) Stock-Wright LM S-statistic: χ$^2_{(2)}$	0.42
(b) Kleibergen-Paap Wald rk F-statistic	7.88	(d) Hansen J statistic χ2(1)	0.000
#Observations		13,267	

Robustness V: External validity – Financial literacy – OECD survey

	Currently hold	Previously held	Never held	Never heard of
	(1)	(2)	(3)	(4)
Financial literacy	**0.002**	**–0.001**	**0.034***	**–0.034***
	[0.013]	**[0.010]**	**[0.013]**	**[0.009]**
Technological literacy	0.014	-0.011	0.023*	-0.026***
	[0.014]	[0.011]	[0.014]	[0.010]
Risk tolerance	0.112***	-0.013	-0.090***	-0.008
	[0.011]	[0.009]	[0.011]	[0.009]
Present orientation	0.043***	-0.003	-0.078***	0.038***
	[0.010]	[0.008]	[0.010]	[0.008]
Male	0.018	0.015	-0.015	-0.017
	[0.015]	[0.012]	[0.015]	[0.012]
Age: 18-25	0.201***	-0.043	-0.190***	0.033
	[0.048]	[0.036]	[0.043]	[0.036]
—"—: 26-35	0.208***	-0.018	-0.211***	0.021
	[0.045]	[0.033]	[0.040]	[0.034]
—"—: 36-45	0.160***	-0.039	-0.133***	0.012
	[0.045]	[0.033]	[0.040]	[0.034]
—"—: 46-55	0.148***	-0.064*	-0.094**	0.01
	[0.046]	[0.034]	[0.040]	[0.035]
—"—: 56-65	{Ref.}	{Ref.}	{Ref.}	{Ref.}
Log(Household income-PPP)	-0.228***	0.006	0.058	0.164***
	[0.065]	[0.050]	[0.064]	[0.042]
Log(Household income-PPP)^2	0.057***	-0.001	-0.013	-0.045***
	[0.016]	[0.012]	[0.016]	[0.010]
Log(Household income-PPP)^3	-0.003***	0.001	0.001	0.003***
	[0.001]	[0.001]	[0.001]	[0.001]
Home owner	0.142***	0.029**	-0.108***	-0.063***
	[0.017]	[0.014]	[0.017]	[0.013]
Education: No qualifications	{Ref.}	{Ref.}	{Ref.}	{Ref.}
—"—: Pre-sixteen	-0.133**	-0.042	0.198***	-0.023
	[0.062]	[0.046]	[0.064]	[0.035]
—"—: A-levels, GNVQ or college	-0.132**	-0.101**	0.289***	-0.055
	[0.066]	[0.050]	[0.066]	[0.037]
—"—: University (Bachelor)	-0.051	-0.046	0.234***	-0.137***
	[0.061]	[0.046]	[0.064]	[0.035]
—"—: Higher university degree	-0.014	-0.069	0.200***	-0.117***
	[0.064]	[0.049]	[0.067]	[0.040]
Philippines	0.186***	-0.002	-0.163***	-0.02
	[0.021]	[0.017]	[0.021]	[0.017]
Vietnam	0.043**	0.025*	-0.098***	0.030**
	[0.019]	[0.015]	[0.018]	[0.015]
Predicted probability	0.3688	0.1457	0.3109	0.1746
%Fin. literacy effect	*0.56%*	*–0.90%*	*10.83%*	*–19.73%*

	Currently hold	Previously held	Never held	Never heard of	First-stage equation Financial literacy
	(A₁)	(A₂)	(A₃)	(A₄)	(F₁)
Financial literacy	**-0.165****	**0.034**	**0.325*****	**-0.140*****	**–**
	[0.067]	**[0.083]**	**[0.070]**	**[0.025]**	
Preference for ethical finance	–	–	–	–	0.091***
					[0.017]
Technological literacy	0.039*	-0.018	-0.029	-0.001	0.164***
	[0.020]	[0.024]	[0.022]	[0.007]	[0.021]
Risk tolerance	0.116***	0.025**	-0.045***	-0.023***	0.012
	[0.012]	[0.011]	[0.012]	[0.005]	[0.016]
Present orientation	0.049***	0.016	-0.044***	0.004	-0.030**
	[0.012]	[0.012]	[0.014]	[0.005]	[0.013]
Male	0.012	0.024*	-0.01	-0.009	-0.004
	[0.016]	[0.014]	[0.015]	[0.006]	[0.021]
Log(Household income-PPP)	-0.206***	-0.079	-0.010	0.104***	-0.016
	[0.065]	[0.059]	[0.061]	[0.024]	[0.087]
Log(Household income-PPP)^2	0.054***	0.022	-0.002	-0.027***	0.019
	[0.016]	[0.015]	[0.015]	[0.006]	[0.021]
Log(Household income-PPP)^3	-0.003***	-0.001	0.001	0.002***	-0.001
	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]
Home owner	0.139***	0.087***	-0.075***	-0.047***	0.060**
	[0.017]	[0.017]	[0.017]	[0.007]	[0.024]
Marginal effect	**-40.58%**	**16.28%**	**70.49%**	**~-100.0%**	
Predicted probability	0.4060	0.2104	0.4604	0.1324	1.6237

Statistics based on a linear probability IV model for cryptocurrency ownership (available upon request)

Test of excluded instruments $F_{(1, 13,225)}$	28.88***	(c) Anderson-Rubin Wald test: $F_{(1, 3,401)}$	0.01
(a) Kleibergen-Paap rk LM statistic $\chi^2_{(2)}$	28.38***	(c) Anderson-Rubin Wald test: $\chi^2_{(2)}$	0.01
(a) Kleibergen-Paap rk Wald statistic $\chi^2_{(2)}$	29.11***	(c) Stock-Wright LM S-statistic: $\chi^2_{(2)}$	0.01
(b) Kleibergen-Paap Wald rk F-statistic	28.88***	(d) Hansen J statistic $\chi2(1)$	0.000
#Observations		3,428	

	Own	Intend to own	Not intend to own	Own	Intend to own	Not intend to own
	(A₁)	(A₂)	(A₃)	(B₁)	(B₂)	(B₃)
Financial literacy	**-0.489*** ** **[0.162]**	**0.133** **[0.183]**	**0.356*** **[0.184]**	**-0.202** **[0.232]**	**0.011** **[0.252]**	**0.191** **[0.269]**
Digital currencies – e.g. Bitcoin – are the future of spending online	0.036*** [0.005]	0.053*** [0.006]	-0.089*** [0.006]	0.048*** [0.018]	0.019 [0.021]	-0.067*** [0.022]
–"– are the future of investment as storage of value	0.023*** [0.006]	0.053*** [0.007]	-0.076*** [0.006]	0.052*** [0.019]	0.061*** [0.022]	-0.113*** [0.022]
I think the value of digital currencies – e.g. Bitcoin – will increase in the next 12 months	0.038*** [0.005]	0.014*** [0.005]	-0.052*** [0.005]	0.013 [0.016]	0.021 [0.018]	-0.034* [0.019]
Fin. literacy*Future of spending online	–	–	–	-0.026 [0.034]	0.069* [0.041]	-0.044 [0.041]
Fin. literacy*Future of investment or storage of value	–	–	–	-0.057 [0.035]	-0.015 [0.043]	0.071* [0.042]
Fin. literacy*The value will increase in next 12 months	–	–	–	0.049 [0.031]	-0.014 [0.035]	-0.035 [0.035]
Fin. literacy* Cryptocurrency riskier than cash	0.001 [0.003]	-0.004 [0.004]	0.004 [0.004]	-0.003 [0.011]	0.006 [0.013]	-0.003 [0.014]
- " - bonds	-0.004 [0.004]	0.007 [0.004]	-0.003 [0.005]	0.001 [0.012]	0.01 [0.014]	-0.011 [0.015]
- " - stocks	0.001 [0.003]	-0.017*** [0.004]	0.016*** [0.004]	-0.017 [0.011]	-0.011 [0.013]	0.029** [0.014]
- " - real estate/property funds	0.002 [0.004]	0.005 [0.004]	-0.007 [0.005]	0.032*** [0.012]	-0.015 [0.015]	-0.017 [0.016]
- " - gold	-0.003 [0.004]	0.012*** [0.004]	-0.008* [0.005]	0.022* [0.012]	0.011 [0.015]	-0.033** [0.016]
- " - investing in own business	-0.002 [0.004]	-0.004 [0.004]	0.006 [0.004]	-0.022* [0.011]	0.002 [0.013]	0.02 [0.014]
Fin. literacy* Cryptocurrency riskier than cash	–	–	–	0.006 [0.022]	-0.02 [0.026]	0.014 [0.028]
- " - bonds	–	–	–	-0.011 [0.023]	-0.006 [0.028]	0.017 [0.029]
- " - stocks	–	–	–	0.036 [0.022]	-0.011 [0.026]	-0.024 [0.027]
- " - real estate/funds	–	–	–	-0.061*** [0.023]	0.043 [0.029]	0.017 [0.030]
- " - gold	–	–	–	-0.050** [0.023]	0.002 [0.029]	0.048 [0.030]
- " - investing in own business	–	–	–	0.041* [0.022]	-0.013 [0.025]	-0.028 [0.027]
%Fin. literacy effect	*-41.15%*	*5.53%*	*7.39%*	*-19.67%*	*0.07%*	*4.24%*
#Observations		8,734			8,734	

Moderators V: Perceptions of Risk and Reward

	Own	Intend to own	Not intend to own	Own	Intend to own	Not intend to own
	(A$_1$)	(A$_2$)	(A$_3$)	(B$_1$)	(B$_2$)	(B$_3$)
Financial literacy	**-0.485***	**0.138**	**0.348***	**-0.194**	**-0.029**	**0.223**
	[0.162]	**[0.183]**	**[0.185]**	**[0.234]**	**[0.253]**	**[0.269]**
Reward perception	0.485***	0.616***	-1.101***	0.572***	0.502***	-1.074***
	[0.021]	[0.022]	[0.020]	[0.081]	[0.083]	[0.097]
Fin. Literacy*Reward perception	−	−	−	-0.178	0.235	-0.057
				[0.158]	[0.166]	[0.191]
Risk perception	-0.036*	0.010	0.026	0.085	-0.002	-0.083
	[0.019]	[0.023]	[0.024]	[0.063]	[0.072]	[0.081]
Fin. Literacy*Risk perception	−	−	−	-0.244**	0.027	0.217
				[0.121]	[0.140]	[0.152]
Technological literacy	0.081***	0.066***	-0.148***	0.082***	0.066***	-0.148***
	[0.017]	[0.019]	[0.020]	[0.017]	[0.019]	[0.020]
Preference for cash	0.001	-0.006	0.005	0.001	-0.006	0.005
	[0.008]	[0.009]	[0.009]	[0.008]	[0.009]	[0.009]
Inflectional FTR	-0.070**	0.158***	-0.089**	-0.070**	0.158***	-0.089**
	[0.030]	[0.038]	[0.035]	[0.030]	[0.038]	[0.035]
Male	0.072***	0.019*	-0.091***	0.072***	0.019*	-0.091***
	[0.009]	[0.010]	[0.010]	[0.009]	[0.010]	[0.010]
%Fin. literacy effect	*-40.95%*	*5.88%*	*7.21%*	*-18.97%*	*-2.61%*	*4.97%*
#Observations		8,734			8,734	

Conclusions

- ❖ The results show large negative effects of financial literacy on the probability of owning cryptocurrencies and on intending to own in the future.

- ❖ The financially-literate are more likely to be aware of cryptocurrencies, compared to their financially-illiterate counterparts.

- ❖ Our evidence confirms the prediction that the more financially literate are better positioned to evaluate the risk-reward profile offered by cryptocurrencies.

Implications:

- ❖ If the demand for cryptocurrencies is less likely to be driven by financially-literate investors, isn't the high volatility of cryptocurrencies to be expected?

- ❖ Do traders understand the supply of cryptocurrencies?

- ❖ What are the actions needed to attract informed traders into cryptocurrencies?

Conclusions

➢ The regulators are right to be concerned!

➢ Apart from the recent evidence on 46% of transactions being illegal

    ➢ Such transactions are less likely to appear in surveys

➢ Our evidence suggests the cryptocurrency market is dominated by uninformed traders