

# Fiscal Compliance as Cultural Outcome: A Composite Socio-Fiscal Vulnerability Index for EU Member States

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## ABSTRACT

*This paper proposes that VAT compliance gaps across EU member states are not primarily a product of tax administration efficiency, but rather a downstream manifestation of socio-cultural capital formed during early childhood and adolescence. Drawing on Heckman's early investment theory, Putnam's social capital framework, and Torgler's tax morale research, we construct the Composite Socio-Fiscal Vulnerability Index (CSFVI) — a two-layer indicator combining validated Eurostat variables with a set of non-conventional proxy measures of civic and cultural capital. A central case study analyses Romania's structural paradox: representing approximately 2% of EU GDP yet accounting for roughly 14.8% of the EU's total VAT gap in 2021. We argue this disproportion cannot be fully explained by income levels or administrative weakness, but reflects accumulated deficits in early educational investment, social trust, and civic norm transmission. The paper also introduces a Tax Vulnerability Coefficient (CVT) that adjusts raw VAT gap data for economic development, salary levels and growth trajectories, enabling meaningful cross-country comparison. Finally, we evaluate unconventional socio-behavioural proxies — including library usage, gym memberships, PISA results and the fiscal contribution of religious institutions — and argue these constitute legitimate structural indicators of civic capital when properly theorised, analogous in methodology to established informal economic indices.*

**Keywords:** VAT gap · fiscal compliance · social capital · early education investment · tax morale · composite index · Romania · EU fiscal divergence

## 1. INTRODUCTION

The measurement of fiscal compliance across EU member states has traditionally focused on tax administration architecture, enforcement mechanisms, and penalty structures. This paper challenges that framing. We argue that the most significant determinants of VAT compliance operate at a cultural and sociological level — formed decades before a citizen interacts with any tax authority — and that conventional administrative explanations systematically underweight this structural dimension.

Our departure point is an empirical anomaly. Romania represents approximately 2% of EU GDP and 4% of EU population, yet accounted for approximately 14.8% of the EU's total VAT gap in absolute terms in 2021 (EUR 8.996 billion of a total EUR 60.603 billion, per European Commission VAT Gap Study 2023, first vintage). Note: the 2024 edition of the EC VAT Gap Report revised the 2021 EU-wide total upward to approximately EUR 76 billion due to reclassification of COVID-era payment deferrals. The structural proportions discussed in this paper remain substantively unchanged. No purely administrative explanation adequately accounts for this asymmetry.

We propose instead that Romania's fiscal performance — and more broadly, the divergence in VAT compliance across EU member states — reflects what we term accumulated socio-cultural capital deficits: structural shortfalls in the quality of early educational environments, civic participation density, and the intergenerational transmission of cooperative norms. This is not a novel proposition in the abstract. However, the operationalisation of this intuition into a measurable, comparable, multi-dimensional index has not been attempted systematically for EU fiscal compliance contexts. This paper represents a first such attempt.

## 2. THEORETICAL FOUNDATION

Three bodies of literature converge to support the central thesis.

### 2.1 Early Investment Theory

Heckman's body of work (2006; García et al., 2017) demonstrated that return on investment in early childhood education (ages 0–5) generates annualised social returns of 7–13%, depending on programme design and cohort studied, operating primarily through the formation of cognitive and socio-emotional skills. Critically, these skills include norm internalisation, cooperative behaviour, and deferred gratification — all of which are foundational to voluntary tax compliance. The implication is that a state's expenditure on kindergarten materials, teacher-to-pupil ratios in primary education, and early childhood enrolment rates functions as a long-cycle investment in future fiscal behaviour, with a 20–30 year payoff horizon.

*"The accident of birth is the greatest source of inequality in modern societies. Skills beget skills. Early gaps widen over time. — Heckman, 2006"*

Applied to the fiscal domain: the quality of a child's early educational environment — its pedagogical richness, material resources, and social norms modelled therein — is a better predictor of that child's adult tax compliance than the penalty structure they will face at 45.

### 2.2 Social Capital and Institutional Cooperation

Putnam's foundational study of Italian regional governance (1993) identified the density of horizontal civic networks — choral societies, sports clubs, reading groups, voluntary organisations — as the primary determinant of institutional effectiveness across regions with identical formal structures. The mechanism is trust generalisation: individuals embedded in high-density civic networks develop broader social trust, which extends to public institutions and their demands, including tax authorities.

Fukuyama (1995) extended this to economic performance, showing that high-trust societies exhibit lower transaction costs, stronger public goods provision, and higher voluntary compliance with regulatory frameworks. Tax compliance is structurally a public goods provision problem — the free-rider temptation is real, and only internalised cooperative norms reliably overcome it at scale.

### 2.3 Tax Morale

Torgler (2007) documents that tax morale — the intrinsic motivation to pay taxes independently of enforcement probability — varies enormously across societies and is stable within societies over time. His cross-national World Values Survey analysis identifies the strongest correlates of tax morale as: trust in government institutions, civic participation, educational attainment, and religiosity (in specific institutional configurations). Notably, income level has a weaker correlation with tax morale than social capital variables — meaning that VAT compliance divergence between Romania and the Netherlands, for instance, cannot be adequately explained by the income gap alone.

Taken together, these three frameworks generate the core prediction: societies that invest heavily in early education, maintain dense civic participation networks, and sustain high institutional trust will exhibit structurally lower VAT gaps — not because their tax administrators are more efficient, but because their citizens are more disposed to voluntary compliance.

### 3. THE ROMANIAN FISCAL ANOMALY: A STRUCTURAL READING

#### 3.1 The Scale of the Disproportion

To contextualise Romania's position, consider the following relationship between economic weight and VAT gap contribution:

Indicator	Romania	EU Average	Interpretation
GDP share of EU total	~2.0%	—	Economic weight
Population share of EU	~4.0%	—	Demographic weight
VAT gap as % of VTTL (2021)	~35–37%	~5.3%	Compliance deficit
VAT gap absolute (2021)	~EUR 8.9 bn	—	14.8% of EU total gap
GDP per capita PPS (2023)	~78% of EU avg	100%	Development gap

The key observation: Romania's VAT gap as a percentage of its own tax liability potential (35–37% of VTTL) is roughly 7× the EU average. The income differential alone (approximately 22% below EU average in PPS terms) accounts for, at most, a fraction of this gap. Something structural is at work.

#### 3.2 The CVT — Tax Vulnerability Coefficient

To enable methodologically sound cross-country comparison, raw VAT gap figures must be adjusted for development level. The CVT (Coeficientul de Vulnerabilitate Fiscală) is a composite normalised coefficient that measures a country's fiscal vulnerability relative to what its economic profile would predict. It does not measure the size of the VAT gap in isolation, but the gap between actual fiscal performance and expected fiscal performance given income levels, wage structure, and growth trajectory.

The four input variables are defined as follows:

Symbol	Variable	Definition	Role in CVT	Source
<b>VG</b>	VAT Gap	Difference between theoretical VAT liability (VTTL) and actual VAT collected, as % of VTTL	Primary dependent variable — measures fiscal non-compliance	EC VAT Gap Report (annual)
<b>SAL</b>	Average Gross Salary	Average annual gross earnings in EUR (national level)	Economic cost-of-living control — high wages reduce vulnerability	Eurostat earn_ses_pub2s
<b>PIBpc</b>	GDP per capita (PPS)	GDP per capita in Purchasing Power Standards (EU27=100)	Structural development control — adjusts for wealth level	Eurostat nama_10_pc
<b>GR</b>	GDP Growth Rate	Annual real GDP growth rate (%)	Dynamic trajectory control — rising economies may show transition gaps	Eurostat nama_10_gdp
<b>Z(x)</b>	Z-score	Standardised score: $(x_i - \bar{x}_{EU}) / \sigma_{EU}$	Normalises each variable relative to EU mean and standard deviation	Derived

Symbol	Variable	Definition	Role in CVT	Source
<b>w1–w4</b>	Weights	w1=0.40 (VG), w2=0.25 (SAL), w3=0.25 (PIBpc), w4=0.10 (GR)	Reflect relative explanatory importance; VG receives highest weight	Author assignment

### CVT — Z-score formulation (standardised)

The primary specification uses standardised z-scores to normalise all variables relative to the EU mean and standard deviation, enabling direct cross-country comparison on a common scale:

$$\text{CVT} = w1 \cdot Z(\text{VG}) - w2 \cdot Z(\text{SAL}) - w3 \cdot Z(\text{PIBpc}) - w4 \cdot Z(\text{GR})$$

Where  $Z(x) = (x_i - \bar{x}_{\text{EU}}) / \sigma_{\text{EU}}$  for each variable. Weights:  $w1 = 0.40 \cdot w2 = 0.25 \cdot w3 = 0.25 \cdot w4 = 0.10$ .

Interpretation:  $\text{CVT} > 0$  indicates above-average fiscal vulnerability relative to the country's economic level.  $\text{CVT} = 0$  would represent a country performing exactly as predicted by its income and growth profile.  $\text{CVT} < 0$  indicates better-than-expected compliance. Romania's CVT is among the highest in the EU — meaning that its VAT gap substantially exceeds what its development level would predict.

The negative signs on SAL, PIBpc, and GR reflect the expected inverse relationship: higher wages, higher income, and stronger growth should reduce fiscal vulnerability. Countries are penalised only for the gap unexplained by economic factors.

### CVT — Ratio-based formulation (simplified)

For practical implementation without z-score infrastructure, the simplified ratio-based variant produces equivalent directional results:

$$\text{CVTs} = (\text{VG}_i / \text{VGUE}) / [(\text{SAL}_i / \text{SALUE})^\alpha \cdot (\text{PIBpci} / \text{PIBpcUE})^\beta \cdot (1 + \text{GR}_i)^\gamma]$$

Typical elasticities:  $\alpha = 0.30\text{--}0.50$  (salary);  $\beta = 0.40\text{--}0.60$  (GDP per capita);  $\gamma = 0.10\text{--}0.20$  (growth rate).  $\text{CVTs} > 1$  indicates above-average vulnerability;  $\text{CVTs} < 1$  indicates below-average vulnerability relative to EU norm, after controlling for economic development context.

*Note: Both formulations produce equivalent rankings. The z-score version is preferable for cross-sectional panel analysis; the ratio version is preferable for single-country monitoring over time or where z-score infrastructure is unavailable.*

## 4. THE COMPOSITE SOCIO-FISCAL VULNERABILITY INDEX (CSFVI)

The CSFVI is constructed in two layers: a validated core index using Eurostat-comparable indicators, and an experimental layer of non-conventional proxies.

### 4.1 Layer 1 — Core Index

All variables are normalised to a [0,1] scale, with higher values indicating greater vulnerability:

Dimension	Indicator	Weight	Source	Mechanism
<b>Fiscal outcome</b>	VAT gap % of VTTL	0.25	EC Annual Report	Primary outcome variable
<b>Economic context</b>	GDP/capita PPS (inverse)	0.15	Eurostat	Development level control

Dimension	Indicator	Weight	Source	Mechanism
Early education	EEI = spending per pupil / GDP/cap	0.20	Eurostat	Quality of formative environment
School dropout	Early school leaving rate	0.15	Eurostat	Norm transmission fracture
Youth vulnerability	NEET rate (18–24)	0.15	Eurostat	Disengaged civic generation
Social capital	Volunteering rate (inverse)	0.10	Eurostat	Cooperative norm density

$$\text{CSFVI\_core} = 0.25 \cdot \text{VAT} + 0.20 \cdot \text{EEI\_inv} + 0.15 \cdot \text{GDP\_inv} + 0.15 \cdot \text{ESL} + 0.15 \cdot \text{NEET} + 0.10 \cdot \text{VOL\_inv}$$

Weight rationale: VAT gap receives the highest weight (0.25) as the primary outcome variable. Education investment (0.20) reflects Heckman's evidence on the primacy of early inputs in long-cycle capital formation. The remaining social outcome variables — GDP context, early school leaving, and NEET rate — are weighted equally (0.15 each) as parallel indicators of structural vulnerability. Volunteering (0.10) serves as a supplementary civic capital indicator with more limited cross-country comparability.

## 4.2 Layer 2 — Revised: EEI Sub-Index and Extended Model

The original formulation treated early education investment (EEI) as a single composite variable. This section introduces a revised, three-component EEI sub-index based on Eurostat data, incorporates household education expenditure alongside public spend, and constructs a second sub-index — CSFVI\_predictive — that measures fiscal compliance risk on a 20–30 year forward horizon. The two sub-indices are then combined into a single extended score.

### Revised EEI Sub-Index

EEI is now decomposed into three measurable Eurostat-sourced components:

Component	Indicator	Weight	Source	Rationale
Public education spend	Govt spend per pupil (primary+pre-primary) as % of GDP/cap — Eurostat educ_uoe_fine06	0.50	Eurostat	Core resource input; directly funds teacher quality, materials, class size
Household education spend	% of total household consumption on education — Eurostat HBS hbs_exp	0.30	Eurostat HBS	Family investment signal; captures socioeconomic complementarity to public spend
Pre-school enrolment rate	% children aged 3–5 enrolled — Eurostat educ_uoe_enra10	0.20	Eurostat	Early socialisation exposure; foundational for norm internalisation

$$\text{EEI} = 0.50 \cdot \text{PubEdu\_inv} + 0.30 \cdot \text{HHEdu\_inv} + 0.20 \cdot \text{PreEnrol\_inv}$$

All three components are inverted and normalised to [0,10]: higher score = greater vulnerability. PubEdu and HHEdu are expressed as % of GDP/cap to control for income level.

Romania scores at the maximum on both public education spend per pupil (12.5% of GDP/cap — the lowest in the dataset) and household education spend (1.8% — also the lowest).

These are not marginal gaps: they represent a structurally different level of investment in the formative environment that the CSFVI thesis identifies as the primary driver of future fiscal behaviour.

### **CSFVI\_diagnostic (Revised)**

The revised diagnostic formula retains the same structure as the original CSFVI\_core but substitutes the disaggregated EEI sub-index:

$$\text{CSFVI\_diag} = 0.25 \cdot \text{VAT} + 0.20 \cdot \text{EEI} + 0.15 \cdot \text{GDP\_inv} + 0.15 \cdot \text{ESL} + 0.15 \cdot \text{NEET} + 0.10 \cdot \text{VOL\_inv}$$

### **CSFVI\_predictive — A Forward Horizon Sub-Index**

A central contribution of the revised model is the explicit separation of diagnostic measurement (what explains VAT compliance gaps today) from predictive measurement (what anticipates compliance behaviour in 2040–2050). This distinction matters because screen time, PISA scores, and current EEI investment are not drivers of today’s VAT gap — the adults filing VAT returns in 2025 were schoolchildren in 1995–2005, before mass smartphone adoption. They are, however, structural predictors of the civic capital that the cohort entering the workforce in 2035–2045 will carry.

Component	Indicator	Weight	Source	Mechanism
<b>PISA performance</b>	Average PISA 2022 score (reading + mathematics), inverted — OECD	0.40	OECD PISA 2022	Current educational outcome; measures quality of capital formation in 10–15 year cohort
<b>Screen time intensity</b>	% children aged 6–16 with daily internet use >3 hours — Eurostat isoc_ci_ifp_fu + PISA 2022	0.35	Eurostat + OECD	Proxy for displacement of formative activity; correlated with reduced reading comprehension and social norm development
<b>EEI current</b>	Early Education Investment sub-index (current values)	0.25	Eurostat	Captures present investment quality feeding into future compliance behaviour

$$\text{CSFVI\_pred} = 0.40 \cdot \text{PISA\_inv} + 0.35 \cdot \text{Screen} + 0.25 \cdot \text{EEI\_current}$$

*PISA scores for Malta, Cyprus, and Croatia are estimated from regional cluster averages (OECD, 2022). China PISA equivalent estimated from OECD informal economy and education research. Screen time data: Eurostat isoc\_ci\_ifp\_fu combined with PISA 2022 contextual questionnaire data on daily digital device use.*

### **CSFVI\_total — Extended Composite Score**

The two sub-indices are combined with a weighted linear aggregation that preserves the primacy of the diagnostic dimension — which is grounded in observed VAT gap data — while incorporating the forward-looking signal:

$$\text{CSFVI\_total} = 0.70 \cdot \text{CSFVI\_diag} + 0.30 \cdot \text{CSFVI\_pred}$$

The 70/30 split reflects the relative maturity of the two components: CSFVI\_diag is anchored in observed EC VAT gap data; CSFVI\_pred is grounded in OECD and Eurostat data but projects an outcome not yet observable. A geometric formulation

$(CSFVI\_diag^{0.70} \cdot CSFVI\_pred^{0.30})$  produces near-identical results and is noted as a robustness check.

### Extended Ranking Results

The following table presents the full extended rankings with both sub-index scores. Columns VAT through VOL represent the normalised input scores [0–10] feeding into CSFVI\_diag. DIAG, PRED, and TOTAL are the sub-index and composite scores.

#	Country	VAT	EEI	GDP	ESL	NEET	VOL	DIAG	PRED	TOTAL
1	China *	7.40	8.32	10.00	10.00	10.00	10.00	9.01	9.05	<b>9.03</b>
2	Romania	10.00	8.81	7.85	6.86	9.17	8.85	8.73	8.84	<b>8.76</b>
3	Bulgaria	3.25	7.61	8.54	5.10	9.01	8.65	6.60	8.70	<b>7.23</b>
4	Greece	6.18	7.06	7.38	3.63	7.51	8.46	6.58	7.14	<b>6.75</b>
5	Italy	5.13	4.75	7.08	5.44	8.51	5.38	5.93	5.43	<b>5.78</b>
6	Malta	5.55	5.34	6.74	5.74	3.48	6.92	5.54	5.98	<b>5.67</b>
7	Croatia	3.37	7.22	7.90	0.54	5.69	8.27	5.23	6.31	<b>5.56</b>
8	Slovakia	3.52	7.18	7.68	2.79	5.30	8.08	5.49	5.64	<b>5.54</b>
9	Cyprus	3.88	4.97	7.30	3.38	5.52	8.27	5.22	6.16	<b>5.50</b>
10	Hungary	3.13	5.68	7.90	5.20	5.14	7.69	5.42	4.93	<b>5.27</b>
11	Lithuania	5.31	6.04	7.25	1.42	3.31	8.46	5.18	5.27	<b>5.21</b>
12	Latvia	4.69	5.93	7.85	2.30	3.65	8.27	5.25	5.06	<b>5.20</b>
13	Spain	1.52	5.55	7.30	6.03	6.63	6.15	5.10	5.09	<b>5.10</b>
14	Portugal	1.97	5.34	7.68	2.16	3.87	8.27	4.44	4.76	<b>4.54</b>
15	Poland	3.31	5.81	7.73	1.57	3.48	7.31	4.64	4.22	<b>4.51</b>
16	USA *	3.82	5.40	3.82	3.38	6.24	2.31	4.28	4.62	<b>4.38</b>
17	France	1.22	4.49	6.70	3.14	5.41	6.15	4.11	4.57	<b>4.24</b>
18	Czech Rep.	1.79	5.87	7.08	2.01	1.82	5.96	3.85	4.10	<b>3.93</b>
19	Belgium	1.61	3.65	6.05	2.60	4.75	6.15	3.76	4.31	<b>3.92</b>
20	Germany	1.40	4.66	5.92	4.41	2.93	5.38	3.81	4.02	<b>3.87</b>
21	Estonia	1.64	4.64	7.25	3.68	3.20	6.15	4.07	2.80	<b>3.69</b>
22	Slovenia	1.94	4.59	7.25	0.44	2.54	6.15	3.55	3.87	<b>3.65</b>
23	Austria	0.60	3.68	5.71	3.28	2.65	3.85	3.02	3.21	<b>3.08</b>
24	Ireland	1.52	4.68	2.02	1.32	3.48	4.62	2.80	2.36	<b>2.67</b>
25	Netherlands	0.54	3.61	5.41	2.94	2.38	0.00	2.46	2.74	<b>2.55</b>
26	Finland	0.03	3.70	6.18	3.09	3.20	1.54	2.77	1.97	<b>2.53</b>
27	Sweden	0.00	2.95	5.62	3.38	2.54	0.00	2.32	2.68	<b>2.43</b>
28	Denmark	2.18	0.19	5.32	3.58	2.93	0.77	2.43	2.05	<b>2.32</b>
29	Japan *	1.07	3.72	6.22	0.00	0.00	6.54	2.60	0.93	<b>2.10</b>
30	Luxembourg	0.09	2.52	0.00	3.24	1.82	3.85	1.67	2.66	<b>1.97</b>

*\* Non-EU economies included for comparative reference. PISA equivalents and screen time estimates for China are based on OECD and World Bank data. USA scores reflect aggregate sales tax compliance gap across state systems.*

## **Key Results and Observations**

China moves to first position (9.03) in the extended model, a result that was already anticipated in the original paper (China was ranked #2 at 8.40). The reversal is driven by three variables reaching their maximum in the dataset simultaneously: GDP/cap vulnerability, NEET equivalent, and ESL equivalent — all reflecting China's structural development gap and 2023 youth unemployment crisis (21.3%). This is mathematically consistent and theoretically defensible.

Romania remains second (8.76), with a notable divergence between its diagnostic score (8.73) and predictive score (8.84). The predictive component is marginally worse than the diagnostic — meaning the model expects Romania's structural fiscal vulnerability to deepen in the coming decades, driven by a PISA average of 428 (among the lowest in the EU) and a screen time intensity of 72%. This is not a marginal signal.

Estonia drops five positions (from #16 to #21), driven entirely by its strong predictive profile: PISA score of 510 (joint highest in the EU alongside Ireland and Finland) and low screen time intensity. Estonia's diagnostic score remains elevated due to a historically high VAT gap and GDP vulnerability, but its forward trajectory is structurally better than its current position suggests.

Denmark drops five positions (from #23 to #28), pulled down by an EEI score that is the lowest in the dataset — Denmark's public education spend per pupil as % of GDP/cap is compressed by its very high GDP/cap denominator, creating a misleading signal. This is a known limitation of ratio-based EEI normalisation and warrants sensitivity analysis in future empirical work.

## **A note on the religious institution fiscal contribution**

The ratio of taxes paid by religious institutions to total fiscal revenues differs substantially across EU member states. Germany's Kirchensteuer system — a church tax collected by the state representing approximately 0.1–0.2% of GDP — represents full fiscal integration of religious institutions. Romania's system involves near-total state subsidisation of the Orthodox Church without equivalent fiscal contribution, representing a net negative fiscal position for an institution with approximately 85% popular trust. Torgler (2007) identifies perceived system fairness as one of the strongest predictors of tax morale: when a high-authority institution is publicly seen to operate outside the fiscal contract, it legitimises non-compliance at the individual level. This differential represents both a measurable fiscal gap and a structural signal — the degree to which powerful social institutions are integrated into, or exempted from, the fiscal contract. It is identified here as a candidate variable for future empirical inclusion, pending development of a cross-nationally comparable measurement framework.

## 5. PREDICTED COUNTRY CLUSTERS UNDER CSFVI

Without running the full regression — which would require a dedicated empirical study — theoretical prediction generates the following clustering, based on known values of the component indicators:

Cluster	CSFVI Range	Countries	Policy Implication
<b>High vulnerability</b>	7.0 – 10.0	Romania, Bulgaria, Greece (+ China est.)	Structural reform required: early education investment, civic capital reconstruction. Administrative tax reform insufficient without upstream intervention.
<b>Elevated</b>	5.0 – 6.9	Italy, Hungary, Latvia, Malta, Slovakia, Cyprus, Lithuania, Spain	Active remediation needed. Risk of structural lock-in without targeted early education and social capital investment.
<b>Moderate-High</b>	4.0 – 4.9	Croatia, Portugal, Poland, Estonia (+ USA est.)	Monitoring required. Demographic and migration pressures could push scores upward.
<b>Moderate</b>	3.5 – 3.9	France, Czech Republic, Belgium, Slovenia, Germany	Generally stable. Specific dimension weaknesses (ESL in Germany, NEET in France) warrant targeted policy.
<b>Low-Moderate</b>	3.0 – 3.4	Ireland, Austria, Finland, Denmark	Strong structural foundations. Maintenance of early education investment critical.
<b>Low</b>	< 3.0	Sweden, Netherlands, Luxembourg (+ Japan est.)	Model performance. High social capital, strong early investment, low VAT gaps.

The demographic profile of the highest-risk group is significant. These are not low-education, low-income populations in absolute terms — they are societies where the gap between human capital potential and human capital realisation is largest, and where that gap has been reproduced across generations through underinvestment in early educational environments.

## 6. METHODOLOGICAL COMPARISON: CSFVI VS. THE AVOCADO INDEX

The Avocado Index (popularised by Bernard Salt, 2017) proposed that millennial inability to purchase property correlated with discretionary expenditure on premium consumer goods (avocado toast). It was widely ridiculed in academic circles — but survived as a cultural reference point because it captured a real phenomenon (preference substitution under housing unaffordability) through an observable consumption proxy.

The comparison with CSFVI's non-conventional indicators is instructive:

Dimension	Avocado Index	CSFVI Experimental Layer
Variable type	Consumer expenditure, adult	Civic/educational capital formation, early-life
Causal direction	Behaviour → financial outcome (contested)	Input environment → behaviour → fiscal outcome
Theoretical basis	Anecdotal / media commentary	Heckman (2006), Putnam (1993), Torgler (2007)
Cross-country comparability	Poor (product varies by market)	Good (Eurostat-standardised or normalised)
Time horizon	Contemporaneous	20–30 year transmission lag
Academic legitimacy	Low (never formalised)	Constructible (via proxy justification framework)

The key distinction: CSFVI's unconventional proxies measure capital formation processes with identifiable causal mechanisms linking them to fiscal outcomes. The Avocado Index measured consumption without a credible mechanism. The former is methodologically defensible when properly theorised; the latter was not.

The practical implication for index construction: unconventional indicators are legitimate when (a) the latent construct they proxy is clearly defined, (b) the causal mechanism linking proxy to outcome is specified, and (c) the proxy is measured comparably across units. CSFVI's experimental layer satisfies all three criteria; the Avocado Index satisfied none of them.

## 7. LIMITATIONS AND RESEARCH AGENDA

This paper is a theoretical and methodological proposal, not an empirical study. Several limitations must be acknowledged.

Causality vs. correlation. The predicted correlations between CSFVI components and VAT gaps require empirical testing via panel regression across EU member states and multiple years. This paper establishes the theoretical priors, not the econometric results.

Index weighting is preliminary. The proposed weights (0.25, 0.20, 0.15...) are theoretically motivated but not empirically calibrated. A principal component analysis or structural equation model would be required to determine optimal weighting.

Data availability. Some experimental proxy indicators (books sold per capita, gym memberships, etc) are not systematically collected in Eurostat and would require alternative data sources (national statistics, market research). This limits immediate operationalisation.

Temporal lag structure. The theoretical claim that early educational investment affects adult fiscal behaviour with a 20–30 year lag requires cohort-level longitudinal data that is currently incomplete for EU comparisons.

Confounding variables. GDP growth trajectories, institutional change post-communist transition, and EU cohesion fund absorption patterns are potential confounders that would require control in any full empirical model.

The research agenda this paper implies includes: (1) empirical testing of CSFVI\_core via Eurostat panel data, (2) sensitivity analysis of weighting schemes, (3) investigation of the 20–30 year lag hypothesis using cohort-level tax compliance data, and (4) case study deepening on Romania's specific trajectory relative to the Baltic states, which share post-communist institutional inheritance but exhibit significantly lower VAT gaps.

## 8. CONCLUSION

The central claim of this paper is that VAT compliance gaps are, in substantial part, cultural phenomena — formed in early childhood environments and transmitted through the density of civic participation in the intervening decades. Romania's structural paradox (2% of EU economy, 14.8% of EU VAT gap) is the clearest available illustration of this thesis, but the pattern generalises across the EU's North-South and West-East gradients.

The CSFVI offers a framework for making this structural dimension measurable and comparable. Its value is not primarily predictive — existing tax gap studies do adequate predictive work — but diagnostic and prescriptive: it identifies where the leverage points for long-term fiscal compliance improvement actually lie, and they lie upstream of any tax administration reform.

If crayons in kindergartens, teachers per classroom, and library membership rates predict VAT compliance better than penalty severity — and the theoretical case for this is strong — then the policy implication is straightforward: the most cost-effective fiscal compliance intervention is not a better audit algorithm. It is a better-resourced first-grade classroom.

## APPENDIX A — CSFVI COUNTRY RANKINGS: EU-27 + USA, JAPAN, CHINA

The following ranking applies the CSFVI\_core formula to all EU member states plus three major non-EU economies. All scores are estimated on the basis of most recent available Eurostat data (2021–2023) and publicly reported equivalents for non-EU countries. Higher CSFVI score = greater socio-fiscal vulnerability.

*Scores in this ranking are illustrative estimates based on the proposed methodology. Empirical calibration via panel regression has not yet been performed. Individual country scores should be interpreted as approximate positioning rather than precise measurement. Each component is scored 0–10 (10 = most vulnerable). The weighted composite:  $CSFVI = 0.25 \cdot VAT + 0.20 \cdot EDU + 0.15 \cdot GDP_{inv} + 0.15 \cdot ESL + 0.15 \cdot NEET + 0.10 \cdot VOL_{inv}$ . Non-EU economies: China figures reflect informal economy research and youth unemployment data (2023 crisis, 21.3% youth unemployment); direct VAT gap measurement is not published officially. USA scores reflect aggregate sales tax compliance gap across state systems — not directly comparable to EU VAT gap methodology. Japan scores reflect high tax morale (Torgler, 2007), low youth unemployment, and strong cultural capital indicators.*

Ran k	Country	VAT	EDU	GDP	ESL	NEET	VOL	CSFVI	Cluster
1	Romania	10.0	9.5	7.5	9.0	8.0	9.0	<b>8.98</b>	High
2	China *	8.0	7.0	9.0	9.0	9.0	9.5	<b>8.40</b>	High
3	Bulgaria	5.0	8.5	9.0	7.0	9.0	9.0	<b>7.60</b>	High
4	Greece	7.0	7.0	7.0	6.5	8.0	8.5	<b>7.23</b>	High
5	Italy	5.0	5.0	5.0	7.0	8.0	6.5	<b>5.90</b>	Elevate d
6	Hungary	4.0	6.5	6.5	7.0	4.0	7.5	<b>5.68</b>	Elevate d
7	Latvia	5.0	6.5	7.0	4.0	4.0	7.5	<b>5.55</b>	Elevate d
8	Malta	6.0	5.0	4.5	7.5	3.5	7.0	<b>5.53</b>	Elevate d
9	Slovakia	4.0	6.0	6.5	4.5	6.0	7.5	<b>5.50</b>	Elevate d
10	Cyprus	5.0	5.5	5.0	5.5	5.0	7.5	<b>5.43</b>	Elevate d

Rank	Country	VAT	EDU	GDP	ESL	NEET	VOL	CSFVI	Cluster
11	Lithuania	6.0	6.0	6.5	3.0	3.5	7.5	<b>5.40</b>	Elevated
12	Spain	3.0	5.0	5.0	8.0	5.0	7.0	<b>5.15</b>	Elevated
13	Croatia	4.0	6.0	7.0	2.0	5.0	7.5	<b>5.05</b>	Mod-High
14	Portugal	3.0	5.5	6.0	5.5	4.0	7.5	<b>4.93</b>	Mod-High
15	Poland	4.0	6.0	6.5	3.0	3.0	7.0	<b>4.78</b>	Mod-High
16	Estonia	3.0	5.0	6.0	6.0	3.0	6.5	<b>4.65</b>	Mod-High
17	USA *	4.5	4.5	3.0	4.5	5.0	6.5	<b>4.55</b>	Mod-High
18	France	2.0	4.5	4.0	5.0	4.5	7.0	<b>4.13</b>	Moderate
18	Czech Rep.	3.0	5.0	5.0	4.0	2.5	6.5	<b>4.13</b>	Moderate
20	Belgium	2.5	4.0	4.0	5.0	4.0	6.5	<b>4.03</b>	Moderate
21	Slovenia	3.0	4.5	5.0	2.5	2.5	7.0	<b>3.85</b>	Moderate
22	Germany	2.0	4.0	4.0	6.0	2.5	5.5	<b>3.73</b>	Moderate
23	Ireland	2.5	4.0	2.5	3.0	3.5	5.5	<b>3.33</b>	Low-Mod
24	Austria	1.5	3.5	4.0	5.0	2.5	4.5	<b>3.25</b>	Low-Mod
25	Finland	1.0	3.0	4.0	5.0	3.0	5.5	<b>3.20</b>	Low-Mod
26	Denmark	3.0	3.0	3.5	5.5	2.5	4.0	<b>3.48</b>	Low-Mod
27	Sweden	1.0	3.0	4.0	5.0	2.5	3.5	<b>2.93</b>	Low
28	Netherlands	1.5	3.5	3.5	4.5	2.0	3.0	<b>2.88</b>	Low
29	Japan *	2.0	3.5	4.0	1.0	1.0	6.5	<b>2.75</b>	Low
30	Luxembourg	1.0	3.0	1.0	5.0	2.0	6.0	<b>2.65</b>	Low

## A.1 Key Observations from the Ranking

Romania's isolation at the top. Romania's score (8.98) exceeds Bulgaria's (7.60) by 1.38 points — a margin larger than the combined distance separating Bulgaria from Greece (0.37), Greece from Italy (1.33), or Italy from any country in the Elevated cluster. Romania does not merely lead the ranking; it anchors a category of its own.

China's high ranking among non-EU economies. China's score (8.40) places it second globally in this analysis, driven by high youth unemployment, massive early school leaving in

rural areas, and extremely low volunteering rates — reflecting a state-mediated civic structure where horizontal social capital is suppressed rather than cultivated.

Japan's paradox. Japan achieves the lowest non-EU score (2.75) despite a relatively high VAT gap component, because its social capital indicators are remarkably strong: near-zero youth unemployment, minimal early school leaving, and deeply embedded civic norms. The Japanese result is consistent with Torgler's observation that intrinsic tax morale — not administrative efficiency — is the primary compliance driver in high-social-capital societies. USA underperforms its income level. The USA ranks 17th overall (4.55), placing it between Estonia and France. Given a GDP per capita approximately 50% above EU average, the expected CSFVI would be substantially lower. The gap reflects high NEET equivalents, early school leaving disparities, and the fragmented character of American civic capital — high in some communities, near-absent in others.

Germany's school leaving problem. Germany ranks 22nd rather than higher, held back by a surprisingly elevated early school leaving score (6.0 — reflecting ~11% ESL rate, partly driven by vocational tracking). This illustrates how a single structural deficit can weigh on an otherwise strong profile.

Malta's anomaly. Malta ranks 8th (5.53) — among the most vulnerable EU members — despite a GDP above EU average. This reflects its historically high VAT gap and early school leaving rate (13%), and confirms the core thesis: income level alone does not determine fiscal compliance.

## A.2 Cluster Summary

Cluster	CSFVI Range	Countries	Policy Implication
<b>High vulnerability</b>	7.0–10.0	Romania, Bulgaria, Greece (+ China est.)	Structural reform required: early education investment, civic capital reconstruction. Administrative tax reform insufficient without upstream intervention.
<b>Elevated</b>	5.0–6.9	Italy, Hungary, Latvia, Malta, Slovakia, Cyprus, Lithuania, Spain	Active remediation needed. Risk of structural lock-in without targeted early education and social capital investment.
<b>Moderate-High</b>	4.0–4.9	Croatia, Portugal, Poland, Estonia (+ USA est.)	Monitoring required. Demographic and migration pressures could push scores upward.
<b>Moderate</b>	3.5–3.9	France, Czech Republic, Belgium, Slovenia, Germany	Generally stable. Specific dimension weaknesses (ESL in Germany, NEET in France) warrant targeted policy.
<b>Low-Moderate</b>	3.0–3.4	Ireland, Austria, Finland, Denmark	Strong structural foundations. Maintenance of early education investment critical.
<b>Low</b>	< 3.0	Sweden, Netherlands, Luxembourg (+ Japan est.)	Model performance. High social capital, strong early investment, low VAT gaps.

The ranking should be read as a diagnostic instrument, not a league table. Its purpose is to identify where structural investment in civic and educational capital is most urgently required — and to argue that such investment, made early enough, is the most durable form of fiscal compliance reform available to policymakers.

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