Too literate to evade?

Financial literacy, tax morale, and informality in Europe

Georgios Panos

Aristotle University of Thessaloniki

with Stamatia Ftergioti and Aristea Vidra
(Aristotle University of Thessaloniki)

CRETE 2026

European Commission

Horizon Europe
2021–2027

TRAILS
Enabling Data Analytics for Actions against Tax Fraud and Financial Crime

G53
Financial Literacy and Personal Finance Research Network

ΙΝΣΤΙΤΟΥΤΟ ΧΡΗΜΑΤΟΟΙΚΟΝΟΜΙΚΟΥ ΑΛΦΑΒΗΤΙΣΜΟΥ

The paper in one slide

Question: Are financially literate Europeans less tolerant of informality?

- We study attitudes toward tax evasion and undeclared work in 31 European countries.
- We use a transparent 0–3 financial-literacy index based on interest, inflation and diversification.
- The main finding is a robust negative literacy gradient in tolerance of informality.
- OLS, ordered-response, IV, placebo, heterogeneity and mediation evidence point in the same direction.
- Interpretation: literacy makes hidden costs more visible — sanctions, formal-sector losses and civic/fiscal costs.

Financial literacy links household finance to tax morale through perceived costs of informality.

Why this is an economics question

Informality is a choice under incentives, but also under limited cognition.

- Classical public finance models evasion as a choice under uncertainty: expected audits, penalties, tax rates and information reporting shape compliance (Allingham and Sandmo, 1972; Yitzhaki, 1974; Slemrod, 2007; Kleven et al., 2011; Pomeranz, 2015).
- Behavioural tax research adds trust, legitimacy, fairness, social norms and intrinsic motivation to the compliance problem (Slemrod, 2007; Alm and Torgler, 2011; Batrancea et al., 2019; Puklavec et al., 2025).
- Household finance shows that financial literacy shapes intertemporal decisions, risk assessment and financial behaviour (Klapper, Lusardi and Panos, 2013; Lusardi and Mitchell, 2014; Kaiser et al., 2022).
- This paper asks whether financial literacy also shapes attitudes toward informality by increasing awareness of its long-term costs.

Financial literacy is treated as decision-making capital, not only as education.

Link to recent literature

Financial literacy and unlawful behaviour: closest evidence

- Financial literacy has recently been linked to financial crime, not only household financial behaviour (Freed and Hackney, 2026, JFE).
- Using a Virginia financial-education reform and an RDD design, Freed and Hackney estimate a 32–37% reduction in financial crime.
- The effect is concentrated in embezzlement, suggesting a mechanism through financial distress, liquidity pressure and household balance-sheet improvement.
- This paper extends the logic to Europe: does financial literacy also predict lower tolerance of tax evasion and undeclared work?

From financial crime to informality attitudes: does financial capability also shape tax morale?

What we do

The paper connects three literatures that usually speak separately.

- We add **financial capability** to the tax-compliance framework of deterrence, information reporting, trust and tax morale (Slemrod, 2007; Alm and Torgler, 2011).
- We extend **financial literacy** from private financial outcomes to **attitudes toward informal economic behaviour** (Lusardi and Mitchell, 2014; Panos, et al., 2016a; b; Kaiser et al., 2022).
- We provide new **harmonised micro evidence** on informality attitudes from **TRAILS-I across 31 European countries** (27EU + 4).
- We combine **OLS, ordered-response models, IV evidence, heterogeneity analysis,** and **causal mediation analysis** (Dippel, et al, 2022: 3-stage IV).
- We show that financial literacy is associated with **lower tolerance of tax evasion and undeclared work**.
- We interpret this as evidence that literacy may raise awareness of the **long-term costs of informality**, not merely proxy for schooling.

Financial literacy appears to matter not only for private financial behaviour, but also for tax morale and informality attitudes in Europe.

Roadmap

- **Data and measurement:** TRAILS-I, a new 31-country survey with harmonised measures of financial literacy and informality attitudes.
- **Literature and theory:** deterrence, tax morale, information reporting and financial capability.
- **Model:** a perceived net-value framework in which literacy enters the cost side of informality.
- **Evidence:** OLS, ordered-response models, IV estimates, placebo checks and heterogeneity.
- **Mechanisms:** 3-stage IV mediation checks (causal mediation analysis) mapping TRAILS-I mediators to the model's three channels.

The presentation moves from theory to evidence, and then to mechanisms.

TRAILS-I, informality attitudes and financial literacy

Why Europe is the right setting

- Europe combines common policy concerns around tax morale, fiscal capacity and labour-market formality.
- At the same time, countries differ markedly in enforcement institutions, welfare systems and pension arrangements.
- TRAILS-I offers comparable individual-level measurement across 31 countries, enabling within- and across-country evidence.

TRAILS-I provides harmonised European microdata.

- The empirical setting is a new 31-country survey of adults aged 18-80.
- Coverage: EU-27 plus the United Kingdom, Switzerland, Serbia and Türkiye.
- Sample: 29,872 individuals in representative online panels commissioned by IPSOS.
- Core advantage: comparable measures of literacies, skills, attitudes and socioeconomic background.
- For this paper: financial literacy, attitudes toward tax evasion and attitudes toward undeclared work.

The setting is not only convenient; it is substantively informative. TRAILS-I makes it possible to study individual literacy gradients within country and regional contexts.

The questions

Domain	Concept [Question Code]	Wording	Response Categories	Correct
Financial literacy	Compound Interest [Q11]	Suppose you have €100 in a savings account earning 5% interest per year, compounded annually. After 2 years, how much do you think you will have in the account?	(1) More than €100 (2) Exactly €100 (3) Less than €100 (98) Don't know	(1)
	Inflation [Q12]	"Imagine that the annual inflation rate is 5%, and your savings account earns 3% interest per year. After one year, will the money in your savings account buy:	(1) More than it does today (2) The same as it does today (3) Less than it does today (98) Don't know	(2)
	Risk diversification [Q13]	Suppose you want to invest €10,000. Is it safer to:	(1) Invest the money in a single company's stock (2) Invest the money in a range of different stocks (98) Don't know	(2)
Informality perceptions	Tax evasion acceptability [Q28_10]	"Where do you place yourself on the political spectrum regarding: "Perception of tax evasion"	'0' = Always unacceptable '10' = Acceptable in some situations (98) Don't know; Prefer not to answer (99)	N/A
	Undeclared work acceptability [Q28_11]	Where do you place yourself on the political spectrum regarding: "Opinion on undeclared work"	'0' = Always unacceptable '10' = Acceptable in some situations (98) Don't know; Prefer not to answer (99)	N/A

Basic financial literacy is captured through three concise, factual items.

Q11 Interest & compounding

€100 at 5% annual interest with compounding: how much after two years?

Correct signal:
More than €110

Q12 Inflation

Inflation is 5% and savings interest is 3%: what happens to purchasing power after one year?

Correct signal:
Less than today

Q13 Diversification

You invest €10,000: which option is safer – one stock or a diversified portfolio?

Correct signal:
A diversified stock portfolio

Measurement principle

These items test whether respondents can apply core concepts – not simply recognise financial terminology.

The index is strongly correlated with each of its three components.

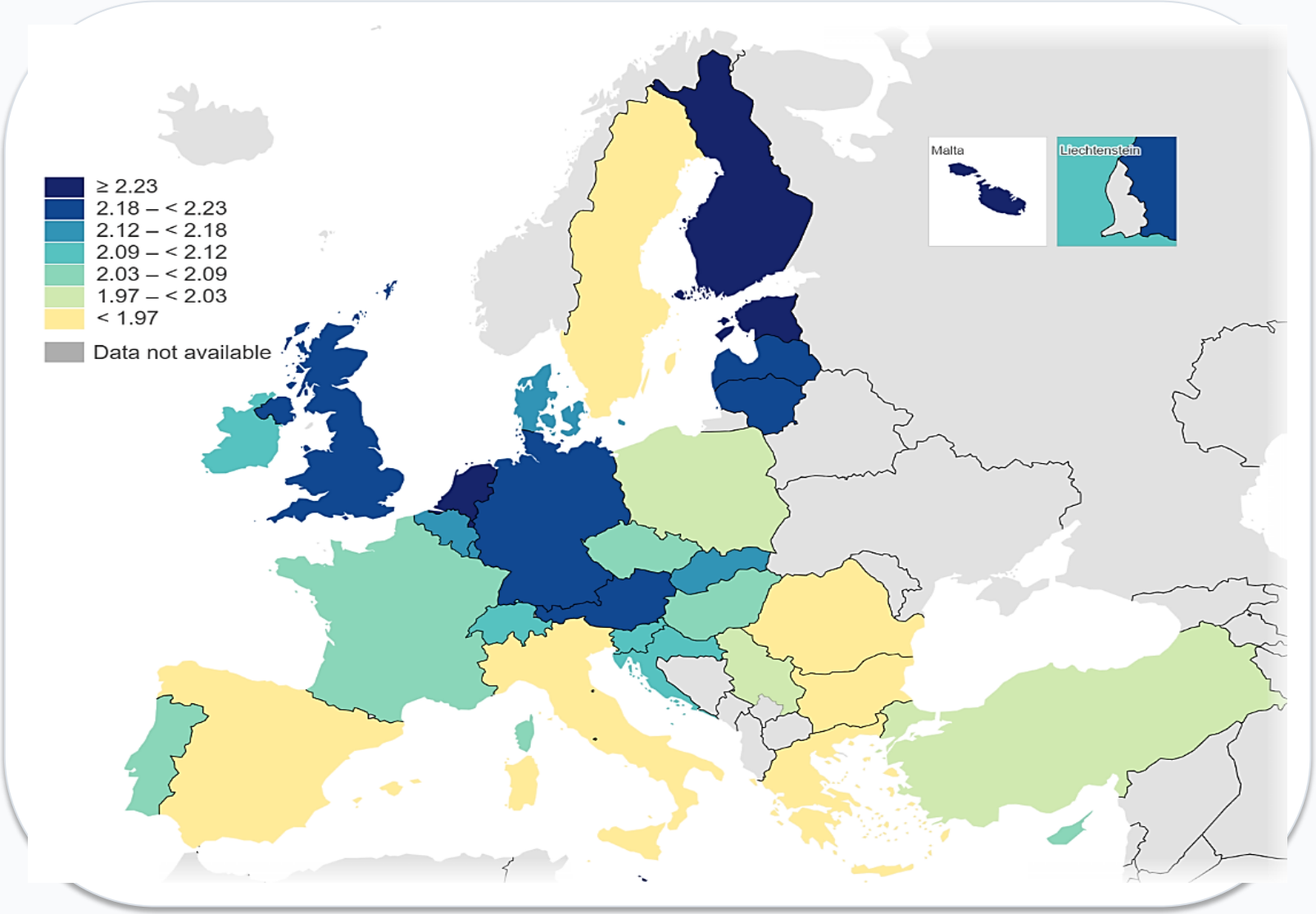
	Financial Literacy Index	Compound interest	Inflation	Risk diversification
Financial Literacy Index [0, 3]	1.000			
Q11: Compound interest	0.696***	1.000		
Q12: Inflation	0.676***	0.152***	1.000	
Q13: Risk diversification	0.665***	0.169***	0.264***	1.000

The 3 items contribute strongly to the overall index, but their modest pairwise correlations show that financial literacy is multidimensional.
Understanding interest, inflation and diversification are related, but distinct, forms of financial knowledge.

Financial Literacy in the EU27+4

Country-level view

MEASUREMENT



READING THE MAP

- Higher-scoring clusters appear more often in Northern and North-Western Europe.
- Lower or more uneven performance appears more often in Southern and South-Eastern Europe.
- The geography is structured, but not uniform.

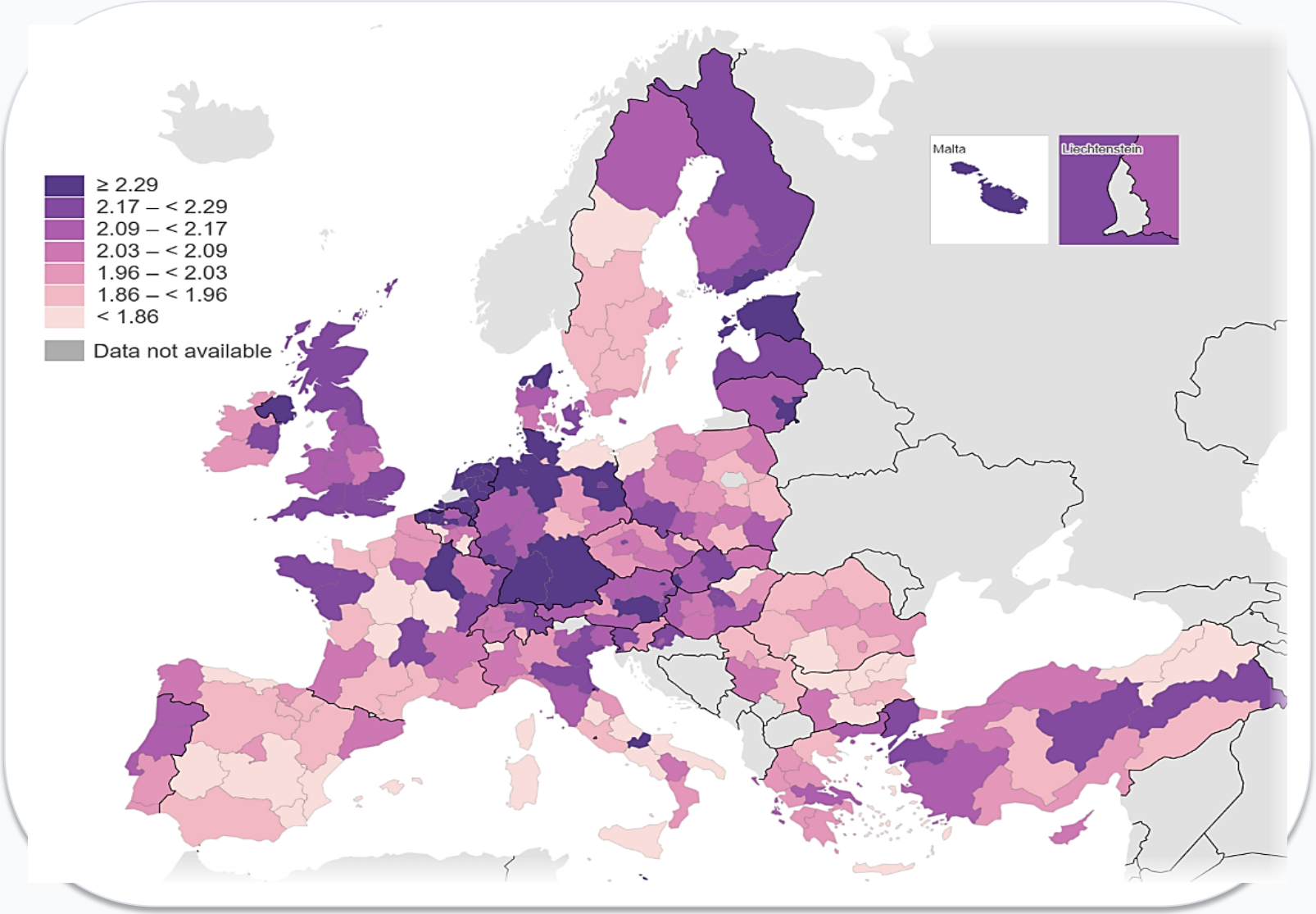
Key takeaway

Europe's basic financial literacy map points to a clear multi-speed pattern.

Financial Literacy in the EU27+4

Regional view

MEASUREMENT



READING THE MAP

- Subnational patterns matter, not only country averages.
- Regional heterogeneity can be substantial within the same national context.
- Local capability gaps may require locally tailored responses.

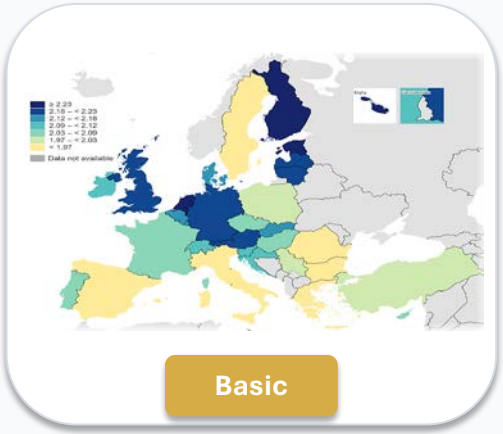
Key takeaway

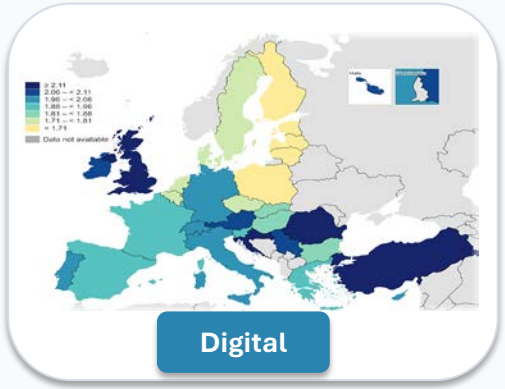
National rankings can conceal important internal disparities in basic financial knowledge.

More types of financial literacy in the TRAILS-I survey

No single ranking, but different readiness profiles.

MEASUREMENT





What the maps show

- Europe is a multi-speed landscape rather than a simple divide between “strong” and “weak” countries.
- Northern and North-Western Europe appear more often in the higher-performing categories.
- Southern and South-Eastern Europe more often display lower or more uneven profiles.
- Country profiles can be asymmetric: stronger in one literacy dimension, weaker in another.

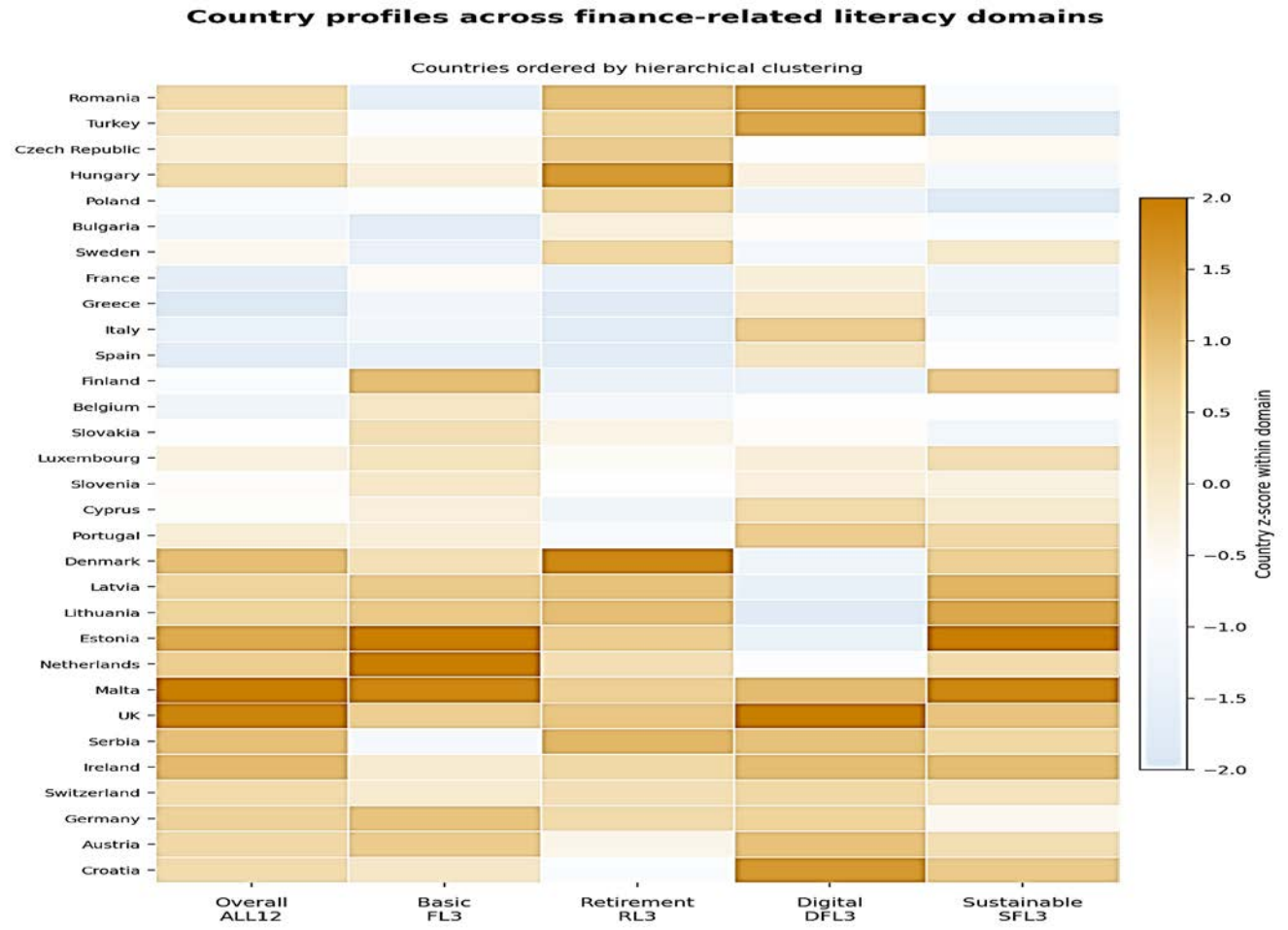
Europe is not organised around one ranking, but around different models of financial readiness.

Country rankings differ across literacy domains

Cross-country profiles in overall and domain-specific literacy

MEASUREMENT

Countries sort into literacy profiles rather than a single common ranking.



Main patterns

- A small group performs strongly and relatively consistently across several domains.
- Retirement literacy generates the largest reshuffling in country positions.
- Digital and sustainable-finance literacy do not always move together.

Top overall performers (ALL12)

Malta (8.14), UK (8.07), and Estonia (7.82) lead the 12-item index.

Bottom overall performers (ALL12)

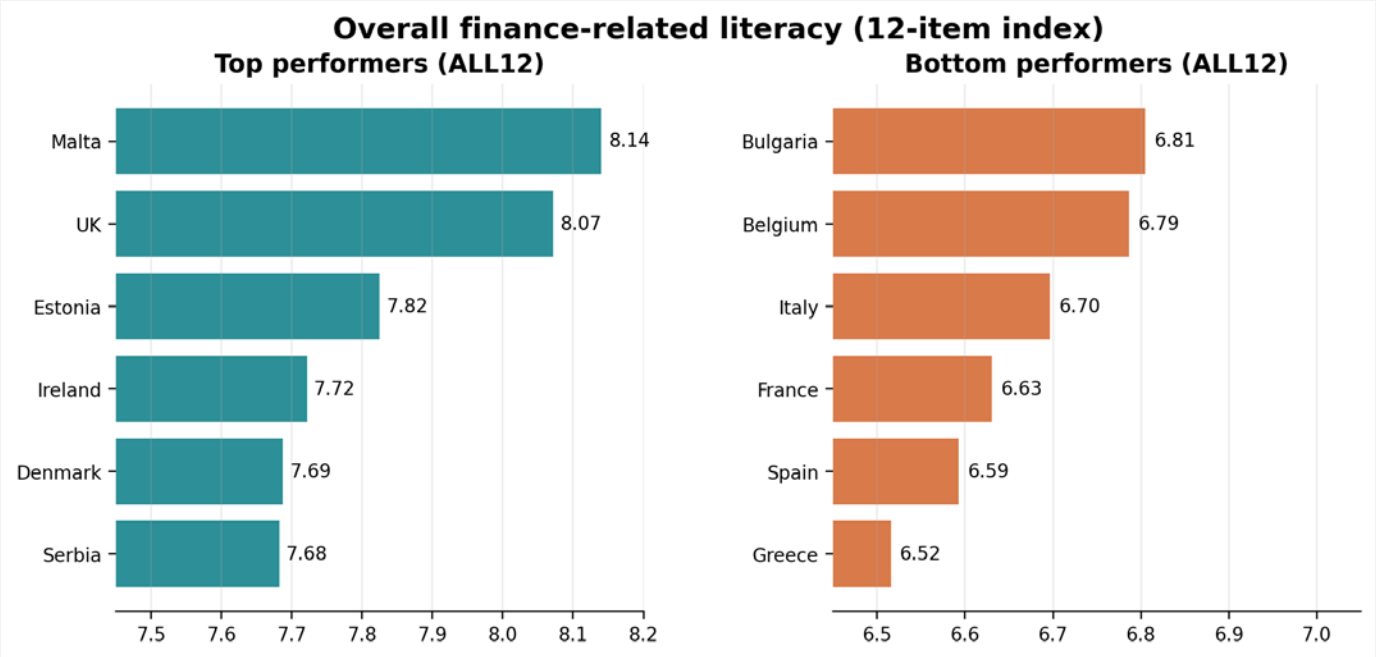
Greece (6.52), Spain (6.59), and France (6.63) are the lowest overall.

Takeaway: the cross-country landscape is best understood through profiles, not just league tables.

Who leads overall, and where do countries differ?

Overall ranking and illustrative country groupings

MEASUREMENT



Interpretation: countries with similar overall scores can still differ noticeably in which domain drives their profile.

Balanced all-rounders

Malta, UK, Estonia, and Ireland combine high overall scores with relatively balanced domain profiles.

Retirement-strong profile

Denmark, Hungary, Romania, and Serbia move up when pension and retirement knowledge is considered.

Relative laggards overall

Greece, Spain, and France are weakest overall, while Italy also combines low overall literacy with weak retirement knowledge.

Two outcomes measure tolerance of informality

Both outcomes are 0-10 attitude scales, not observed behaviour.

- **Tax evasion acceptability:** "Perception of tax evasion", where 0 = "always unacceptable" and 10 = "acceptable in some situations".
- **Undeclared work acceptability:** "Opinion on undeclared work", where 0 = "always unacceptable" and 10 = "acceptable in some situations".
- Higher values indicate greater tolerance of informal economic behaviour.

Similar questions appear in other surveys and in the tax-morale literature.

- **Tax morale lineage:** the WVS/EVS ask whether "cheating on taxes if you have the chance" is justifiable, a standard measure used in the tax-morale literature (e.g. Alm and Torgler, 2011).
- **Undeclared-work lineage:** European Commission Eurobarometer surveys measure attitudes and perceptions toward lawful paid activities that are not declared to public authorities (e.g. Special Eurobarometers 284, 402 and 498).

TRAILS-I brings both attitudes together with financial literacy in one harmonised survey covering 31 countries.

Why attitudes and norms matter

These are normative tolerance measures, but that is precisely why they are informative.

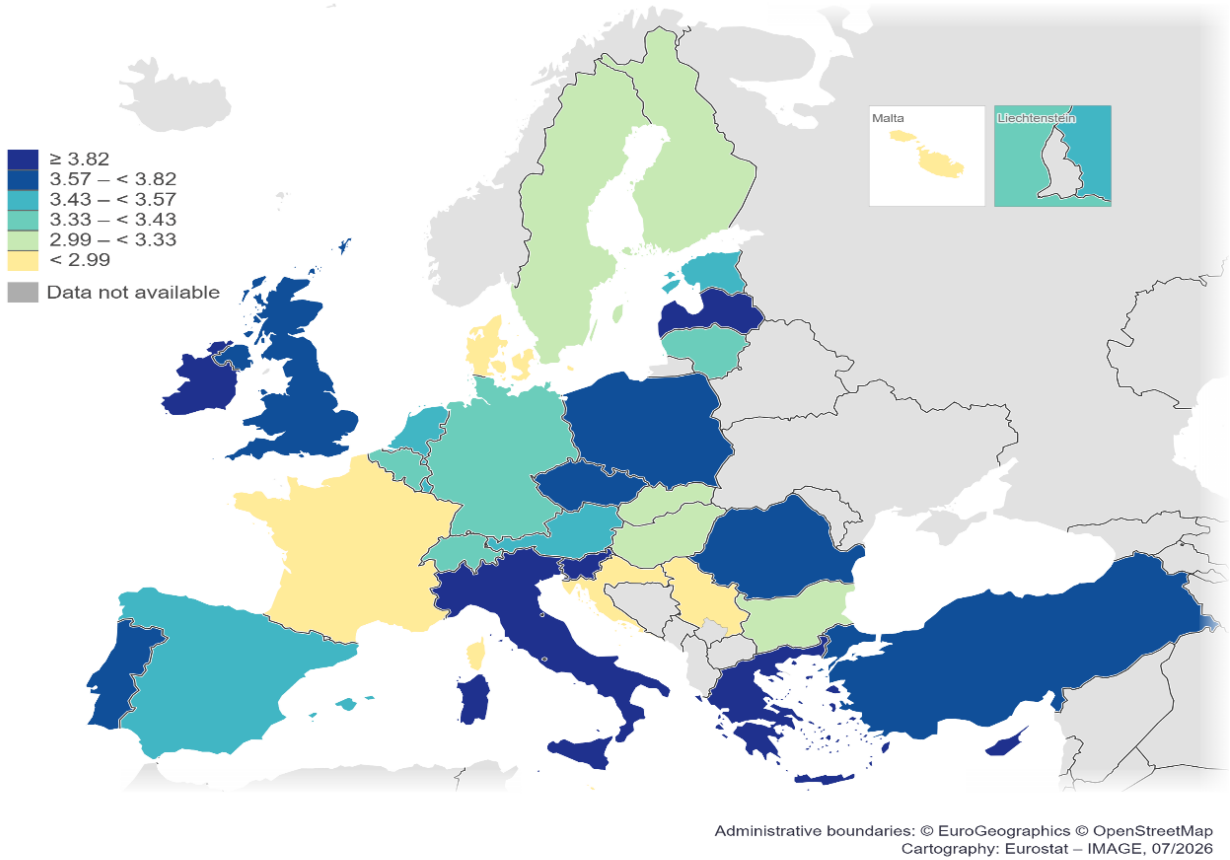
- **Beyond deterrence:** tax compliance depends not only on audits and penalties, but also on trust, fairness, legitimacy, social norms and intrinsic motivation (Slemrod, 2007; Alm and Torgler, 2011; Batrancea et al., 2019).
- **Why norms can be persistent:** recent NBER evidence on cultural persistence argues that norms can remain "sticky" because they are transmitted vertically, horizontally and through institutions (Giuliano, 2026).
- **Why this matters here:** tolerance of tax evasion and undeclared work captures part of the normative environment in which informal behaviour is judged more or less acceptable.

Why keep two outcomes?

- **Tax evasion:** primarily a fiscal-compliance attitude linked to reporting, taxation and revenue collection.
- **Undeclared work:** also a labour-market/formality attitude, with implications for social protection, pensions and formal-sector attachment.

If norms matter and persist, attitudes toward informality are economically meaningful outcomes rather than "soft" survey responses.

Tax-evasion tolerance has its own geography

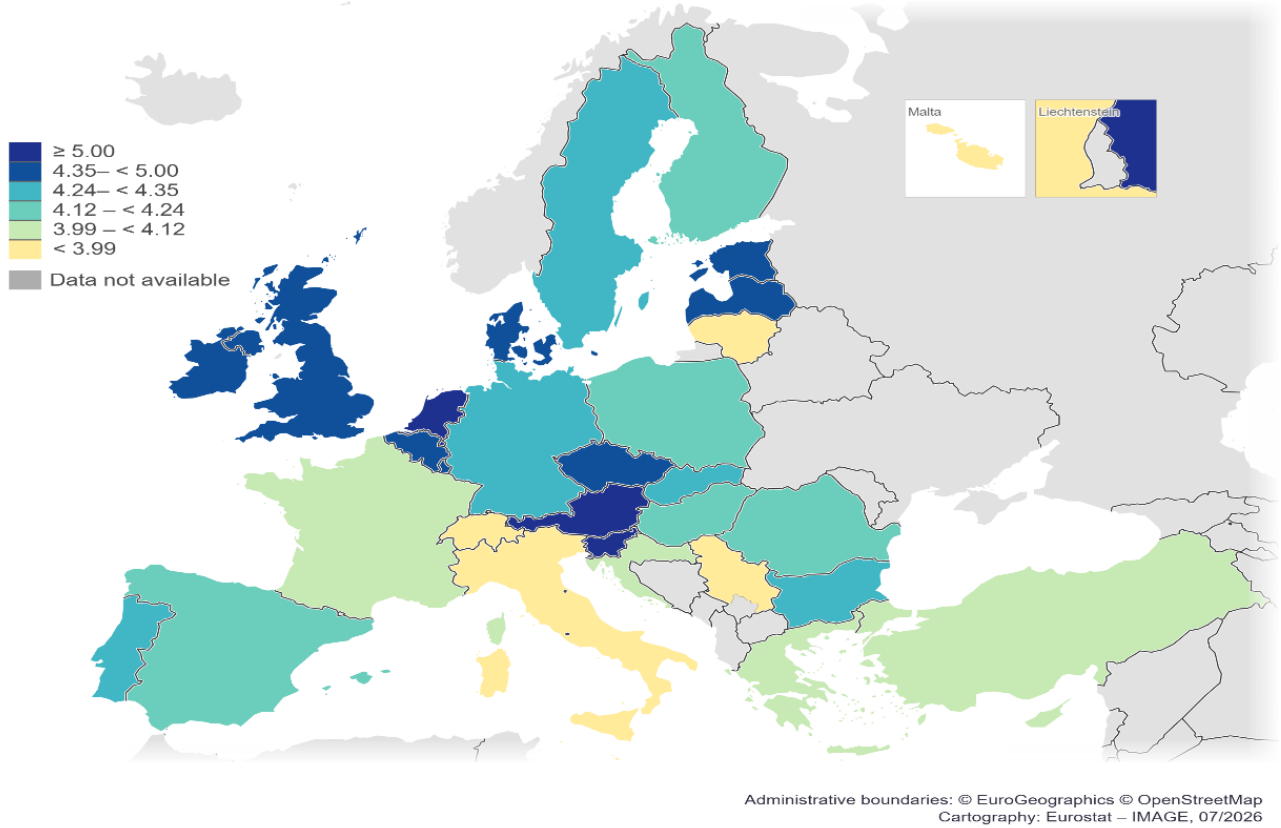


Notes: higher values indicate greater acceptability of tax evasion.

- The geography of tax-evasion acceptability is not the inverse of financial literacy.
- This points to the role of institutions, norms and enforcement environments.
- The key empirical question is whether literacy still predicts attitudes within those environments.

Financial literacy and tax morale are related, but not reducible to country averages.

Undeclared-work tolerance is related but not identical



- Undeclared work has a different level and geography from tax evasion.
- The perceived costs may involve labour-market status, social insurance and future benefits.
- Separate outcomes allow us to test whether the literacy gradient is stronger for one form of informality.

Notes: higher values indicate greater acceptability of undeclared work.

The paper treats informality as a family of related but distinct attitudes.

Deterrence models start from expected costs

Tax evasion is classically modelled as a choice under uncertainty

Allingham and Sandmo (1972); Srinivasan (1973); Yitzhaki (1974); Sandmo (1981).

- Individuals compare the gain from underreporting against expected audit and penalty costs.
- The core primitives are tax rates, detection probabilities, penalties and risk preferences.
- Later refinements adjust the penalty base and connect evasion to optimal tax design.

→ **Financial literacy can affect how individuals understand this expected-cost calculation.**

Compliance depends not only on willingness to cheat, but also on ability to cheat:

Kleven et al. (2011); Pomeranz (2015); Slemrod (2007).

- Third-party reporting sharply limits opportunities for underreporting.
- VAT paper trails create self-enforcing compliance and spillovers through trading networks.
- Information-based enforcement helps explain high compliance even when audit rates are low.

→ **Information changes opportunities to evade. The opportunity structure matters; literacy may matter more where consequences are harder to observe.**

Tax morale adds voluntary compliance
Financial literacy is decision-making capital

Compliance is also shaped by trust, fairness, legitimacy and social norms.

Andreoni, Erard and Feinstein (1998); Slemrod (2007); Alm and Torgler (2011); Batrancea et al. (2019); Puklavec et al. (2025).

- Expected-utility models predict more evasion than is often observed.
- Tax morale captures intrinsic motivation and moral attitudes toward paying taxes.
- Trust and perceived power of tax authorities jointly shape voluntary and enforced compliance.

Financial literacy improves the processing of economic information.

Lusardi and Tufano (2009); Lusardi and Mitchell (2014); Kaiser et al. (2022).

- It predicts saving, borrowing, retirement planning, portfolio choice and financial resilience.
- Debt literacy is especially relevant for understanding compounding and long-term costs.
- Financial education has positive causal effects on knowledge and downstream behaviour in experimental evidence.

The same capability may also change attitudes toward informal financial behaviour.
This paper studies attitudes, so it directly enters the tax-morale tradition.

The gap: capability and tax morale are rarely integrated

The literature has the ingredients, but not the direct test.

- Tax compliance research models incentives, information, institutions and norms.
- Financial literacy research models information processing and long-horizon decisions.
- Our mechanism: literacy changes the perceived long-term cost of informality.
- The empirical test: whether literacy predicts lower tolerance of informality in comparable European microdata.

Financial literacy may reduce financially motivated wrongdoing
Recent evidence links financial education to lower financial crime.

Freed and Hackney (2026)

- Mandatory financial education in Virginia reduced subsequent financial-crime charges.
- The effect appears concentrated in embezzlement, consistent with a financial-constraint mechanism.
- This suggests social returns to financial education beyond private household decisions.

This paper asks a related question for European attitudes toward tax evasion and undeclared work.
The contribution is not to replace tax morale, but to add a capability channel to it.

Individuals tolerate informality when perceived benefits exceed perceived costs.

Latent net value of an informal action

$$I_i^* = B_i^I - p_i(L_i)F_i - M_i(L_i) - C_i^F(L_i) + \varepsilon_i$$

Observed tolerance of informality:

$$A_i = g(I_i^*)$$

- B_i^I: perceived short-run benefit of informality.
- $p_i(L_i)F_i$: perceived expected sanction cost.
- $M_i(L_i)$: moral/civic cost.
- $C_i^f(L_i)$: forgone formal-sector benefits.

Financial literacy enters through perceived costs, not through income alone.

Where financial literacy enters

Financial literacy can make hidden costs more visible.

Three channels

- **Expected sanction cost:** better understanding of probabilities, penalties, audit risk and information reporting *(Allingham and Sandmo, 1972; Yitzhaki, 1974; Slemrod, 2007; Kleven et al., 2011; Pomeranz, 2015)*.
- **Intertemporal cost:** clearer valuation of pensions, credit records, formal-sector benefits and long-run resilience *(Jappelli and Padula, 2013; Lusardi and Mitchell, 2014; Kaiser et al., 2022; Freed and Hackney, 2026)*.
- **Moral/civic cost:** stronger awareness of fiscal exchange, public goods, trust, legitimacy and social norms *(Feld and Frey, 2002; Slemrod, 2007; Alm and Torgler, 2011; Batrancea et al., 2019; Giuliano, 2026)*.

➢ The key distinction is that the first channel links to the classic deterrence and information-reporting literature; the second links to financial literacy as decision-making human capital; and the third links to tax morale, fiscal exchange and persistent norms.

Prediction: Financially literate respondents should display lower tolerance of tax evasion and undeclared work.

Mechanism in comparative-static form

Financial literacy increases the perceived cost of informality.

Expected sanction cost

$$\frac{\partial [p_i(L_i)F_i]}{\partial L_i} \geq 0$$

Formal-sector benefits

$$\frac{\partial C_i^F(L_i)}{\partial L_i} \geq 0$$

Moral / civic cost

$$\frac{\partial M_i(L_i)}{\partial L_i} \geq 0$$

- The model does not require financial literacy to make people morally “better”.
- It requires literacy to change how costs, future consequences and fiscal trade-offs are perceived.
- That mechanism is consistent with both deterrence and tax-morale perspectives.

The mechanism is cognitive and intertemporal, not merely normative.

Main comparative static

The model predicts a negative literacy gradient in tolerance of informality.

$$\frac{\partial E[A_i \mid L_i, X_i]}{\partial L_i} < 0$$

Interpretation

- An additional correct financial-literacy answer should reduce the reported acceptability of informality.
- The effect should be stronger where long-run costs are salient or where institutions make those costs credible.
- The sign could be attenuated if literacy also improves concealment or perceived ability to evade.

The empirical tests focus first on sign and robustness, then on heterogeneity.

Empirical predictions

The model leads to four empirical predictions.

- P_1: Financial literacy is negatively associated with tolerance of tax evasion.
- P_2: Financial literacy is negatively associated with tolerance of undeclared work.
- P_3: The gradient is stronger where hidden costs are more salient: pensions, resilience, formality and trust.
- P_4: Candidate mediators map onto three model channels: sanction awareness, intertemporal/formal-sector cost, and civic fiscal exchange.

The empirical analysis tests the sign of the gradient and the channels behind it.

Mechanism channels to take seriously

The model implies three cost channels.

1 Expected sanction / rule-awareness cost

Literacy may sharpen understanding of detection risk, penalties, audit probabilities and reporting systems.

Proxies: political literacy; rule-awareness / justice orientation.

(Allingham and Sandmo, 1972; Yitzhaki, 1974; Slemrod, 2007; Kleven et al., 2011; Pomeranz, 2015).

2 Intertemporal / formal-sector cost

Literacy may make future losses more visible: pensions, credit records, social insurance, resilience and formal labour-market attachment.

Proxies: retirement literacy, pension exposure, shock-coping diversity, labour-market resilience, adaptability and upskilling.

(Jappelli and Padula, 2013; Lusardi and Mitchell, 2014; Kaiser et al., 2022; Lusardi and Tufano, 2009; Lusardi and Mitchell, 2014; Freed and Hackney, 2026).

3 Moral / civic / fiscal-exchange cost

Literacy may increase awareness that informality weakens public goods, redistribution and institutional reciprocity.

Proxies: trust in political institutions and redistribution orientation.

(Andreoni et al., 1998; Feld and Frey, 2002; Torgler, 2007; Slemrod, 2007; Kirchler et al., 2008; Alm and Torgler, 2011; Batrancea et al., 2019).

The mediation analysis tests observable TRAILS-I proxies for the three theoretical channels.

Baseline specification

The baseline compares individuals within country contexts.

Main estimating equation

$$Y_{icr} = \beta FL_{icr} + X'_{icr}\gamma + \delta_c + \varepsilon_{icr}$$

- Y_{icr} is the 0-10 acceptability score for individual i in country c and region r.
- FL_{icr} is the 0-3 financial-literacy index.
- X_{icr} includes demographics, education, labour-market status, income and wealth.
- δ_c captures country fixed effects; robustness uses regional fixed effects.

β is the within-country literacy gradient in informality tolerance.

Controls and interpretation

The preferred OLS specification is demanding, but still descriptive.

- Controls: gender, age, age squared, marital status, education and labour-market status.
- Income and wealth deciles are added progressively to test whether the gradient is just socioeconomic status.
  ❖ Note: These deciles are custom in the TRAILS-I survey
- Country fixed effects absorb institutional, cultural and enforcement-level differences at the national level.
- Regional fixed effects provide a stronger within-country comparison where available.

The baseline estimates are associations;
the IV results are presented as preliminary causal evidence.

Ordered-response model

The outcomes are ordinal, so we also estimate ordered probit and generaralized ordered probit models.

$$Y^*_{icr} = \beta FL_{icr} + X'_{icr}\gamma + \delta_c + u_{icr}$$

Observed response rule

$$Y_{icr} = j \iff \kappa_{j-1} < Y^*_{icr} \leq \kappa_j$$

- This respects the ordered nature of the 0–10 responses.
- Marginal effects show where probability mass moves along the response scale.
- The generalised ordered probit relaxes the parallel-lines / proportional-odds assumption, allowing the literacy effect to vary across response thresholds.

The ordered model tests whether literacy shifts respondents away from permissive categories. The generalised specification shows whether literacy shifts respondents away from permissive categories differently across the response scale.

IV strategy

The IV evidence uses parental and early-exposure instruments for literacy.

First stage

$$FL_{icr} = \pi Z_{icr} + X'_{icr}\theta + \delta_c + \nu_{icr}$$

Second stage

$$Y_{icr} = \beta \widehat{FL}_{icr} + X'_{icr}\gamma + \delta_c + e_{icr}$$

- Z_{icr} captures parental and early-life exposure variables related to financial capability formation.
- The estimates are informative but should be interpreted cautiously until the instrument set is fully documented and tested.

The IV section is best framed as preliminary evidence, not the final causal claim.

IV identification: two predetermined instruments

Financial literacy may be endogenous to unobserved early-life background, cognitive ability or institutional exposure. The IV strategy uses two predictors of literacy that are plausibly predetermined with respect to current informality attitudes.

Instrument	Source of variation	Relevance for financial literacy	Identification logic
Childhood financial conditions	Reported household financial situation during childhood: very difficult to very easy.	Early exposure to budgeting, saving, formal financial products and educational resources.	Predetermined relative to current informality attitudes; complements controls and fixed effects.
Cognitive skill intensity	HCII-derived occupational skill portfolio from ISCO-ESCO profiles at the 6th digit.	Cognitively intensive skills proxy analytical, numerical, reasoning and planning capacity.	Skill content of occupational experience predicts literacy through capability rather than current tax attitudes.

Specification

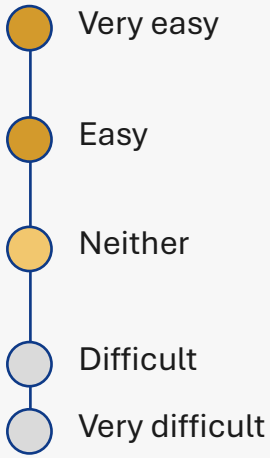
- **First stage:** financial literacy is predicted by childhood financial conditions and cognitive skill intensity, conditional on individual controls and country fixed effects.

The first instrument captures early household exposure;
the second exploits a major TRAILS-I innovation: AI-assisted occupational skill portfolios.

Instrument 1: childhood financial conditions

Early household financial conditions proxy pre-adult exposure to financial decision-making.

Survey measure



Higher values = better household financial situation during childhood.

Why it predicts financial literacy

- More secure households may expose children to budgeting, saving and formal financial products.
- Early resources can shape access to education, economic knowledge and financial confidence.
- Expected first-stage sign: better childhood financial conditions predict higher financial literacy.

Why it is useful as an instrument

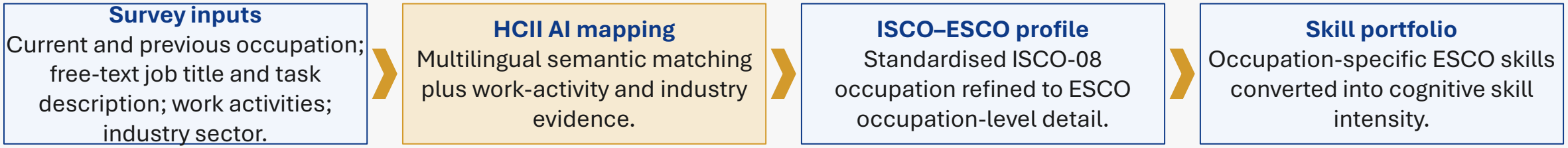
- The measure predates current tax morale and current informality attitudes.
- It is most credible when used with rich controls and alongside the skill-intensity instrument.

Instrument 1 captures pre-adult household exposure to financial decision-making, a natural source of variation in later-life financial literacy.

Instrument 2: HCII occupational skill portfolios

Empirical strategy

A methodological innovation in TRAILS-I:
AI-assisted occupational histories are converted into comparable ISCO–ESCO skill portfolios.



What makes this different from a simple occupation control?

- **Multilingual AI layer:** sentence-transformer models score native-language job descriptions against 3,039 ESCO occupations.
- **Triangulated classification:** semantic similarity is combined with work activity evidence and industry-sector evidence.
- **Beyond ISCO-4:** the pipeline refines respondents to specific ESCO occupations and then to skill portfolios.
- **Empirical leverage:** the instrument uses the cognitive share of the respondent's skill portfolio, not the occupation label itself.
- **Professional AI partnership:** generated jointly with SkillLab, our AI-expert partner in the TRAILS project

The HCII pipeline turns occupational histories into a respondent-level skill measure that can predict financial literacy through cognitive and analytical task content.

Cognitive skill intensity: from skill portfolio to instrument

The second instrument measures how cognitively intensive the respondent's occupational skill portfolio is.

Cognitive skill intensity$_i$ = cognitive, thinking, knowledge-based and transferable skills$_i$ / all specific ESCO skills$_i$

Construction

- Link the HCII-derived ISCO–ESCO occupation profile to ESCO occupation-skill relations.
- Build binary occupation-skill matrices: rows are occupations/ISCO groups; columns are ESCO skills
- Calculate the cognitive share of the respondent's occupational skill portfolio.

First-stage interpretation

- Cognitive skills capture information processing, reasoning, planning, problem-solving and learning.
- These capabilities should make numerical concepts, risk assessment and financial products easier to understand.
- Expected first-stage sign: higher cognitive skill intensity predicts higher financial literacy.

29,872 survey respondents	**31** European countries	**3,039** ESCO occupations	**13,939** ESCO skills

The second instrument is a TRAILS-I methodological contribution: occupational histories become skill portfolios, and skill portfolios become an interpretable source of variation in financial literacy.

Causal mediation as 3-stage IV

Following the logic of Dippel et al. (2021), the mediation design asks whether financial literacy affects a proposed mediator and whether that mediator accounts for the informality-attitude effect.

Stage 1: first stage for financial literacy

$$FL_i = \pi Z_i + X_i'\theta + \delta_c + v_i$$

Use instrument Z_i to isolate exogenous variation in financial literacy.

Stage 2: effect of financial literacy on the mediator

$$M_i = \alpha \widehat{FL_i} + X_i'\lambda + \delta_c + e_i$$

This is the key mediation stage: does instrumented financial literacy move the proposed mediator M_i?

Examples of mediators: financial resilience, perceived long-term costs of informality, trust/tax morale, or formal-sector attachment.

Stage 3: outcome equation with financial literacy and mediator

$$Y_i = \beta \widehat{FL_i} + \rho \widehat{M_i} + X_i'\gamma + \delta_c + u_i$$

Y_i is tolerance of tax evasion or undeclared work; ρ captures the mediated channel.

Interpretation

- Stage 1 must establish a relevant instrument for financial literacy.
- Stage 2 tests whether instrumented financial literacy significantly shifts the mediator.
- Stage 3 tests whether the instrumented mediator predicts informality attitudes once financial literacy is included.

The key test is whether the instrumented mediator is significant in stage 3 and attenuates, or eliminates, the direct effect of instrumented financial literacy.

Financial literacy and tax evasion: main estimates

The negative literacy gradient is stable across all specifications.

	(1) Baseline	(2) + income	(3) + wealth	(4) Region FE	(5) Ordered probit
Financial literacy	**-0.446*** **	**-0.450*** **	**-0.453*** **	**-0.452*** **	**-0.139*** **
Male	0.185***	0.181***	0.168***	0.165***	0.054***
Age	-0.047***	-0.046***	-0.046***	-0.048***	-0.015***
Master level education	-0.672***	-0.681***	-0.699***	-0.661***	-0.235***
Self-employed	0.633***	0.616***	0.603***	0.615***	0.205***
Income controls	No	Yes	Yes	Yes	Yes
Wealth controls	No	No	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	No	Yes
Region FE	No	No	No	Yes	No
% effect	**-12.8%**	**-12.9%**	**-13.0%**	**-13.0%**	**—**
N	29,872	29,872	29,872	29,872	29,872

Notes: Columns (1)–(4) are OLS estimates; column (5) is ordered probit. Standard errors omitted for readability. % effect is based on the mean linear prediction of 3.486.

A one-unit increase in financial literacy is associated with about a 13% lower tolerance of tax evasion.

Financial literacy and undeclared work: main estimates

Main results

The association is again negative and significant, but smaller than for tax evasion.

	(1) Baseline	(2) + income	(3) + wealth	(4) Region FE	(5) Ordered probit
Financial literacy	**-0.306*** **	**-0.296*** **	**-0.293*** **	**-0.292*** **	**-0.092*** **
Male	0.048	0.076	0.075	0.074	0.024
Age	-0.049***	-0.047***	-0.048***	-0.049***	-0.016***
Master level education	-0.675***	-0.633***	-0.630***	-0.606***	-0.203***
Self-employed	0.233	0.287*	0.294*	0.322**	0.090*
Retired	-0.344**	-0.325**	-0.327**	-0.327**	-0.115**
Income controls	No	Yes	Yes	Yes	Yes
Wealth controls	No	No	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	No	Yes
Region FE	No	No	No	Yes	No
% effect	**-7.0%**	**-6.8%**	**-6.7%**	**-6.7%**	**—**
N	29,872	29,872	29,872	29,872	29,872

Notes: Columns (1)–(4) are OLS estimates; column (5) is ordered probit. Standard errors omitted for readability. % effect is based on the mean linear prediction of 4.377.

A one-unit increase in financial literacy is associated with about a 7% lower tolerance of undeclared work.

Financial-literacy components and financial illiteracy

Decomposing the index shows that future-cost anticipation is the strongest component.

Measure	Tax evasion	%Effect	Undeclared work	%Effect
Components entered jointly				
Interest / short-term reasoning	-0.191***	-5.49%	-0.133***	-3.03%
Inflation / future-cost anticipation	-0.852***	-24.44%	-0.590***	-12.11%
Risk evaluation	-0.370***	-10.61%	-0.186***	-4.25%
Illiteracy proxies				
Wrong answers	+0.593***	+17.02%	+0.384***	+8.78%
Don't know answers	+0.138***	+3.95%	+0.088***	+2.01%

Notes:
|OLS specifications with income, wealth and country fixed effects; dependent variables are 0–10 informality-attitude scales.
%Effect is relative to the linear prediction.

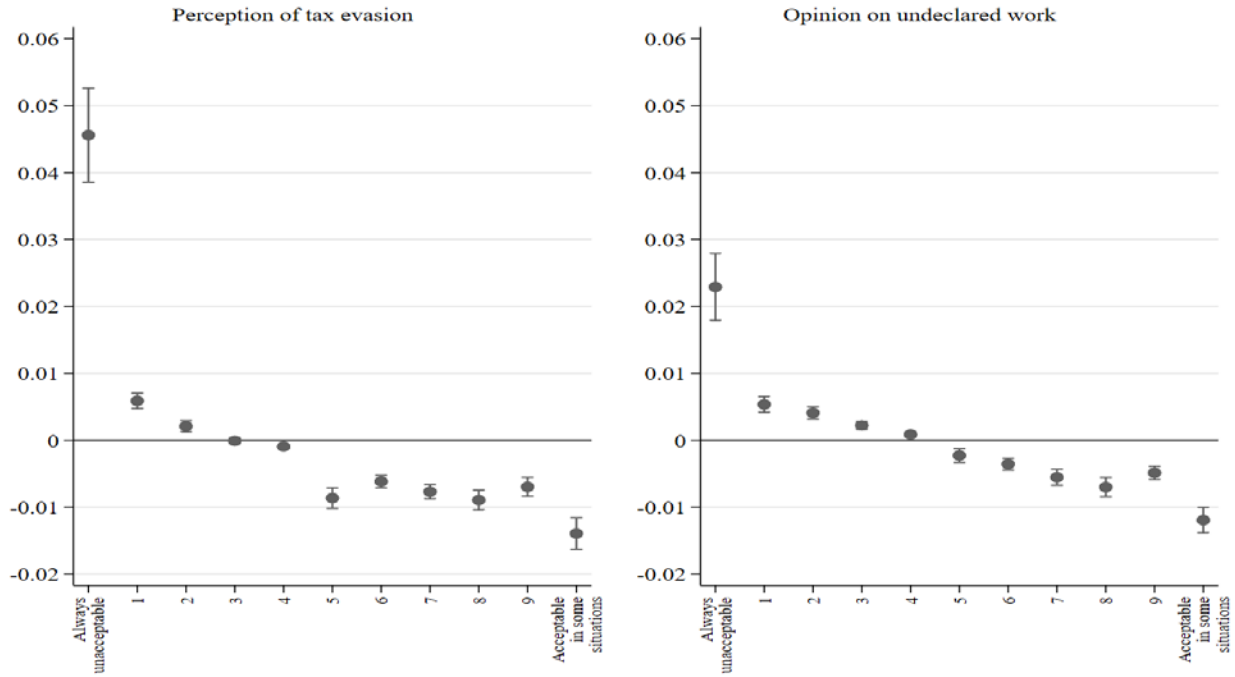
Interpretation

- Inflation literacy dominates: it captures awareness of future costs and erosion of value.
- Risk evaluation also matters; short-term reasoning is smaller once all components enter together.
- Illiteracy works in the opposite direction: wrong answers raise tolerance of informality.
- Effects are consistently larger for tax evasion than for undeclared work.

The component results point to a capability channel: respondents who better understand inflation and risk are less permissive toward informality, while financial illiteracy predicts greater tolerance.

Higher literacy shifts respondents away from permissive categories

Ordered-probit marginal effects by response category



Tax evasion

- +16.1% at category 0: higher strict rejection
- -20.2% at category 9 and -27.7% at category 10
- negative effects dominate permissive categories

Undeclared work

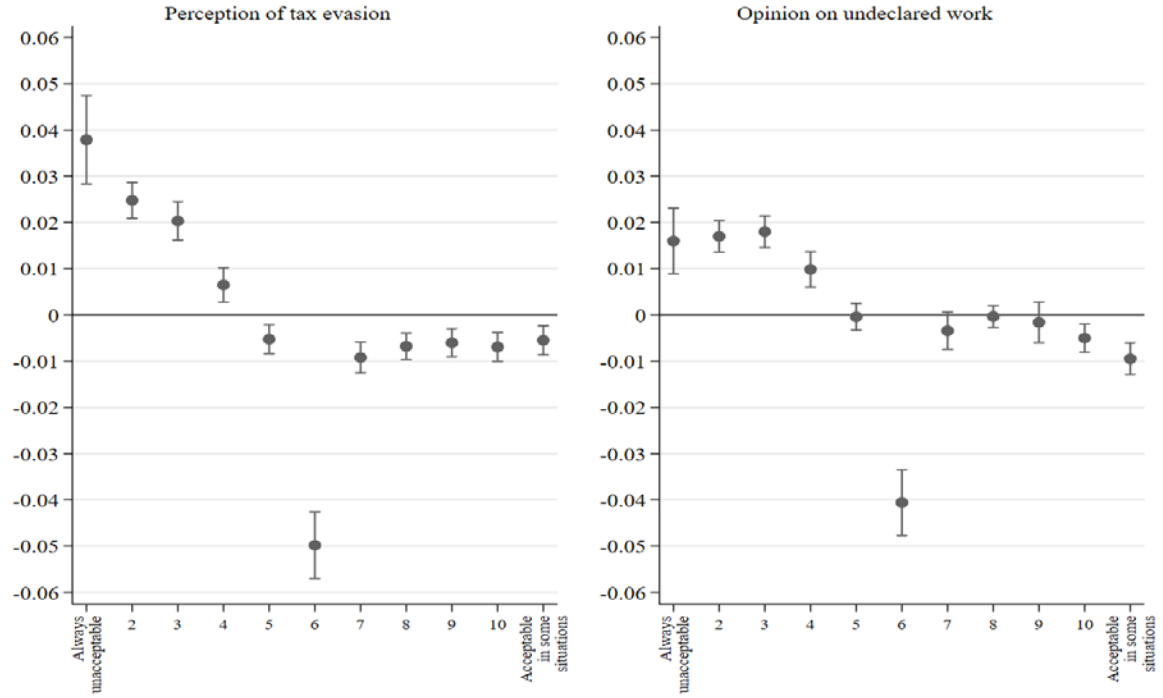
- +30.7% at category 0: strongest relative shift
- -11.9% at category 9 and -17.1% at category 10
- same sign pattern, but smaller at the top end

Ordered probit shows a distributional shift: literacy raises strict anti-informality responses and lowers permissive responses.

	- 0 -	- 1 -	- 2 -	- 3 -	- 4 -	- 5 -	- 6 -	- 7 -	- 8 -	- 9 -	- 10 -
Panel A: Tax Evasion											
Financial literacy	0.046***	0.006***	0.002***	0.001	-0.001***	-0.009***	-0.006***	-0.008***	-0.009***	-0.007***	-0.014***
	[0.004]	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
%Effect	*16.1%*	*5.8%*	*2.4%*	*-0.1%*	*-2.0%*	*-5.6%*	*-9.9%*	*-12.9%*	*-16.4%*	*-20.2%*	*-27.7%*
Predicted probability	*0.2838*	*0.1021*	*0.0872*	*0.0622*	*0.0474*	*0.1549*	*0.0625*	*0.06*	*0.0548*	*0.0347*	*0.0504*
Panel B: Undeclared Work											
Fin.Lit# Correct Responses	0.023***	0.005***	0.004***	0.002***	0.001***	-0.002***	-0.004***	-0.006***	-0.007***	-0.005***	-0.012***
	[0.003]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
%Effect	*30.7%*	*7.2%*	*5.0%*	*3.0%*	*1.5%*	*-1.3%*	*-4.4%*	*-6.7%*	*-9.3%*	*-11.9%*	*-17.1%*
Predicted probability	*0.0746*	*0.0746*	*0.0825*	*0.0737*	*0.059*	*0.1836*	*0.0823*	*0.0838*	*0.0755*	*0.0411*	*0.07*
#Observations	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*

Generalised ordered probit: where the shift is strongest

Marginal effects after relaxing the parallel-lines assumption



What changes relative to ordered probit?

- The generalised model lets the literacy effect vary across response thresholds rather than imposing one common slope.
- This reveals concentrated shifts in selected parts of the response scale, rather than a uniform movement across categories.
- **Relaxing parallel lines** confirms the negative literacy gradient and shows where along the scale the probability mass moves.

Tax evasion

- +24.3% and +23.4% at categories 1 and 2
- -32.2% at category 5: largest relative drop
- negative effects persist through most tolerant categories

Undeclared work

- +21-23% at categories 0-2: stricter responses
- -22.1% at category 5: sharpest relative fall
- -12.2% and -13.6% at categories 9 and 10

	- 0 -	- 1 -	- 2 -	- 3 -	- 4 -	- 5 -	- 6 -	- 7 -	- 8 -	- 9 -	- 10 -
Panel A: Tax Evasion											
Financial literacy	0.038***	0.025***	0.020***	0.006***	-0.005***	-0.050***	-0.009***	-0.007***	-0.006***	-0.007***	-0.005***
	[0.005]	[0.002]	[0.002]	[0.002]	[0.002]	[0.004]	[0.002]	[0.001]	[0.002]	[0.002]	[0.002]
%Effect	*13.3%*	*24.3%*	*23.4%*	*10.5%*	*-11.2%*	*-32.2%*	*-14.7%*	*-11.2%*	*-11.0%*	*-19.8%*	*-10.9%*
Predicted probability	0.2845	0.1022	0.0868	0.0617	0.047	0.1546	0.0629	0.0604	0.0551	0.0349	0.0501
Panel B: Undeclared Work											
Financial literacy	0.016***	0.017***	0.018***	0.010***	-0.001	-0.041***	-0.003*	0.001	-0.002	-0.005***	-0.009***
	[0.004]	[0.002]	[0.002]	[0.002]	[0.001]	[0.004]	[0.002]	[0.001]	[0.002]	[0.002]	[0.002]
%Effect	*21.4%*	*22.7%*	*21.9%*	*13.4%*	*-0.7%*	*-22.1%*	*-4.1%*	*-0.4%*	*-2.1%*	*-12.2%*	*-13.6%*
Predicted probability	*0.0747*	*0.0747*	*0.0823*	*0.0734*	*0.0587*	*0.1834*	*0.0826*	*0.084*	*0.0756*	*0.0411*	*0.0699*
#Observations	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*	*29,872*

Placebo regressions show a much weaker and less systematic pattern

Financial literacy coefficients across placebo outcomes

Placebo outcome	Coef.	% effect
Political ideology	**-0.088*** **	-1.7%
Redistribution	**-0.087*** **	-1.7%
Immigration	**0.024**	0.4%
Trust in political institutions	**-0.178*** **	-4.3%
EU integration	**0.173*** **	3.0%
Environment	**0.144*** **	2.2%
Justice	**-0.036**	-0.6%
Success	**0.105*** **	1.6%
Gender	**0.073*** **	1.3%

Interpretation

- The placebo coefficients are not uniformly negative: some are negative, others positive, and two are statistically insignificant.
- Even when statistically significant, the implied % effects are modest in size: most lie between about 0.4% and 3.0%, with the largest placebo effect at 4.3% (trust).
- This is much smaller and less systematic than the main outcomes, where financial literacy lowers permissive attitudes by about 13% for tax evasion and about 7% for undeclared work.
- As a placebo exercise, this weakens a reverse-causality or generic-response-style interpretation: literacy does not simply predict every attitudinal outcome in the same direction.

The main literacy–informality relationship appears outcome-specific rather than a reflection of broad attitudinal bias.

IV estimates reinforce the negative literacy–informality relationship

Instrumenting financial literacy leaves precisely estimated negative effects for both outcomes.

	Tax evasion (1) baseline IV	Tax evasion (2) + income & wealth	Undeclared work (3) baseline IV	Undeclared work (4) + income & wealth
Financial literacy	**-1.697*** **	**-1.853*** **	**-0.794*** **	**-0.894*** **
Male	0.649***	0.607***	0.236**	0.269***
Age	-0.044***	-0.044***	-0.048***	-0.047***
Self-employed	0.975***	0.871***	0.364**	0.406**
Income & wealth controls	No	Yes	No	Yes
Country FE	Yes	Yes	Yes	Yes
Controls	Demographic, education, labour-market	Same + income/wealth	Demographic, education, labour-market	Same + income/wealth
Observations	**29,776**	**29,776**	**29,776**	**29,776**

*Notes: IV/2SLS estimates. The dependent variables are calibrated 0–10 attitude measures. Standard errors are omitted for readability; *** p<0.01, ** p<0.05.*

- The IV estimates are negative for both outcomes and remain significant after adding income and wealth controls.
- Effect magnitudes are larger than OLS, but the pattern is closer to the ordered-response evidence than to a simple conditional-mean interpretation.

The IV evidence reinforces the same pattern, i.e., higher financial literacy predicts lower tolerance of tax evasion and undeclared work.

IV diagnostics support the identification strategy

The IV estimates are robust across calibrated and original informality outcomes.

Diagnostic / estimate	Calibrated DVs	Original DVs
FL -> tax evasion	**-1.697 to -1.853*** **	**-1.712 to -1.877*** **
FL -> undeclared work	**-0.794 to -0.894*** **	**-0.835 to -0.926*** **
Excluded-instruments F / KP Wald F	54.13 to 98.24***	75.78 to 82.95***
KP rk LM under-ID test	24.28 to 192.46***	149.57 to 163.69***
Anderson-Rubin Wald F	5.31 to 32.16***	4.80 to 18.47***
Hansen J over-ID test	0.039 to 0.850 n.s.	0.005 to 1.367 n.s.
Endogeneity test	3.74 to 25.98**/***	3.39 to 21.81*/***

Interpretation

- The literacy effects remain negative and highly significant in all eight IV specifications.
- First-stage and rank diagnostics are strong: the KP Wald F statistics range from 54 to 98.
- The Hansen J tests do not reject the over-identifying restrictions; endogeneity tests support the IV approach.
- Original outcomes reproduce the calibrated-outcome pattern, so calibration is not driving the result.

*Table reports ranges across baseline and income/wealth specifications. ** p<0.05; *** p<0.01; n.s. = not significant.*

The diagnostic evidence is consistent with relevant instruments and a stable negative literacy-informality relationship.

First stage: the instruments predict financial literacy

Both excluded instruments are positive, precisely estimated, and stable across specifications.

Dependent variable: financial literacy	A3	B3	C3	D3	E3	F3
Childhood financial difficulty	**0.033*** **	—	**0.032*** **	**0.032*** **	—	**0.031*** **
Cognitive skill intensity	—	**0.099*** **	**0.098*** **	—	**0.092*** **	**0.091*** **
Controls	Baseline	Baseline	Baseline	Full	Full	Full
Income and wealth controls	No	No	No	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.126	0.128	0.130	0.149	0.151	0.153

First-stage results

- Childhood household conditions predict later financial literacy.
- Cognitive skill intensity is the stronger first-stage predictor.
- The coefficients are stable after adding income and wealth controls.

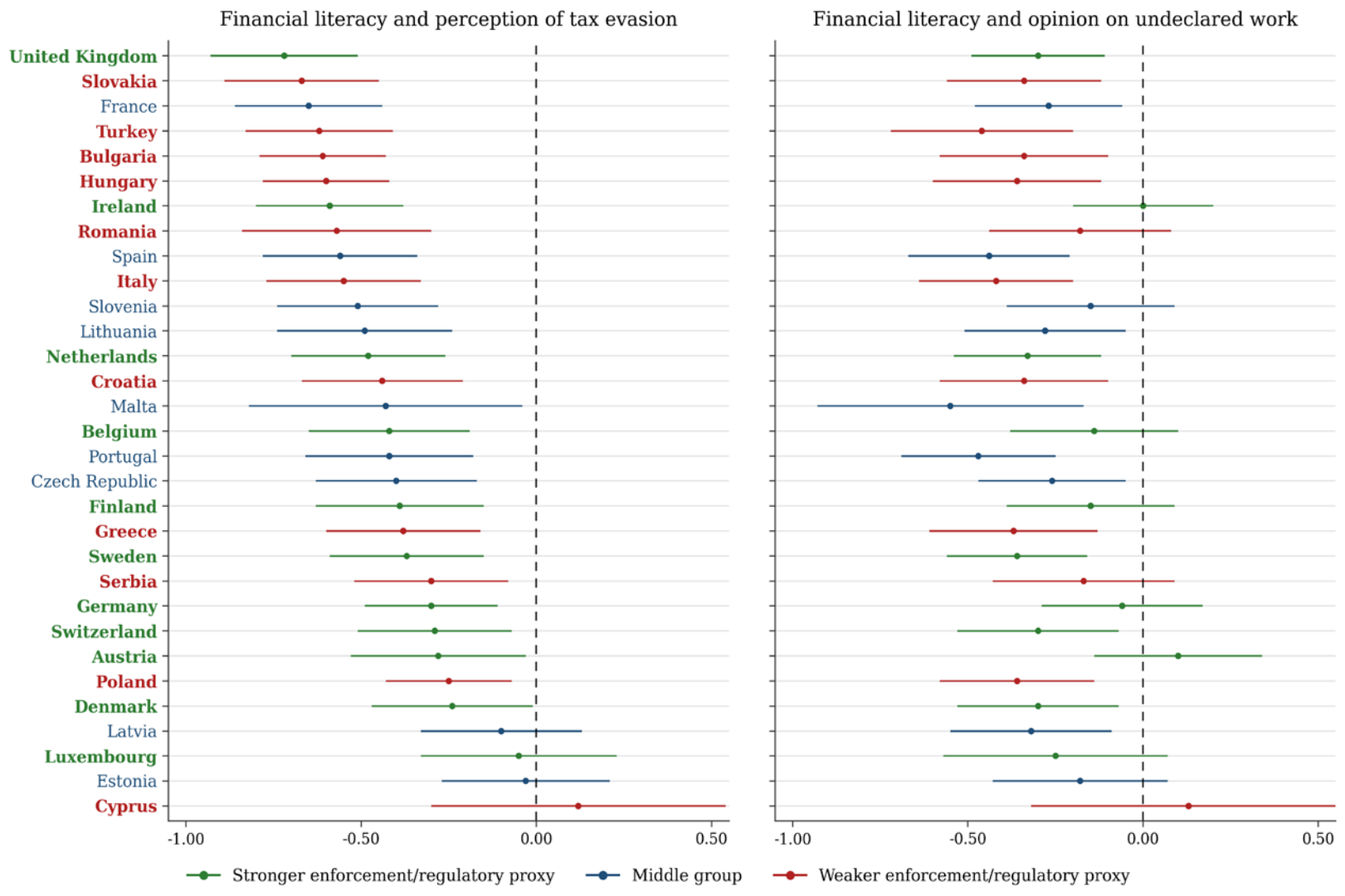
Interpretation for the IV strategy

The two instruments supply complementary variation: early-life financial exposure and occupational cognitive-skill intensity. The first-stage pattern supports relevance before the second-stage IV estimates are interpreted.

Notes: Full specifications include the same demographic, education, labour-market and country controls used in the IV tables.

Country heterogeneity: enforcement proxy does not mechanically sort the gradient

Coefficient plots



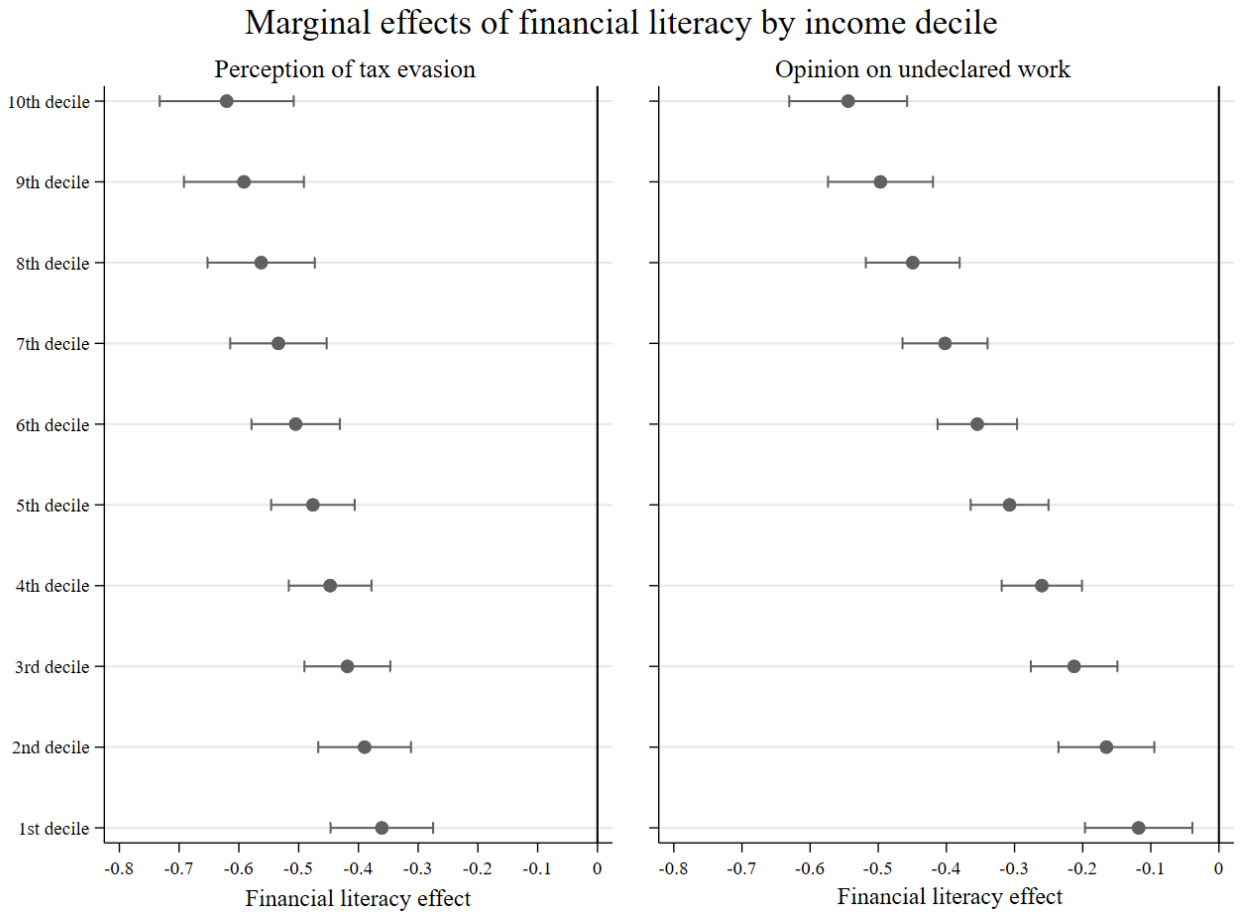
- Both panels use the same country order, fixed by the tax-evasion estimates.
- **Green** = stronger enforcement / regulatory proxy; **red** = weaker proxy; blue = middle group.
- Most country-specific literacy gradients are negative in both outcomes.
- The ordering is not cleanly explained by enforcement strength: green and red countries appear throughout the distribution.
- This suggests that institutional strictness may condition the literacy gradient, but does not dominate it.

Clear pattern: broad negative gradient, but no simple stricter-versus-weaker enforcement split.

Note: colours use external institutional proxies (WGI Rule of Law / Regulatory Quality terciles), not a statutory penalty ranking.

The literacy gradient is not just income or wealth

Interaction plots



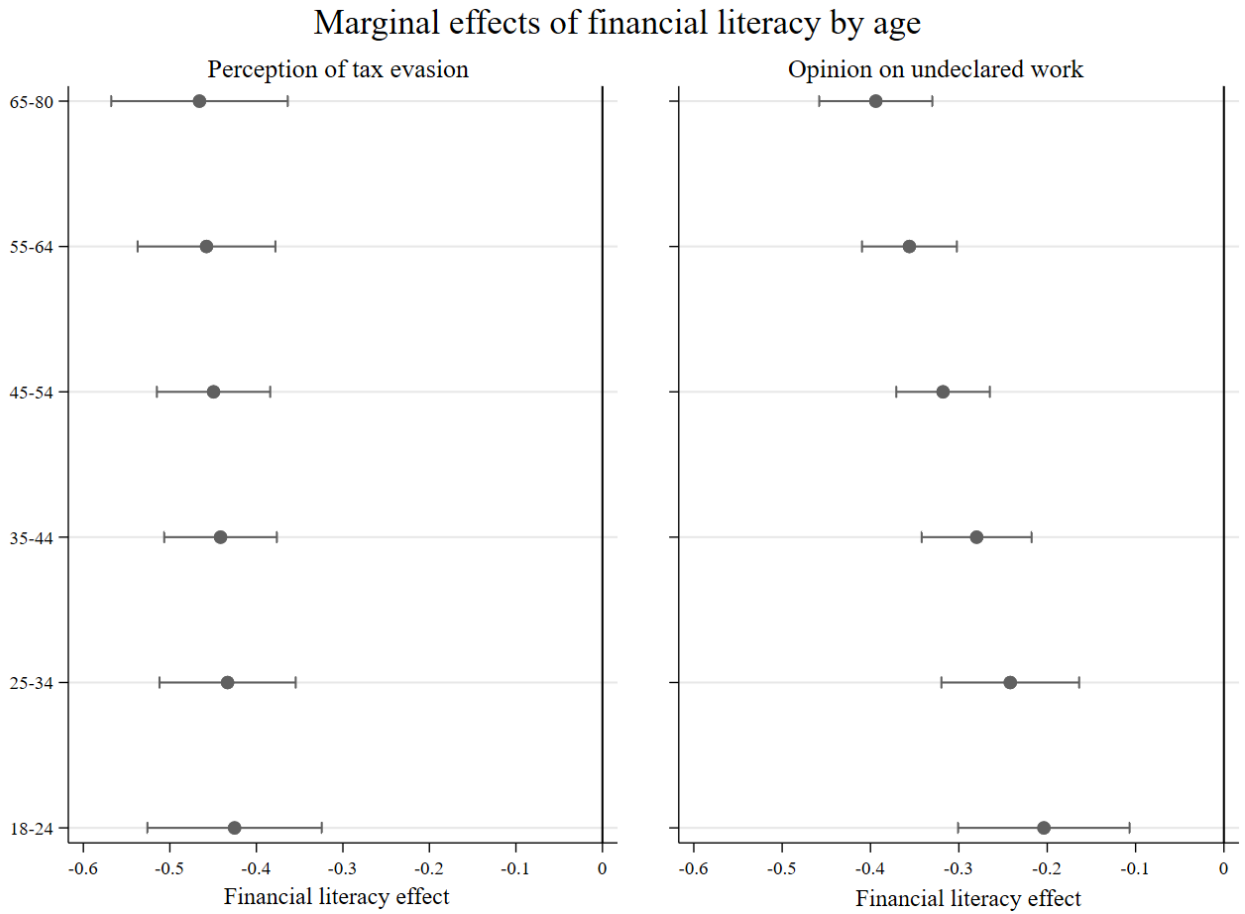
- The negative gradient appears across income and wealth deciles.
- The pattern suggests that financial literacy is not just a proxy for economic resources.
- The finding supports a capability interpretation rather than a pure class gradient.

Financial literacy retains explanatory power beyond income and wealth.

Age patterns are consistent with long-horizon costs

Interaction plots

Heterogeneity

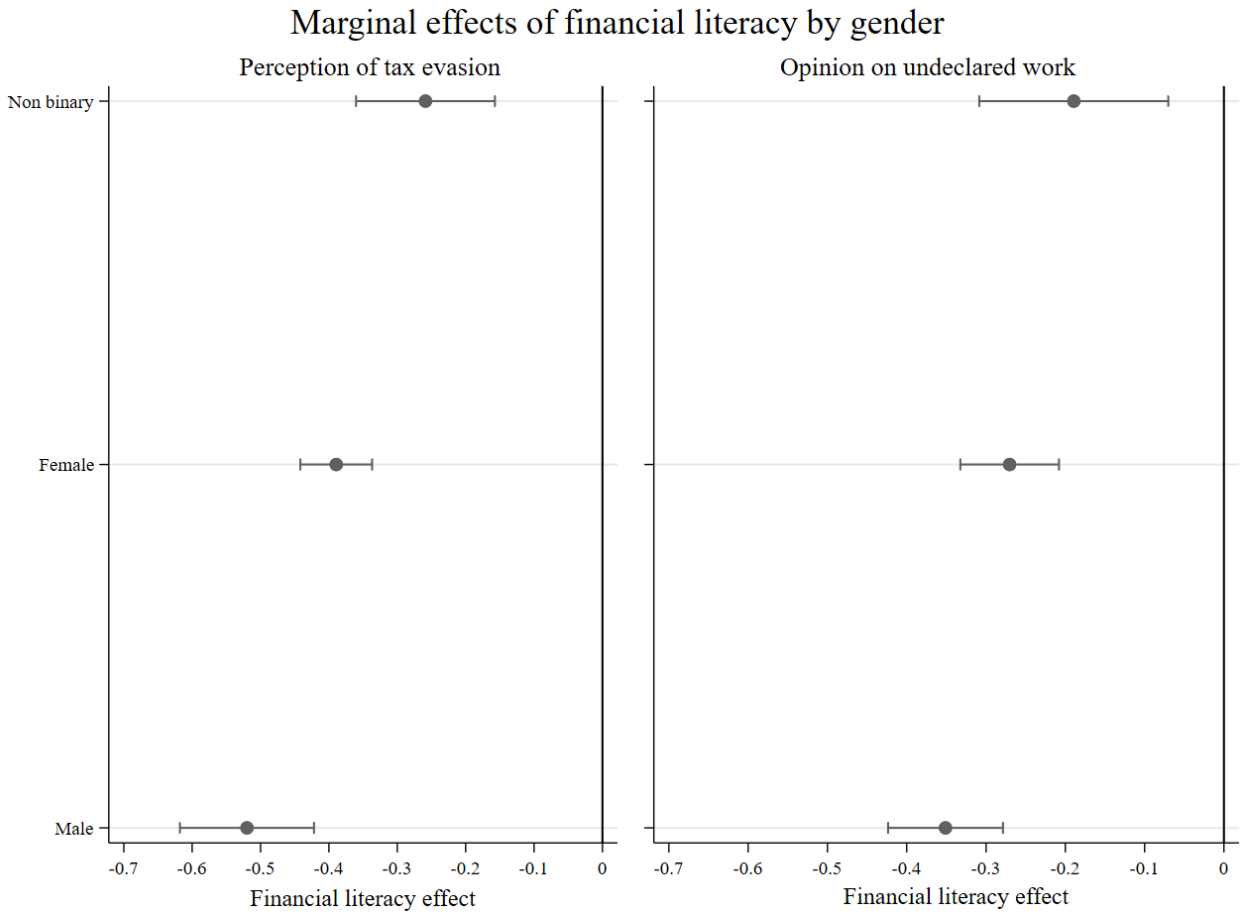


- Negative effects appear across the life cycle.
- Tax-evasion gradients appear stronger among older respondents.
- This is consistent with mechanisms involving pensions, formal entitlements and accumulated economic experience.

Age heterogeneity supports the intertemporal-cost channel.

Gender heterogeneity is present but not the main story

Interaction plots

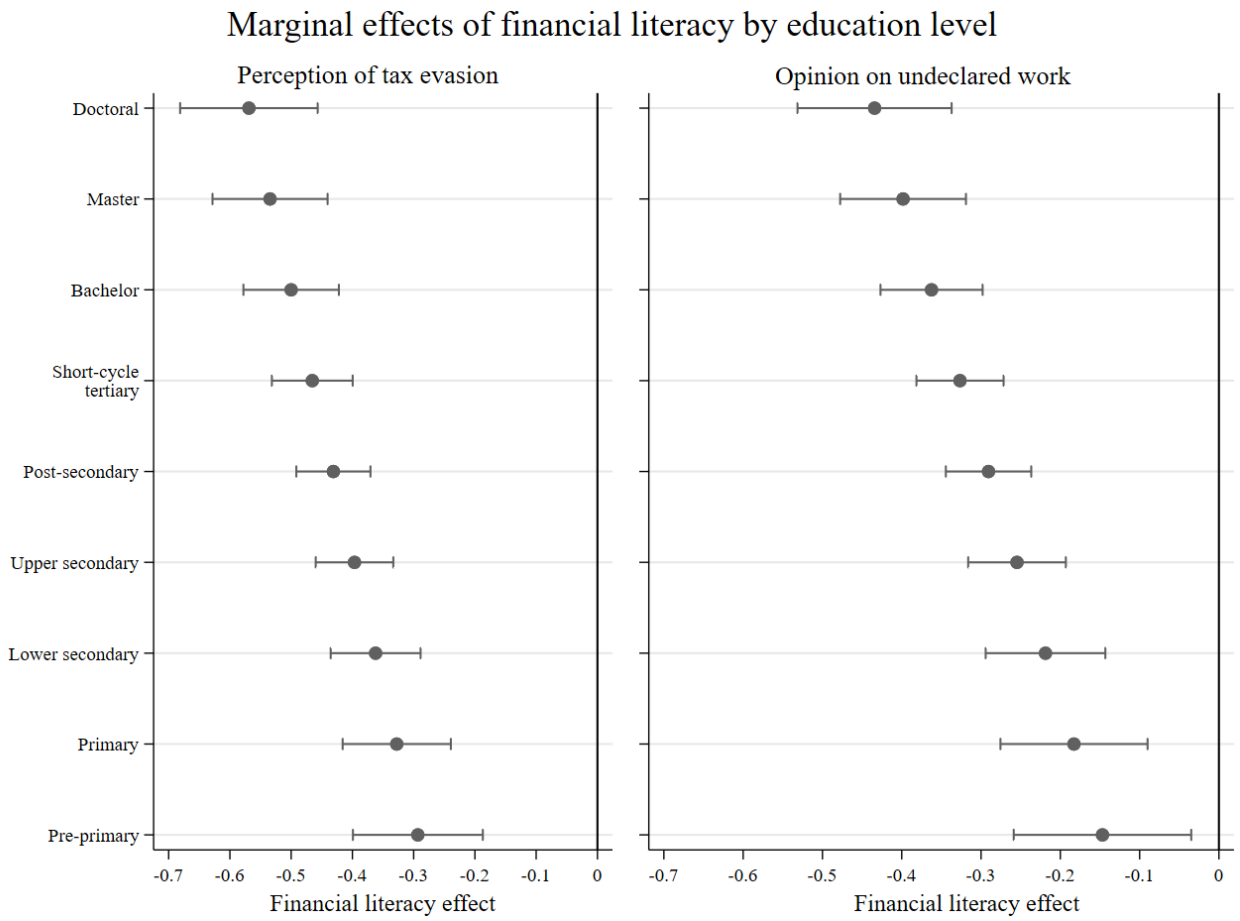


- The negative gradient is visible for both men and women.
- Differences in magnitude should be interpreted cautiously given subgroup precision.
- The key point is that the main result is not driven by one gender group.

Financial literacy predicts informality attitudes across major demographic groups.

Financial literacy is not merely education

Interaction plots

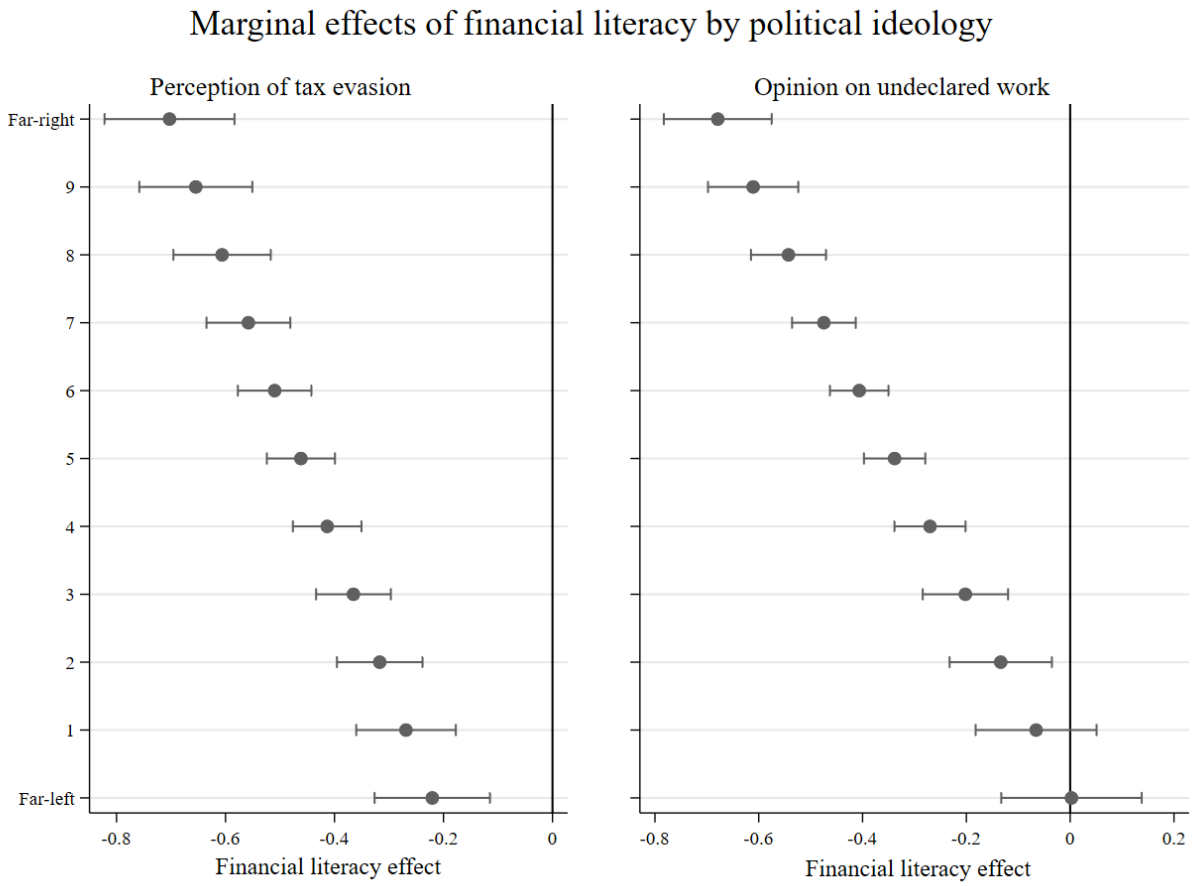


- The negative gradient appears across education groups.
- This matters because formal education and financial literacy are related but distinct.
- The result suggests that specific financial knowledge adds information beyond credentials.

The literacy index captures economic knowledge not fully absorbed by education.

Political ideology may moderate the mechanism

Interaction plots

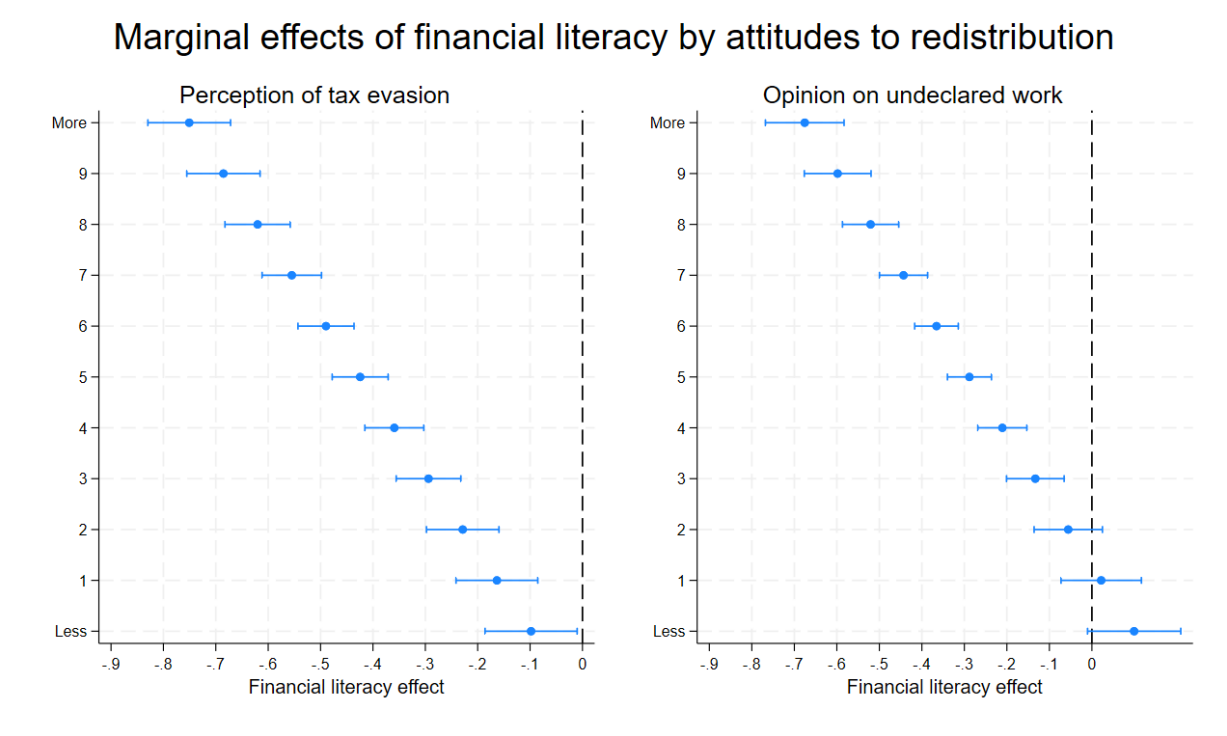


- The gradient is more negative for respondents on the right of the ideology scale, especially for tax evasion.
- This may reflect interactions between literacy, views about government, redistribution and civic responsibility.
- This is a promising extension rather than a settled mechanism.

Institutional and political context should enter the next version of the paper.

Redistribution strengthens the literacy–informality link

Interaction plot: marginal effects of financial literacy by attitudes to redistribution



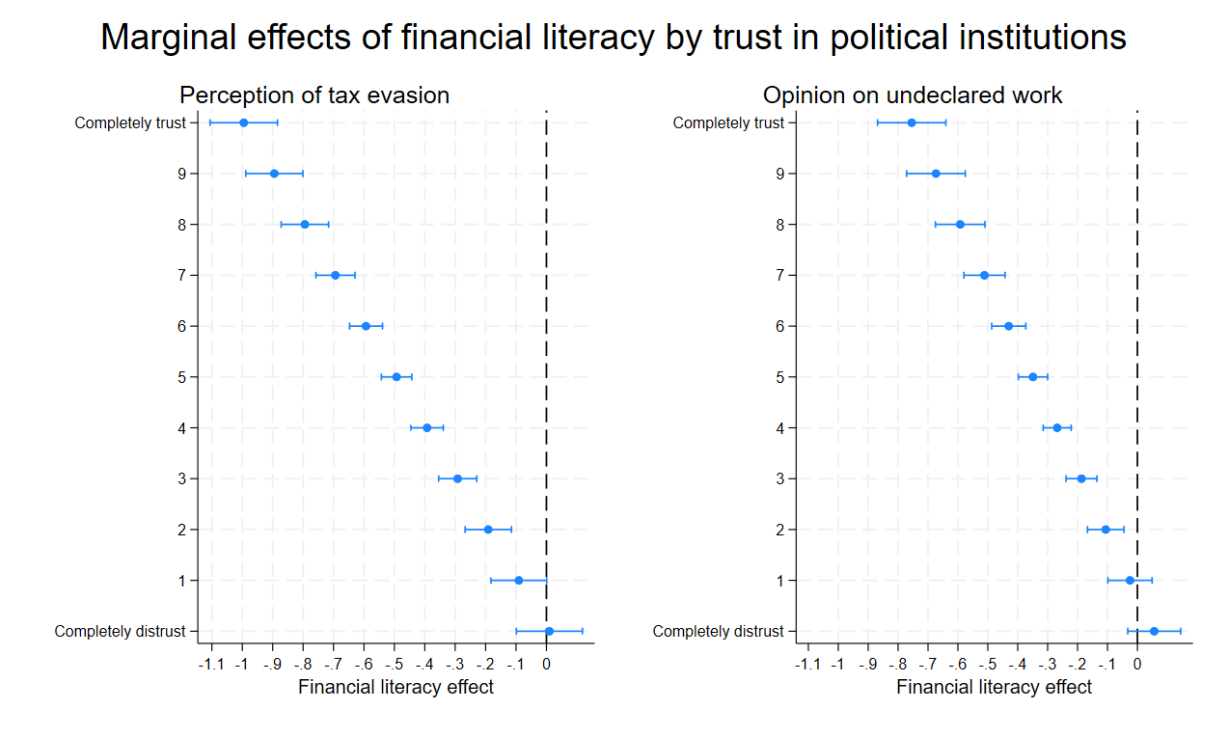
Note: left panel = perception of tax evasion; right panel = opinion on undeclared work.

- The marginal effect of financial literacy is negative across almost the full redistribution scale for both tax evasion and undeclared work.
- The anti-informality effect is strongest among respondents who are more supportive of redistribution, where literacy is associated with markedly lower tolerance of both behaviours.
- The effect weakens as support for redistribution falls and becomes close to zero at the least pro-redistribution end, especially for undeclared work.
- This is consistent with literacy reinforcing awareness of the fiscal exchange: it matters more when respondents are already sympathetic to redistribution and collective provision.

Financial literacy appears most effective in discouraging informality when redistributive preferences are stronger.

Institutional trust strengthens the literacy–informality link

Interaction plot: marginal effects of financial literacy by trust in political institutions



Note: left panel = perception of tax evasion; right panel = opinion on undeclared work.

- Financial literacy has the most negative marginal effects among respondents with higher trust in political institutions.
- As trust declines, the disciplining effect of literacy becomes progressively weaker, and at the lowest-trust end it is close to zero or slightly positive for undeclared work.
- The pattern is especially clear for the undeclared-work outcome, where literacy alone does not seem sufficient when institutional legitimacy is very low.
- Taken together, the results suggest complementarity: financial capability is more likely to translate into anti-informality attitudes when citizens also trust the institutions that collect and use public resources.

Literacy and institutional trust appear to be complements in reducing permissive attitudes towards informality.

What heterogeneity tells us

The relationship is broad, systematic, and informative.

- Across countries and across gender, income and education groups, higher financial literacy is linked to less permissive attitudes to informality.
- The relationship is stronger and more systematic for tax evasion, but it is also visible for undeclared work.
- Differences in magnitudes are informative: literacy matters most where it changes perceived enforcement, formal-sector returns, and institutional trust.
- Heterogeneity therefore complements the follow-up mediation results: the effect is broad, while its strength depends on context and perceived costs.

Heterogeneity strengthens the main result and shows where the mechanism is strongest.

Mediation checks are proxies for the model's three channels

The 3-stage IV exercise is not a list of unrelated mechanisms

Organising principle

The theoretical model has three cost channels. The candidate mediators are observable TRAILS-I proxies nested inside those channels.

Model channel	What financial literacy changes	Candidate TRAILS-I mediators	Evidence
Expected sanction / rule-awareness cost	Rules, probabilities, penalties and enforcement consequences	Political literacy; wider political literacy; justice / punishment orientation	Supporting but weakest proxy set
Intertemporal / formal-sector cost	Future private costs: pensions, resilience, formal-sector benefits, employability	Retirement literacy; pension exposure; shock-coping diversity; labour-market resilience; adaptability; upskilling; employability confidence	Strongest and broadest channel
Moral / civic / fiscal-exchange cost	Social and fiscal costs: public goods, redistribution, trust and reciprocity	Trust in political institutions; pro-redistribution orientation	Contextual and partially mediating

Takeaway: the many mediator variables should be presented as measurement proxies for three theoretical channels, with intertemporal and formal-sector costs as the core empirical mechanism.

Channel 1: expected sanction and rule-awareness cost

This is conceptually central, but empirically the weakest proxy set

Model object: expected sanction cost

- The deterrence channel predicts that literacy raises the perceived expected cost of non-compliance.
- TRAILS-I does not directly ask about tax audits, penalty schedules or perceived detection probabilities.
- Political literacy and justice orientation are therefore rule-awareness proxies, not direct deterrence measures.
- The evidence should be read as supporting context rather than the main mediation result.

Candidate mediators

Mediator	Stage-2 pattern	Stage-3 reading
Political literacy	FL strongly predicts political literacy	Relevant for tax evasion; weaker for undeclared work
Wider political literacy	Same pattern	Similar interpretation
Justice / punishment orientation	Not moved strongly by FL	Weak proxy for expected sanctions

The expected-sanction channel is theoretically important, but the current survey offers only indirect rule-awareness proxies. The evidence is suggestive, not central, for deterrence.

Channel 2: intertemporal and formal-sector costs carry the evidence

Most candidate mediators are different empirical faces of the same model channel

Model object: future/formal-sector cost

- This channel says literacy makes hidden future costs of informality more visible.
- These costs include pensions, social insurance, credit records, formal labour-market attachment and financial resilience.
- The mediation checks point most strongly to this family of mechanisms.
- This is the cleanest empirical bridge between household finance and informality attitudes.

Sub-proxy family	Mediators	Stage-3 implication
Retirement / formal benefits	Retirement literacy; pension exposure	Strongest clean attenuation pattern, especially for undeclared work
Financial resilience	Short-, medium- and long-term coping diversity; resilience gap	Large mediator effects; especially clear for tax evasion
Labour-market resilience	LMR index; adaptability; upskilling; employability confidence	Partial mediation; strongest for adaptability and formal attachment

Financial literacy reduces tolerance of informality primarily by increasing the salience of long-run private costs and the value of remaining attached to formal financial and labour-market institutions.

Channel 3: moral, civic and fiscal-exchange costs condition the gradient

Trust and redistribution explain when literacy turns into anti-informality attitudes

Model object: moral / civic cost

- This channel is not simply “morality”; it is awareness of the fiscal exchange behind formal compliance.
- Trust in institutions makes the cost of informality more credible because citizens believe public resources are used legitimately.
- Redistributive preferences make the social cost of evasion and undeclared work more salient.
- The interaction plots reinforce this reading: literacy matters most where trust or support for redistribution is stronger.

Mediator	How it maps to the model	Empirical role
Trust in political institutions	Legitimacy of fiscal exchange	Strong heterogeneity pattern; partial mediation
Pro-redistribution orientation	Value attached to public provision	Stronger literacy gradient among pro-redistribution respondents

Fiscal-exchange variables are not the whole mechanism; they make the intertemporal and social costs of informality credible. They are best interpreted as contextual mediators and moderators.

Revised mechanism takeaway

Three model channels, one dominant empirical message

1. Rule-awareness cost

Political literacy moves with financial literacy, but direct deterrence is only weakly proxied.

Supporting channel

2. Intertemporal/formal-sector cost

Retirement literacy, resilience and formal labour-market attachment carry the strongest mediation evidence.

Core channel

3. Civic/fiscal-exchange cost

Trust and redistribution help explain when literacy translates into lower informality tolerance.

Contextual channel

- The mediation analysis should be viewed as a structured test of the theoretical model, not a fishing exercise across many mechanisms.
- The strongest conclusion is that financial literacy operates through cognitive and intertemporal cost salience, reinforced by civic-fiscal context.

Financial literacy makes the hidden private and social costs of informality more visible; the evidence is strongest for formal-sector benefits and resilience.

What the full evidence says

The results now form a coherent evidence stack.

Financial literacy is consistently associated with lower tolerance of tax evasion and undeclared work.

Baseline estimates	Stable negative gradients: about 13% lower tolerance of tax evasion and about 7% lower tolerance of undeclared work.
Ordered-response models	Literacy shifts probability mass away from permissive categories and toward strict anti-informality responses.
IV evidence	Instrumented estimates remain negative and significant; first-stage and diagnostic tests support relevance and stability.
Placebo and heterogeneity	Placebo effects are smaller and mixed; the negative gradient appears across countries, income, wealth, education and gender.
Mechanisms	Financial literacy makes the hidden private and social costs of informality more visible; the evidence is strongest for formal-sector benefits and resilience.(intertemporal channel)

The result is not just an education or income gradient: it is an economically meaningful financial-capability gradient.

Mechanisms: financial literacy makes hidden costs visible

The 3-stage IV mediation checks support a cognitive and intertemporal interpretation.

The strongest channels are those closest to long-run consequences and resilience.

Long-term formal-sector costs

Retirement literacy and pension exposure account for a large part of the effect, especially once the mediator enters the outcome equation.

Financial resilience

Shock-coping capacity is strongly moved by literacy and predicts lower tolerance of informality.

Labour-market resilience

Adaptability, upskilling and formal-employability measures help explain why literacy matters for undeclared work.

Fiscal exchange and institutions

Trust and redistribution do not replace the core channels; they condition when literacy translates into anti-informality attitudes.

- The mediation results reject a single “morality only” reading: the evidence is strongest where literacy changes perceived costs, resilience and formal-sector benefits.
- Tax evasion looks more fiscally anchored; undeclared work looks more tied to formal-sector and labour-market channels.

The mechanism is cognitive and intertemporal: literacy changes how respondents perceive the cost of informality.

Conclusion: too literate to evade?

The answer from the evidence is: more literate, less tolerant.

Financial capability belongs in the economics of informality.

Public finance

Adds capability to deterrence, information reporting, trust and tax morale.

Household finance

Extends financial literacy from private financial behaviour to civic-economic attitudes.

European evidence

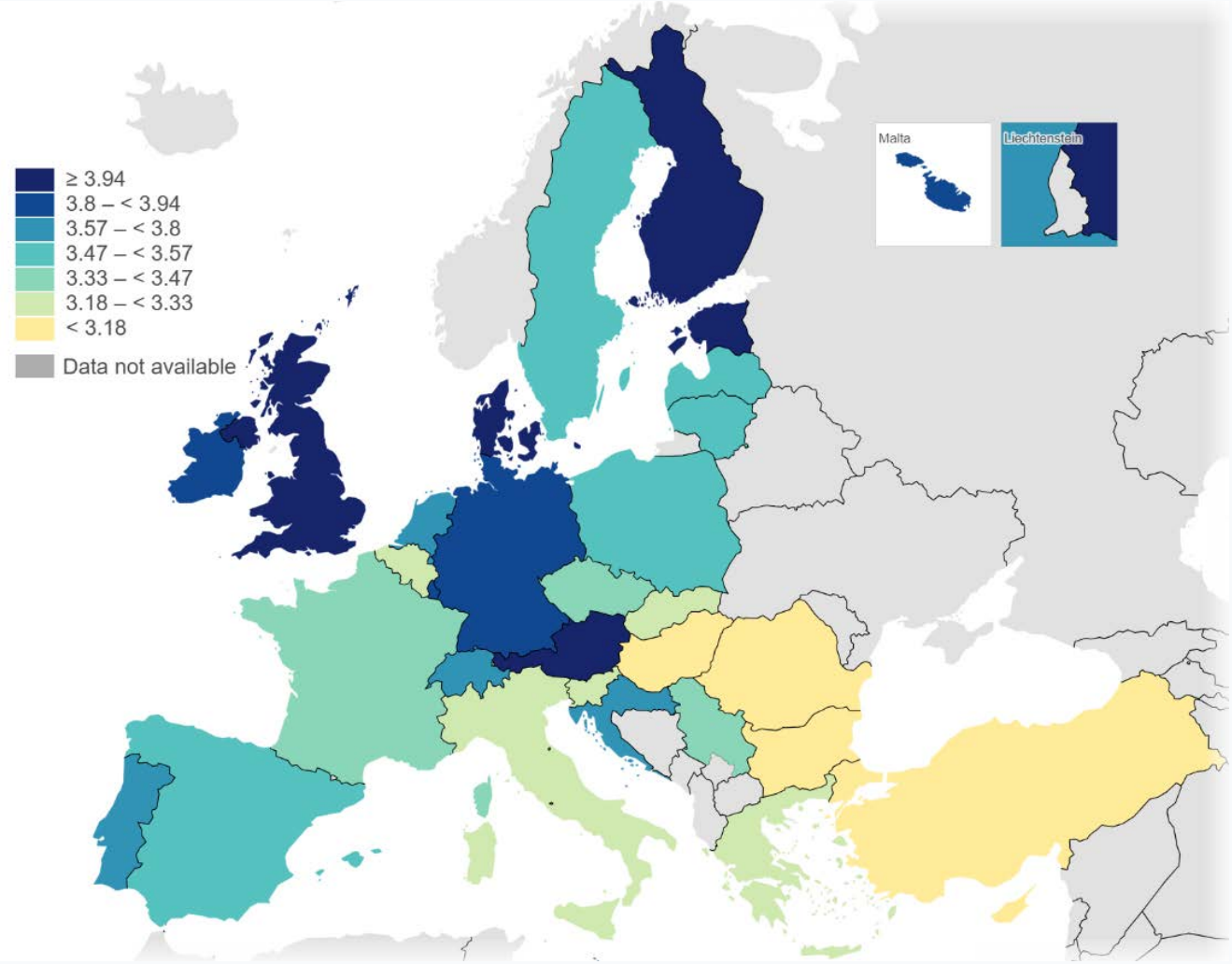
Uses harmonised TRAILS-I microdata for 31 countries to connect literacy, institutions and informality.

- The evidence is strongest for tax evasion, but the undeclared-work results point in the same direction.
- Financial education should be understood not only as household protection, but also as civic-economic capability.
- Financial capability complements institutions: it helps citizens recognise the private and social costs of informality.

Main takeaway: financial literacy does not substitute for enforcement, but it can strengthen the perceived value of formality.

A New Concept: AI Literacy in the EU27+4

EU27 + United Kingdom, Switzerland, Serbia and Turkey

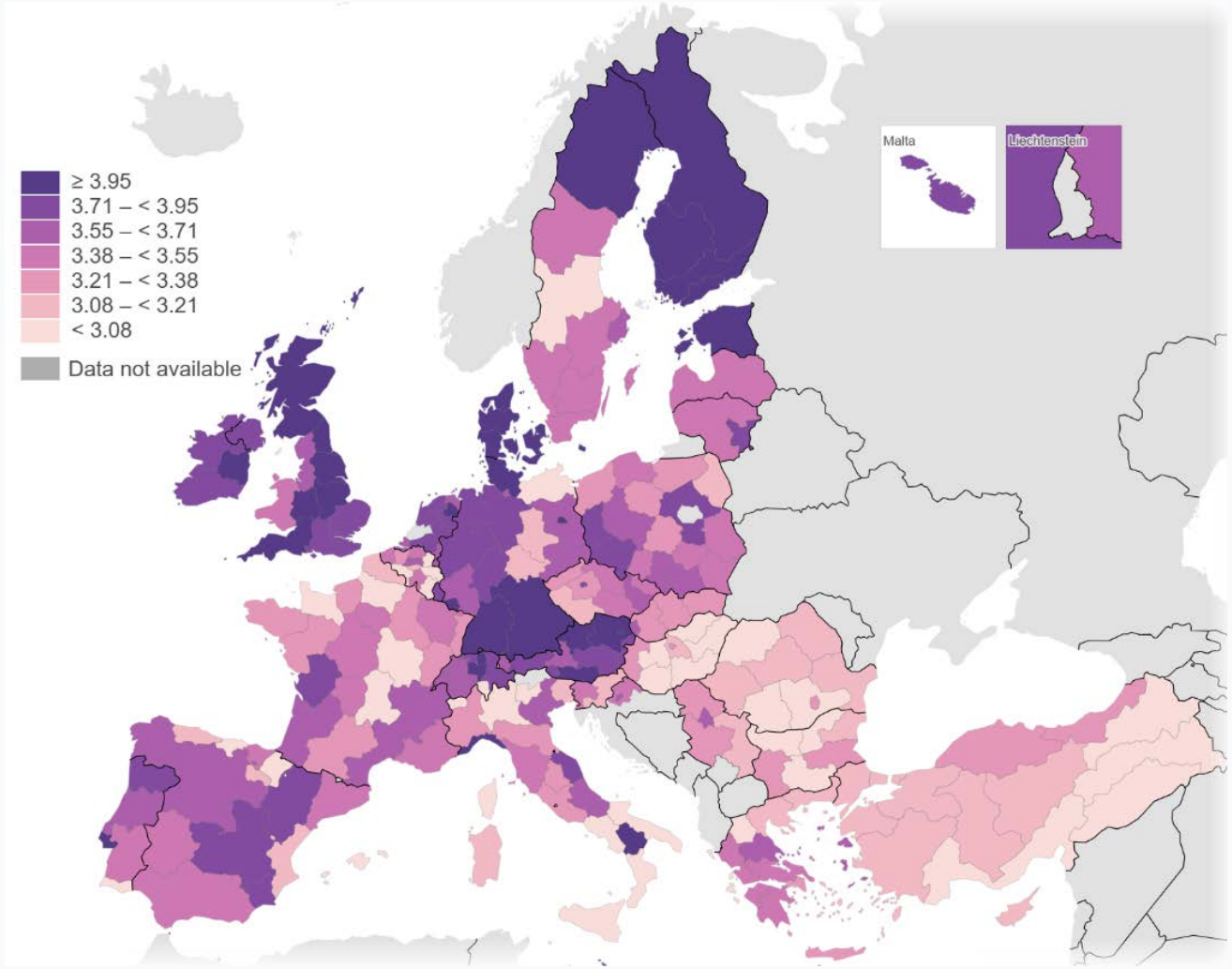


Reading the map

AI literacy extends the framework from financial decision-making to the technological environment in which those decisions are increasingly made.

A New Concept: AI Literacy in the EU27+4

EU27 + United Kingdom, Switzerland, Serbia and Turkey



Reading the map

The implication is broader than AI itself: future financial literacy will increasingly require citizens to understand data, algorithms and automated advice.