Journal of Behavioral and Experimental Economics 119 (2025) 102480

Contents lists available at ScienceDirect

Journal of Behavioral and Experimental Economics

journal homepage: www.elsevier.com/locate/jbee

Drivers of tax compliance: Survey evidence from 1761 Greek micro-firms

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ARTICLE INFO

Keywords:
Micro-business owners
Voluntary compliance
Enforced compliance
Slippery slope framework
SSF

ABSTRACT

In countries where tax compliance is low and tax evasion is widespread, the specific compliance behavior of micro-business owners remains poorly understood. This study addresses this gap by analyzing both voluntary and enforced tax compliance among a nationally representative sample of 1761 micro-business owners in Greece. Guided by the Slippery Slope Framework (SSF), we find that trust in tax authorities is closely associated with voluntary compliance, whereas perceptions of coercive power are primarily linked to enforced compliance. Notably, women leading micro-businesses report higher trust and stronger compliance intentions across both motivational types. Perceptions of fairness, legitimacy, and corruption, as well as emotional responses toward tax authorities, are related to trust and indirectly associated with voluntary compliance. Our findings underscore the central role of trust in understanding cooperative taxpayer behavior and suggest that service-oriented, transparent, and fair administrative practices could support greater voluntary compliance, particularly within the micro-business sector.

1. Introduction

Traditional economic theories of tax compliance—most notably the seminal model by Allingham and Sandmo (1972)—conceptualize taxpayer behavior as the outcome of rational utility maximization, whereby individuals weigh the expected costs and benefits of evasion, factoring in audit probabilities and penalty rates. While analytically elegant, this deterrence-based approach has proven insufficient in explaining the persistently high levels of compliance observed even in low-enforcement contexts (Andreoni et al., 1998; Fischer et al., 1992). This limitation was already acknowledged by Allingham and Sandmo (1972, p. 326), who noted:

> "…may perhaps be criticized for giving too little attention to non-pecuniary factors in the taxpayer's decision on whether or not to evade taxes. It need hardly be stressed that in addition to the income loss there may be other factors affecting utility if one's attempt at tax evasion is detected. These factors may perhaps be summarily characterized as affecting adversely one's reputation as a citizen of the community…" (p. 326)

Indeed, empirical inconsistencies have spurred a growing body of interdisciplinary research, emphasizing that tax behavior is shaped not only by economic incentives but also by a complex interplay of psychological and social factors (Braithwaite, 2009; Kirchler, 2007; Pickhardt & Prinz, 2014). In response to the limitations of the neoclassical model, the Slippery Slope Framework (SSF) was developed as an integrative theoretical lens that synthesizes economic deterrence with psychological and social dimensions of compliance (Kirchler et al., 2008). Central to the SSF is the proposition that tax compliance is jointly determined by two key constructs: trust in tax authorities and the (perceived) power of tax authorities. Trust fosters voluntary compliance rooted in reciprocity and civic duty, whereas perceived power—encompassing both legitimate and coercive elements—drives enforced compliance through deterrence mechanisms.

Although the SSF has been extensively validated in experimental and survey-based studies across various populations—including students, employees, the self-employed, and corporate representatives (e.g., Batrancea et al., 2019; Gangl et al., 2015; Kogler et al., 2013)—micro-business owners remain an understudied yet policy-relevant group. This omission is particularly notable given that micro-entrepreneurs often face greater evasion opportunities, higher compliance costs, and more complex regulatory obligations compared to

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https://doi.org/10.1016/j.socec.2025.102480
Received 19 June 2025; Received in revised form 4 November 2025; Accepted 5 November 2025
Available online 6 November 2025

other taxpayers (Chittenden et al., 2003; Torgler & Schneider, 2007). Moreover, their compliance behavior is especially susceptible to contextual factors such as institutional trust, perceived fairness, and administrative burden (Kamleitner et al., 2012).

This study seeks to fill this empirical gap by analyzing factors associated with tax compliance among micro-business owners in Greece, a country that epitomizes the challenges of weak tax compliance attitudes, institutional distrust, and high informality in the business sector (Antinyan et al., 2020; Kaplanoglou & Rapanos, 2013; Kaplanoglou & Rapanos, 2015). Greece provides an ideal setting for testing the SSF under adverse conditions—what the literature refers to as an antagonistic tax climate—where compliance is more likely driven by suspicion, resentment, and coercion rather than trust and reciprocity (Bitzenis et al., 2016; Kaplanoglou & Rapanos, 2013; Kaplanoglou & Rapanos, 2015; Kirchler et al., 2008).

Using a nationally representative sample of 1761 micro-business owners, we address two key research objectives. First, we empirically test the core assumptions of the SSF by examining the associations of trust and perceived power with voluntary and enforced compliance. Second, we explore potential antecedents of trust in tax authorities and whether trust may account for the associations between these antecedents and voluntary compliance. In doing so, our study makes three main contributions. First, it extends the applicability of the SSF to a real-world business population in a Southern European context. Second, it identifies key demographic and attitudinal factors that are particularly salient for micro-entrepreneurs. Third, it offers policy-relevant insights for designing trust-based, service-oriented tax strategies that move beyond deterrence.

The remainder of the paper is structured as follows. Section 2 presents the theoretical framework and reviews relevant literature. Section 3 describes the study design, data collection, and measures. Section 4 reports the main empirical findings. Section 5 discusses the implications, limitations, and avenues for future research.

2. Theoretical background

2.1. Behavioral and psychological determinants of tax compliance

Taxpayer behavior is shaped not only by economic incentives but also by a broad array of psychological, social, institutional, and socio-demographic factors, which complement traditional explanations and illuminate the complex motivations underlying compliance.

Central among these is tax knowledge, which enables individuals to navigate complex tax systems with confidence and accuracy. Greater tax knowledge reduces ambiguity, facilitates correct filing, and strengthens reason–based trust in authorities, thereby fostering voluntary compliance (Eriksen & Fallan, 1996; Kasper et al., 2015; Kirchler & Maciejovsky, 2001; McCaffery & Baron, 2004; Olsen et al., 2019).

Building on cognitive drivers, fairness perceptions are a key determinant of compliance. Although empirical findings on fairness and justice are sometimes mixed (Murphy & Tyler, 2008; Porcano, 1988), there is broad consensus that perceived fairness enhances voluntary compliance (Andreoni et al., 1998; Hofmann et al., 2014; Tyler, 2006; Wahl et al., 2010). Compliance increases when authorities are perceived as fair and supportive, and is further strengthened when tax revenues fund valued public services and the distribution of burdens and benefits is considered equitable (Gangl et al., 2020; Kirchler et al., 2006; Lancee et al., 2023).

Equally important, yet less systematically studied, are emotional processes (Alm & Torgler, 2011; Enachescu et al., 2019; Privitera et al., 2021). Emotions influence how taxpayers interpret and respond interactions with tax authorities and the tax system. Negative affect—such as anger triggered by perceived unfairness (Murphy & Tyler, 2008) or heightened arousal during tax-related decisions (Coricelli et al., 2010)—has been linked to increased evasion. Conversely, trust in tax authorities can buffer negative emotions and promote cooperative attitudes, while positive interpersonal exchanges with tax officials strengthen compliance intentions (Olsen et al., 2018; Privitera et al., 2021).

Complementing these individual-level affective processes, broader orientations such as patriotism also influence tax behavior. Defined as pride in and attachment to one's country (Gangl et al., 2016), patriotism has been associated with prosocial behavior and voluntary tax compliance (Huddy & Khatib, 2007; Torgler, 2005). By fostering a cooperative mindset, patriotic identification encourages taxpayers to view compliance as a contribution to collective welfare rather than merely a personal cost (Konrad & Qari, 2012). Nevertheless, the psychological mechanisms linking patriotic sentiments to tax compliance remain underexplored (Gangl et al., 2016; Hofmann et al., 2008).

Building on patriotic orientations, tax morale—defined as individuals' moral attitudes toward paying or evading taxes (Kornhauser, 2007; Torgler, 2011)—emerges as a central determinant of tax compliance, even though it was not directly measured in our survey. While establishing causality has been challenging, Halla (2012) provides compelling evidence that higher tax morale reduces participation in the shadow economy. Tax morale is positively influenced by trust in government, institutional quality, and individuals' psychological well-being, particularly life satisfaction (Ciziceno & Pizzuto, 2022; Torgler, 2011). Moreover, cultural orientation moderates this relationship, with collectivistic societies exhibiting stronger links between life satisfaction, trust, and tax morale (Ciziceno & Pizzuto, 2022).

Social norms also play a key role in shaping compliance by establishing expectations within reference groups (Alm, 2019; Alm et al., 1992; Cheng et al., 2024). Perceptions of widespread evasion weaken compliance attitudes (Torgler, 2005), whereas norm-based interventions and the communication of shared cooperative norms promote voluntary compliance (Braithwaite, 2003; Hallsworth et al., 2017; Wenzel, 2005). At the institutional level, perceptions of corruption significantly undermine trust and are consistently associated with higher tax evasion (Alm et al., 2016; Kogler et al., 2023; Litina & Palivos, 2016; Shleifer & Vishny, 1993).

Demographic factors, including age, gender, and education, offer additional insight into compliance behavior (Alm & Malézieux, 2021). Although meta-analyses generally report mixed and modest effects (Hofmann, Voracek et al., 2017), older individuals tend to show higher compliance (Vincent et al., 2023), and women are often observed to be more cooperative and risk-averse than men (Croson & Gneezy, 2009; Karakostas & Zizzo, 2016). Nevertheless, evidence on gender differences is mixed (Chung & Trivedi, 2003; Torgler & Valev, 2010).

Taken together, these cognitive, affective, social, institutional, and demographic factors provide a comprehensive perspective on the complex drivers of tax compliance, forming the foundation for the conceptual frameworks presented in Section 2.2.

2.2. From SSF to e-SSF: understanding drivers of tax compliance

Building on the multifaceted behavioral and psychological determinants of tax compliance, the SSF (Kirchler, 2007; Kirchler et al., 2008) provides a conceptual model highlighting the interaction between taxpayers and authorities as a central driver of compliance. According to this framework, citizens' willingness to cooperate with the state—particularly in fulfilling tax obligations—depends on the prevailing interaction climate, which ranges from synergistic to antagonistic. In a synergistic climate, mutual trust and cooperation dominate, whereas in an antagonistic climate, distrust prevails and compliance must be externally enforced (Kirchler et al., 2008).

The SSF integrates economic deterrence with psychological motivations by distinguishing between trust in authorities and perceived power, which jointly define the interaction climate. Trust refers to the belief that authorities act competently and benevolently (Tyler, 2003), whereas power reflects the ability of authorities to detect and penalize noncompliance. These dimensions give rise to two complementary pathways: voluntary compliance, driven by intrinsic motivation and a sense of moral obligation, and enforced compliance, rooted in strategic behavior influenced by deterrence and monitoring (Ryan & Deci, 2000). Voluntary compliance aligns with “commitment” postures, reflecting socially and morally driven behavior, whereas enforced compliance resembles “resistance,” reflecting compliance under external pressure (Braithwaite, 2003).

To capture greater nuance, the extended Slippery Slope Framework (e-SSF; Gangl et al., 2015; Hofmann et al., 2014) differentiates between coercive and legitimate power and between reason-based and implicit trust (Castelfranchi & Falcone, 2010). Coercive power, exercised through audits and sanctions, may increase resistance and erode trust. In contrast, legitimate power—grounded in professionalism, transparency, and public acceptance—enhances compliance and encourages reciprocity (Hofmann, Hartl et al., 2017).

Trust can be further distinguished by its underlying mechanisms. Reason-based trust arises from deliberate evaluations of authorities' competence, fairness, and transparency (Eriksen & Fallan, 1996; Murphy, 2004), whereas implicit trust reflects intuitive, automatic reliance shaped by social norms, emotions, and patriotic sentiments (Gangl et al., 2016; Hallsworth et al., 2017). Although reason-based and implicit trust are conceptually distinct, they often reinforce one another. Nevertheless, implicit trust is difficult to measure reliably in tax contexts (Gangl et al., 2020).

By integrating these distinctions, the SSF and e-SSF demonstrate how interactions between taxpayers and authorities—shaped by trust and power—translate the multifaceted factors discussed in Section 2.1 into observable compliance outcomes. The next section applies these theoretical insights to examine the compliance behavior of micro-business owners in the Greek context.

2.3. Micro-Business owners' compliance behavior in the Greek context

Greece provides a compelling setting for examining tax compliance, as micro-business owners operate within one of the largest shadow economies in the OECD, marked by persistent and systemic tax evasion (Feld & Schneider, 2010; Schneider, 2005). Chronic legislative instability, entrenched perceptions of corruption, repeated tax amnesties, and post-crisis over-taxation have eroded institutional trust and tax morale, weakening incentives for voluntary compliance (Alm et al., 2009; Bitzenis et al., 2016; Kaplanoglou & Rapanos, 2013; Kaplanoglou & Rapanos, 2015; Litina & Palivos, 2016; Pissarides et al., 2020). To curb widespread underreporting, Greece employs presumptive taxation (Law 4172/2013), which estimates income based on assets and living standards rather than solely on declared earnings. In 2023, Law 5073/2023 introduced presumptive income thresholds for professionals and sole proprietors, to better align enforcement with the financial realities of micro-businesses.

Within this context, Greece's enforcement regime, overseen by the Independent Authority for Public Revenue (IAPR), operates a three-tier audit system—preventive, tax-return, and operational audits—to deter tax evasion. Between 2016 and 2020, the IAPR conducted 127,770 operational audits and 432,985 preventive audits, generating €10.45 billion in assessments, but collected <10 % of this amount. These data indicate that, despite high audit activity for micro-business owners, a substantial enforcement-collection gap persists, suggesting that detection alone rarely translates into effective revenue collection (IAPR 2017–2021).

Micro-businesses are central to the Greek economy, representing 97.4 % of the non-financial sector and employing 62 % of the workforce, with 680,036 firms forming its backbone (OECD, 2022). Unlike salaried employees, micro-business owners face complex, multi-layered obligations—income, VAT, payroll, corporate, and property taxes—while perceiving taxation as a direct financial loss. Limited tax literacy, decision contexts that normalize evasion, and substantial audit risks further complicate their compliance behavior (Chittenden et al., 2003; Kamleitner et al., 2012; Webley, 2004). Consequently, micro-business owners strategically respond to incentives and perceived burdens, balancing the cost of compliance against potential benefits of evasion, and generally exhibit lower tax morale than other taxpayers (Joulfaian & Rider, 1998; Torgler, 2007).

These challenges are intensified by high compliance costs, including expenses for advisors, training, software, and administrative effort, compounded by psychological stress and legislative uncertainty (Chittenden et al., 2003; Lazos et al., 2022). Because compliance costs decline with firm size, micro-businesses bear a disproportionately heavy relative burden (Smulders et al., 2012). Limited resources force owners to divert time and capital from productive activities, reducing competitiveness. As a result, they often prioritize survival over strict compliance, engaging in strategic underreporting (Chittenden et al., 2003), while perceiving greater coercive power from tax authorities due to elevated audit exposure (Ahmed & Braithwaite, 2005). Despite their critical economic role, micro-business owners remain under-researched in tax compliance studies, highlighting the need for behaviorally informed, targeted enforcement strategies that account for both fiscal and psychological dimensions.

3. Method

3.1. The current study

Our target population consists of micro-business owners in Greece, where the owner—typically the head of a family-run enterprise—commonly serves as the sole decision-maker. In line with ongoing debates regarding the appropriate conceptualization of entrepreneurial roles (Carland et al., 1984), we treat the roles of owner and manager as synonymous in this context.

Our hypotheses are based on the core assumptions of the SSF, specifically:

- Trust in tax authorities is positively associated with voluntary tax compliance.
- Perceived coercive power of tax authorities is positively associated with enforced tax compliance.

We also examine additional predictors of both trust and compliance (voluntary and enforced), including perceived tax knowledge, fairness perceptions, emotions related to taxation, social norms, patriotism, perceived corruption, and key demographic characteristics.

Our secondary hypotheses explore the antecedents and mediating role of trust:

- Trust in tax authorities is influenced by a range of psychological, social, and socio-demographic factors.
- Trust mediates the relationship between these factors and voluntary compliance.

3.2. Sample

A total of 1761 micro-business owners in Greece participated in the study, which involved several data collection waves conducted between January 2021 and January 2022. The participating firms operated across various sectors, including services (38 %), commerce (29 %), catering (21 %) and manufacturing (12 %). On average, each firm employed 3.28 individuals. Of the respondents, 67 % identified as male and 33 % as female. Further details on the socio-demographic characteristics are provided in Table 1.

3.3. Measures and survey instrument

A comprehensive questionnaire was developed to assess key determinants of tax compliance using a hybrid approach. To balance theoretical rigor with practical feasibility, the instrument was grounded

Table 1
Sample characteristics (N = 1761).

Sector		*Staff*		*Legal Form*		*Gender*		*Age*		*Education*	
Catering	20.8 %	0	23.2 %	Sole Proprietorship	42.0 %	Male	67.3 %	18–40	27.9 %	Elementary School	1.4 %
Trade	28.9 %	1–3	39.1 %	General Partnership	19.8 %	Female	32.7 %	41–50	38.4 %	High School	17.6 %
Services	38.0 %	4–6	17.1 %	Limited Partnership	9.6 %			51–65	31.2 %	Vocational School	16.5 %
Manufacturing	12.4 %	7–9	20.6 %	Private Capital Company	5.7 %			65+	2.6 %	College (BA or BSc)	44.2 %
				Limited Liability Company	19.0 %					MSc	18.9 %
				Public Limited Company	4.0 %					PhD	1.5 %

in the SSF, which parsimoniously captures the trust–power dynamics underlying compliance behavior. To improve conceptual precision, selected elements of the e-SSF were integrated, distinguishing coercive from legitimate power. Trust was measured as a single construct, given the challenges of reliably assessing implicit trust in tax contexts (Gangl et al., 2020).

The instrument included the following components:

- Voluntary compliance (3 items; e.g., "When I pay my taxes as required by the regulations, I do so to support the state and other citizens"),
- Enforced compliance (3 items; e.g., "When I pay my taxes as required by the regulations, I do so because a great many tax audits are carried out"),
- Trust in tax authorities (3 items; e.g., "The tax authority is trustworthy"),
- Legitimate power (2 items; e.g., "Tax authorities combat tax crimes in an efficient way"),
- Coercive power (2 items; e.g., "Tax authorities primarily aim to punish"),
- Tax knowledge (1 item; e.g., "If you were to prepare your tax report, do you think you would have a good understanding of what would be expected from you?"),
- Fairness perceptions (3 items; e.g., "The Greek tax system distributes the tax load among all taxpayers in a just way"),
- Negative emotions (4 items; e.g., "When you think about the tax authority, to what extent do you feel anxious?"),
- Patriotism (1 item; e.g., "I am proud to be Greek"),
- Compliance norm (1 item; e.g., "Most businesses pay all the taxes that they are supposed to pay"),
- Corruption perceptions (1 item; e.g., "On a scale of 1 to 9, how would you position your views on the corruption of the tax authorities in Greece?"),
- Antagonistic climate (1 item; e.g., "Between the tax authority and taxpayers, there exists a climate like robbers and cops").

Participants also provided socio-demographic information. Compliance intention items were adapted from the TAX-I inventory (Kirchler & Wahl, 2010), while the remaining measures were drawn from prior research (e.g., Erard et al., 2019; Hofmann, Hartl et al., 2017; Kastlunger et al., 2013). Scale scores were calculated by averaging their constituent items. All items were measured on 9-point Likert scales to maximize sensitivity and minimize ceiling and floor effects. The items were based on well-established theoretical frameworks and empirically standardized to allow for cross-study comparability. Internal consistency was sufficient across constructs (Cronbach's $\alpha = 0.72$–0.90), and principal component analyses supported the unidimensionality of all multi-item scales (KMO = 0.67–0.71; Bartlett's test, $p < .001$).

To minimize social desirability and non-response bias—common issues in tax behavior research (Andreoni et al., 1998; Elffers et al., 1987)—we highlighted the confidentiality, anonymity, and voluntary nature of the study in the survey invitation. To further reduce bias, several items assessed intentions rather than actual compliance behavior, an approach shown to reduce socially desirable responding (Onu, 2016). The questionnaire was also designed to be user-friendly to limit respondent fatigue and was administered as an anonymous online survey, with a single response permitted per invitation to ensure data integrity. Detailed information on scale composition, item statistics, reliability estimates, factor loadings, and the complete questionnaire are provided in Appendix Tables A.1-A.2.

3.4. Procedure

We conducted a nationwide online survey targeting all micro-firms operating within the Greek economy. As a first step, we compiled a comprehensive list of micro-businesses registered with the regional Chambers of Commerce, Craftsmanship, and Industry. To ensure representativeness across sectors and regions, we matched this list with data from Eurostat's Business Statistics Database and the Hellenic Statistical Authority's Business Register for the year 2019.

Using a stratified random sampling approach, we created sectoral and regional subgroups to ensure proportional representation. Each micro-firm within a given stratum had an equal probability of selection. This process yielded a representative sample of 42,915 micro-firms, corresponding to approximately 6.3 % of the total micro-firm population in Greece.

To validate the questionnaire design and test the fieldwork process, we first conducted a pilot survey with 82 micro-business owners between November 2019 and February 2020. Feedback from the pilot survey was used to refine the questionnaire, enhancing clarity and measurement accuracy.

The final survey was conducted in collaboration with a professional market research firm. Personalized e-invitations were sent to the 42,915 selected micro-entrepreneurs, incorporating the revised instrument. Repeated reminder messages were issued to increase participation.

A total of 3312 responses were received, resulting in a gross response rate of 7.7 %. After excluding incomplete or invalid responses, 1761 complete questionnaires remained for analysis, corresponding to a completion rate of 53.2 % among those who started the survey, and a net response rate of 4.1 % relative to the initial sample. Despite this modest rate, the final sample size is robust and in line with comparable large-scale e-tax compliance surveys (Onu et al., 2019). The study protocol was approved by the Ethics Review Board of the Hellenic Open University.

4. Results

4.1. Correlational analysis of trust, power, and compliance

First, we computed correlations between trust, power and compliance, which yield a first impression regarding the first two hypotheses. The correlational analysis revealed several significant relations (Fig. 1). Most notably, trust in tax authorities exhibited a strong and statistically significant positive correlation with voluntary compliance ($r = 0.73$, $p < .001$), and a moderate positive correlation with perceived legitimate power ($r = 0.36$, $p < .001$).

In contrast, trust was weakly but significantly negatively associated with enforced compliance ($r = -0.10$, $p < .001$). Further intercorrelations reveal that legitimate power is positively related to voluntary compliance, while it correlates negatively with coercive

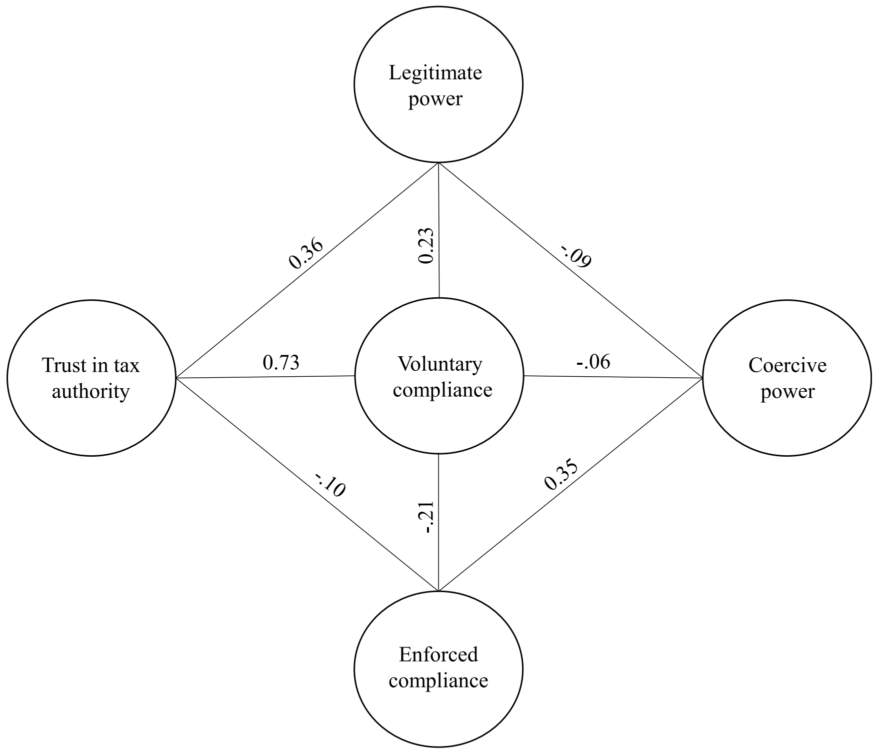

Fig. 1. Correlational patterns among trust, power perceptions, and compliance intentions.

power, consistent with theoretical distinctions between these forms of authority.

Additionally, coercive power shows a strong positive correlation with enforced compliance, whereas a negative correlation between voluntary and enforced compliance was observed, suggesting a potentially antagonistic dynamic. Higher levels of enforced compliance were associated with lower levels of voluntary compliance, reinforcing the conceptual distinction between these two compliance pathways.

Finally, the role of emotions was associated with differences in perceptions of trust and power. As summarized in Table 2, trustworthiness, perceived fairness, legitimacy, and voluntary compliance were negatively associated with the experience of negative emotions toward tax authorities. Conversely, coercive power, enforced compliance, and perceptions of an antagonistic climate were positively associated with such negative emotional responses, underscoring the emotional costs of coercion-based governance.

4.2. *Predictors of voluntary compliance*

The first research question examined determinants of voluntary tax compliance, with a particular focus on trust in tax authorities and other well-established attitudinal and demographic predictors. To address this, we estimated the following regression model:

$$\text{VOLUNTARY COMPLIANCE} = \text{b0} + \text{b1} \times \text{ATTITUDES} + \text{b3} \times \text{SOCIODEMOGRAPHICS}$$

The set of attitudinal predictors included perceptions of trust, legitimate and coercive power, fairness, emotional responses, and beliefs about the interaction climate. Sociodemographic controls comprise age, gender, and educational attainment. The results from the OLS regression are presented in Table 3. The model accounted for a substantial proportion of variance in voluntary compliance ($R^2 = 0.547$) and identified several significant predictors.

Trust emerged as the most influential factor ($\beta = 0.754$, $p < .001$), followed by coercive power ($\beta = -0.044$, $p = .009$) and legitimate power ($\beta = -0.042$, $p = .020$), both of which were negatively associated with voluntary compliance. Gender also played a significant role, with women reporting higher compliance intentions than men ($\beta = 0.053$, $p = .001$). Notably, perceptions of fairness, patriotism, tax knowledge, compliance norms, and perceived corruption did not attain statistical significance in the full model.

4.3. *Predictors of enforced compliance*

The second research objective focused on identifying the determinants of enforced compliance—compliance driven by perceived external pressure or threat. The corresponding model was specified as: ENFORCED COMPLIANCE = b0 + b1 x ATTITUDES + b3 x SOCIODEMOGRAPHICS

The results (Table 4) reveal that coercive power was the most influential predictor of enforced compliance ($\beta = 0.317$, $p < .001$), followed by negative emotions ($\beta = 0.155$, $p < .001$), legitimate power ($\beta = 0.142$, $p < .001$), and trust (negatively associated; $\beta = -0.107$, $p < .001$).

Further significant predictors included fairness perceptions (positive), patriotism (negative), and gender, with women reporting higher levels of enforced compliance. The model's explanatory power was moderate ($R^2 = 0.194$), yet the consistency and strength of the main predictors align with theoretical expectations from the SSF.

Robustness checks[1] across sectors and staff-size groups confirmed the

[1] Trust consistently emerged as the most significant predictor of voluntary compliance across all subsamples ($\beta = 0.709$–0.800, $p < .001$), while coercive power was consistently linked to enforced compliance ($\beta = 0.251$–0.417, $p < .001$). Secondary effects revealed minor context-specific variations: legitimate power influenced voluntary compliance in commerce, coercive power in catering, and patriotism in services and manufacturing. For enforced compliance, legitimate power, negative emotions, and perceptions of fairness or corruption displayed modest, non-linear effects, while trust and patriotism occasionally showed negative associations. Demographic factors had negligible effects, and all multicollinearity diagnostics were within acceptable thresholds.

Table 2
Means, standard deviations and inter-correlations between variables.

	Research Scales	M	SD	1	2	3	4	5	6	7	8	9	10	11
	TAX COMPLIANCE													
1	*Voluntary Compliance*	5.36	1.51											
2	*Enforced Compliance*	4.25	1.85	−0.21**										
	ATTITUDES													
3	*Trust*	4.08	1.43	0.73**	−0.10**									
4	*Legitimate Power*	4.16	1.83	0.23**	0.04	0.36**								
5	*Coercive Power*	5.87	1.58	−0.06*	0.35**	−0.04	−0.09**							
6	*Fairness Perceptions*	2.70	1.39	0.22**	0.04	0.33**	0.27**	−0.02						
7	*Negative Emotions*	6.12	1.84	−0.22**	0.25**	−0.32**	−0.23**	0.23**	−0.11**					
8	*Patriotism*	7.18	2.01	0.16**	−0.06*	0.19**	0.16**	−0.01	0.13**	−0.09**				
9	*Tax Knowledge*	4.78	2.40	0.10**	−0.03	0.10**	0.09**	−0.03	0.13**	−0.07**	0.15**			
10	*Compliance Norm*	3.82	2.02	0.12**	0.02	0.19**	0.17**	0.66**	0.24**	−0.04	0.13**	0.27**		
11	*Corruption Perceptions*	6.83	1.89	−0.13**	0.01	−0.21**	−0.15**	0.04	−0.18**	0.10**	−0.11**	−0.03	−0.11**	
	INTERACTION CLIMATE													
12	*Antagonistic Climate*	6.75	1.86	−0.18**	0.14**	−0.26**	−0.25**	0.15**	−0.16**	38**	−0.04	−0.03	−0.13**	18**

Notes: Answering scales range from 1 to 9; correlations are Pearson correlations; *, ** indicate significance at the 1 % and 0.1 % level respectively.

Table 3
OLS regression with voluntary compliance as dependent variable and attitudinal factors and sociodemographic characteristics as predictors.

	OLS model				Collinearity Statistics	
Research Scales	*S.E.*	*β*		*p*	*Tolerance*	*VIF*
ATTITUDES						
Trust	0.020	0.754	***	<0.001	0.714	1.401
Legitimate Power	0.015	−0.042	*	0.020	0.797	1.254
Coercive Power	0.016	−0.044	**	0.009	0.924	1.082
Fairness Perceptions	0.019	−0.016		0.368	0.817	1.225
Negative Emotions	0.015	0.021		0.246	0.759	1.318
Patriotism	0.013	0.025		0.133	0.925	1.081
Tax Knowledge	0.011	0.030		0.075	0.896	1.116
Compliance Norm	0.013	−0.021		0.227	0.850	1.177
Corruption Perceptions	0.013	0.026		0.123	0.914	1.094
INTERACTION CLIMATE						
Antagonistic Climate	0.015	−0.008		0.641	0.791	1.265
SOCIODEMOGRAPHICS						
Age	0.030	0.007		0.695	0.955	1.048
Gender	0.053	0.053	**	0.001	0.965	1.037
Education	0.023	−0.008		0.621	0.976	1.025
N	1761					
R^2	0.547					

Notes: Voluntary compliance is the dependent variable. Gender is coded as 1 = male and 2 = female (reference category: male). Age and education are coded on four- and six-point ordinal scales, respectively. Attitudinal variables use a nine-point Likert scale (1 = strong disagreement; 9 = strong agreement). Significance levels: $p <$ .05 (*), $p <$ .01 (**), $p <$ .001 (***).

Table 4
OLS regression with enforced compliance as dependent variable and attitudinal factors and sociodemographic characteristics as predictors.

	OLS model				*Collinearity Statistics*	
Research Scales	*S.E.*	*β*		*p*	*Tolerance*	*VIF*
ATTITUDES						
Trust	0.033	−0.107	***	<0.001	0.714	1.401
Legitimate Power	0.024	0.142	***	<0.001	0.797	1.254
Coercive Power	0.026	0.317	***	<0.001	0.924	1.082
Fairness Perceptions	0.032	0.078	***	<0.001	0.817	1.225
Negative Emotions	0.025	0.155	***	<0.001	0.759	1.318
Patriotism	0.021	−0.057	*	0.011	0.925	1.081
Tax Knowledge	0.017	−0.007		0.766	0.896	1.116
Compliance Norm	0.021	−0.004		0.858	0.850	1.177
Corruption Perceptions	0.022	−0.017		0.450	0.914	1.094
INTERACTION CLIMATE						
Antagonistic Climate	0.024	0.049	*	0.044	0.791	1.265
SOCIODEMOGRAPHICS						
Age	0.049	−0.008		0.727	0.955	1.048
Gender	0.086	0.101	***	<0.001	0.965	1.037
Education	0.038	−0.035		0.107	0.976	1.025
N	1761					
R^2	0.194					

Notes: Enforced compliance serves as the dependent variable. Coding of variables follows the same structure as in Table 3. Significance levels: $p <$ .05 (*), $p <$ .01 (**), p $<$ .001 (***).

stability of the core findings (see Appendix Tables B.1-B.4).

4.4. Predictors of trust

Building on the preceding analysis, which identified perceived trust in tax authorities as the principal determinant of voluntary tax compliance, we extended the investigation to examine the key factors shaping trust itself. Drawing on established theoretical frameworks from the literature, we conducted an OLS regression analysis to identify the most salient predictors of trust.

The regression model was significant, F (12, 1748) = 58.37, $p < .001$, explaining 28.6 % of the variance. The results, presented in Table 5, suggest that trust was positively predicted by legitimate power (β = 0.203, $p < .001$), fairness perceptions (β = 0.201, $p < .001$), patriotism, compliance norms, gender, and, to a lesser extent, coercive power (β = 0.046, $p = .028$). Negative emotions (β = −0.218, $p < .001$), perceptions of corruption, and antagonistic climate were negatively associated with trust. Age, education, and tax knowledge did not significantly influence trust.

Collinearity diagnostics indicated no multicollinearity concerns (VIF $\leq$ 1.25, condition indexes < 30). To assess the stability of the findings, we conducted several robustness checks. Results remained substantively unchanged when using alternative operationalizations of the constructs and when estimating models with different sets of control variables.

To ensure that our findings are not influenced by the chosen method of scale construction, we conducted supplementary analyses using alternative aggregation approaches. Specifically, all regression models for voluntary compliance, enforced compliance, and trust were re-estimated using (a) the first principal component (PC1) of each multi-item construct and (b) averaged combinations of individual items, with results remaining largely consistent in sign, magnitude, and significance (see Appendix Table B.5).

4.5. The role of trust as a mediator

According to Hayes (2018), mediation analysis is used to examine the underlying process through which an intermediary variable—known as the mediator—transmits the effect of an independent variable on a dependent variable. Synthesizing the prior correlational and regression analyses, which revealed that trust substantially relates to voluntary compliance, we applied mediation analysis to assess whether trust in tax authorities mediates the relationship between several key predictors and voluntary tax compliance. Specifically, we tested the mediating role of trust in the associations between legitimate power, perceived fairness, negative emotions toward tax authorities, patriotism, perceived corruption, and gender with voluntary compliance.

(a) Legitimate Power: Following the procedure outlined by Baron and Kenny (1986), we conducted three regression models to assess (i) the direct effect of legitimate power on voluntary compliance, (ii) the effect of legitimate power on trust, and (iii) the effect of trust on voluntary compliance while controlling for legitimate power. The corresponding coefficients are displayed in Fig. 2. Results indicate a significant indirect effect of legitimate power on voluntary compliance through trust (b = 0.224, p < .001). The direct effect of legitimate power on voluntary compliance remained statistically significant, though marginal (b = −0.036, p = .012). These results suggest partial mediation, whereby trust partially explains the link between legitimate power and voluntary compliance. Full regression results are reported in Table 6.

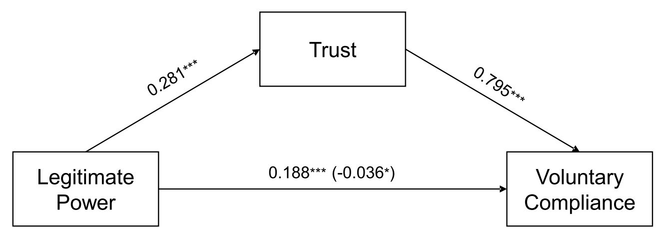

Fig. 2. Relation between perceived legitimate power of authorities and voluntary compliance, mediated by trust in authorities.
Notes: Unstandardized regression coefficients for the relationship between legitimate power and voluntary compliance, as mediated by trust (N = 1761), are presented. The number in parentheses represents the unstandardized regression coefficient when trust is included in the regression model. Reversing the path direction (Trust → Legitimate Power) confirms that trust remains a strong predictor of voluntary compliance, and that the minor role of legitimate power is robust regardless of model specification. *, **, *** indicate significance at the 5 %, 1 % and 0.1 % level respectively.

Table 5
OLS regression with trust as dependent variable and attitudinal factors and sociodemographic characteristics as predictors.

	OLS model				*Collinearity Statistics*	
Research Scales	*S.E.*	*β*		*p*	*Tolerance*	*VIF*
ATTITUDES						
Legitimate Power	0.017	0.203	***	<0.001	0.836	1.196
Coercive Power	0.019	0.046	*	0.028	0.927	1.079
Fairness Perceptions	0.022	0.201	***	<0.001	0.856	1.168
Negative Emotions	0.018	−0.218	***	<0.001	0.799	1.251
Patriotism	0.015	0.082	***	<0.001	0.934	1.071
Tax Knowledge	0.013	0.011		0.608	0.896	1.116
Compliance Norm	0.015	0.069	**	0.002	0.855	1.170
Corruption Perceptions	0.016	−0.093	***	<0.001	0.925	1.081
INTERACTION CLIMATE						
Antagonistic Climate	0.017	−0.072	**	0.001	0.795	1.257
SOCIODEMOGRAPHICS						
Age	0.036	0.007		0.725	0.955	1.048
Gender	0.062	0.111	***	<0.001	0.981	1.019
Education	0.027	0.011		0.585	0.976	1.025
N	1761					
R^2	0.286					

Notes: In the OLS regression model, Trust is used as the dependent variable. This model examines the influence of a variety of psychological, cognitive, behavioral, and demographic factors on individuals' trust in tax authorities. Gender is coded as 1 = male and 2 = female, with male serving as the reference category for the categorical covariate. Age is coded on a four-point scale from 1 = 18–40 to 4 = 65+, and Education is coded on a six-point scale from 1 = elementary school to 6 = PhD. All other variables are coded on a nine-point Likert scale, where 1 indicates strong disagreement and 9 indicates strong agreement. *, **, *** denote significance at the 5 %, 1 % and 0.1 % level, respectively.

Table 6
Summary table of trust as a mediator of various determinants of compliance.

Relationships	Total Effect b	Direct Effect b	Indirect Effect b	Confidence Interval		Conclusion
				Lower Bound	Upper Bound	
Fairness Perceptions → Trust → Voluntary Compliance	0.240***	−0.031	0.271***	0.227	0.315	Full Mediation
National Pride → Trust → Voluntary Compliance	0.117***	0.015	0.102***	0.075	0.130	Full Mediation
Corruption Perceptions → Trust → Voluntary Compliance	−0.100***	0.023	−0.123***	−0.153	−0.093	Full Mediation
Negative Emotions → Trust → Voluntary Compliance	−0.180***	0.013	−0.193***	−0.227	−0.161	Full Mediation
Legitimate Power → Trust → Voluntary Compliance	0.188***	−0.036*	0.224***	0.190	0.257	Partial Mediation
Gender → Trust → Voluntary Compliance	0.393***	0.180**	0.212**	0.108	0.321	Partial Mediation

Note: *, **, *** indicate significance at the 5 %, 1 % and 0.1 % level respectively.

(b) Fairness Perceptions: Applying the same analytical framework, we examined whether trust in tax authorities mediates the relationship between perceived fairness and voluntary compliance. The results support the mediation hypothesis. Fairness perceptions exerted a significant indirect effect on voluntary compliance through trust ($b = 0.271$, $p < .001$). Importantly, once trust was included in the model, the direct effect of fairness perceptions on voluntary compliance became statistically non-significant ($b = -0.031$, $p = .099$). These findings indicate full mediation, suggesting that the influence of fairness perceptions on voluntary compliance operates primarily through increased trust in tax authorities (Table 6). The reversed path (Trust → Fairness Perceptions) does not substantially alter the main conclusions, reinforcing the robustness of the theoretical model.

(c) Negative Emotions: Trust also mediated the relationship between negative emotions toward tax authorities and voluntary compliance. A significant negative association was observed between negative emotions and trust, which, in turn, influenced voluntary compliance. The indirect effect of negative emotions on voluntary compliance through trust was statistically significant and negative ($b = -0.193$, $p < .001$). In contrast, the direct effect of negative emotions on voluntary compliance was non-significant when trust was included in the model ($b = 0.013$, $p = .350$). These results provide evidence of full mediation, highlighting trust as a key mechanism through which negative affect undermines voluntary compliance (Table 6). The reversed model (Trust → Negative Emotions) supports the robustness check: regardless of the assumed causal direction between trust and negative emotions, trust remains the central predictor of voluntary compliance, while negative emotions have only a minor, indirect influence.

(d) Patriotism: In line with a core proposition of the SSF, the analysis revealed that trust fully mediates the relationship between patriotism and voluntary compliance. The indirect effect of patriotism on voluntary compliance via trust was significant ($b = 0.102$, $p < .001$), while the direct effect of patriotism became statistically non-significant in the presence of the mediator ($b = 0.015$, $p = .233$). These findings suggest that patriotic sentiment contributes to voluntary tax compliance primarily by fostering trust in tax authorities (Table 6). Reversing the mediation direction (Trust → Patriotism) confirms the theoretical robustness: Patriotism is largely a consequence of trust, not a mediator that explains voluntary compliance.

(e) Corruption Perceptions: The role of trust as a mediator was also supported in the relationship between perceived corruption and voluntary compliance. Specifically, the indirect effect of perceived corruption on voluntary compliance via trust was significant and negative ($b = -0.123$, $p < .001$). When trust was included as a mediator, the direct effect of corruption perceptions on voluntary compliance was no longer significant ($b = 0.023$, $p = .078$), indicating full mediation. This suggests that perceptions of corruption erode trust, which in turn reduces individuals' willingness to comply voluntarily (Table 6). The reversed model (Trust → Corruption Perceptions) indicates that perceived corruption is largely an outcome of trust rather than a mechanism linking trust to compliance.

(f) Gender: Finally, we examined the mediating role of trust in the relationship between gender and voluntary compliance. Results indicated a significant indirect effect of gender on voluntary compliance via trust ($b = 0.212$, $p < .001$), alongside a significant direct effect ($b = 0.180$, $p = .006$). These findings suggest partial mediation, implying that while trust explains a substantial portion of the gender effect, other mechanisms may also contribute to higher compliance intentions among female respondents (Table 6). Reversing the mediator (Trust → Gender) confirms that gender influences voluntary compliance primarily via trust, not vice versa.

Supplementary mediation models with coercive power as mediator were estimated to examine the power pathway. Coercive power consistently exerted a strong positive effect across models ($\beta = 0.31$–0.41, $p < .001$). However, distinct patterns emerged: fairness, legitimate power, and corruption perceptions had negligible effects on coercive power and no meaningful indirect effects on enforced compliance. Patriotism demonstrated a small direct negative effect ($\beta = -0.058$, $p = .010$) but no significant indirect effect. In contrast, negative emotions significantly predicted enforced compliance both directly ($\beta = 0.178$, $p < .001$) and indirectly via coercive power ($\beta = 0.073$, $p < .001$), indicating partial mediation. The results suggest that, while predictors such as patriotism may affect power perceptions their explanatory weight is substantially stronger in the trust pathway.

5. Discussion

5.1. Interpretation and avenues for future research

This study provides robust evidence supporting the SSF using a large, policy-relevant sample of 1761 Greek micro-business owners. In line with SSF assumptions, trust in tax authorities was strongly associated with voluntary compliance, whereas coercive power—especially when reinforced by negative emotions—was linked to higher levels of enforced compliance.

Trust consistently predicted voluntary compliance across sectors and firm sizes, while gender and patriotism had only marginal effects. In contrast, enforced compliance was more context-dependent, varying by sector and firm size, and was primarily associated with coercive power. The observed negative correlation between voluntary and enforced compliance suggests that coercive strategies may undermine voluntary tax morale, reflecting findings from other low-trust contexts (Mardhiah et al., 2019; Muehlbacher et al., 2011) and highlighting the complex interplay between trust and power emphasized in recent behavioral economics research (Alm et al., 2022; Batrancea et al., 2019; Olsen et al., 2018). Voluntary compliance was positively related to perceptions of fairness, legitimate power, and patriotism, and negatively related to perceived corruption, negative emotions, and an antagonistic climate. These associations appear to be underpinned by trust, although the cross-sectional design limits causal inference.

The study also reveals significant heterogeneity among micro-business owners. Females reported higher trust and voluntary compliance, aligning with research on gender differences in moral orientation and risk preferences (Croson & Gneezy, 2009; Kastlunger et al., 2010). Conversely, tax knowledge and perceived compliance norms were not significant predictors, diverging from studies in more educated populations (Braithwaite, 2003; Torgler, 2007), possibly reflecting the complexity and opacity of the Greek tax system (Schneider & Enste, 2013). Negative emotions - fear, anger, and anxiety - were positively linked to enforced compliance but negatively associated with voluntary compliance, supporting dual-process models of compliance (Gangl et al., 2013; Olsen et al., 2018; Wenzel, 2004).

These findings underscore the need to move beyond one-size-fits-all approaches, considering both micro-business owners' heterogeneity and contextual factors. Future research should employ longitudinal or experimental designs to clarify causal links between trust, coercive power, and compliance, investigate how enforcement strategies can strengthen legitimacy, minimize negative spillovers, and integrate behavioral and moral factors. Jointly examining trust and power pathways can provide deeper insight into how enforcement strategies interact with perceptions of authority to shape compliance behavior in real-world business contexts, thereby informing more tailored and effective policy interventions.

5.2. Strengths and limitations

Previous studies testing the SSF in Greece have often relied on experimental surveys with small samples, primarily comprising undergraduate students (e.g., Batrancea et al., 2019; Kaplanoglou & Rapanos, 2015). These designs, while valuable, provide limited real-world applicability, due to reliance on hypothetical scenarios and the absence of actual tax experience (Batrancea et al., 2022; Hartl et al., 2015). By contrast, this study draws on a large, nationally representative sample of micro-business owners operating in a real business environment, thereby enhancing the policy relevance of the findings.

Nonetheless, limitations remain. First, although self-reported measures are commonly used and theoretically justified in tax compliance research (Braithwaite, 2003), their accuracy in capturing actual behavior is subject to debate (Hite, 1988; Onu, 2016; Santoro, 2021). To address this, the study employed validated, theory-driven instruments and implemented quality-control measures during data collection (see Section 3.4).

Second, while the regression and mediation analyses were robust across multiple estimation techniques, the cross-sectional design limits causal inference (MacKinnon & Pirlott, 2015). To partially address potential endogeneity, we tested alternative model specifications, including reversing the direction of key paths, and controlled for relevant covariates. The results remained stable, indicating that endogeneity is unlikely to substantially distort the observed associations. Nevertheless, future longitudinal or experimental studies are needed to clarify causal directions. Moreover, voluntary participation in the e-survey introduces the possibility of self-selection bias. Finally, although the findings are highly relevant for Greece, caution is required when extrapolating to other institutional contexts, given the country's prolonged economic crises and institutional instability.

Future research could benefit from integrating multiple complementary data sources—including administrative records (Bergolo et al., 2023), experimental designs (Kasper & Rablen, 2023), and survey-based methods—to triangulate findings and enhance robustness (Santoro, 2021). However, access to confidential tax data remains a significant barrier, highlighting the need for innovative methodological approaches to advance the field (Kirchler & Wahl, 2010).

5.3. Contributions and policy implications

Despite its limitations, the study offers several important contributions. First, it is among the few to empirically test the SSF within a real-world business context using a nationally representative sample. While SSF hypotheses have been extensively examined among students and self-employed individuals, research on micro-businesses —a key group to shadow economies— remains sparse. This study fills that gap and expands the scope of compliance research.

Second, the findings demonstrate that SSF assumptions hold even in antagonistic institutional environments, such as Greece, underscoring the framework's broader relevance in business settings. Third, the study highlights the associations of emotions and patriotic identification with compliance motivation, extending research beyond purely rational-choice perspectives.

A particularly notable contribution is the identification of trust as a central factor linked to voluntary compliance. From a behavioral economics perspective, this emphasizes the importance of relational and normative factors—beyond deterrence—in influencing micro-business owners' behavior.

From a policy standpoint, the results lend support to arguments for adopting service-oriented approaches aligned with responsive regulation (Braithwaite, 2003), the trust paradigm (Alm & Torgler, 2011), and the SSF (Kirchler et al., 2008) to foster long-term, trust-based relationships between tax administrations and micro-business owners (Antinyan et al., 2020; Gangl et al., 2013; Gangl et al., 2015; Kogler et al., 2023; Santoro, 2021). In the Greek context, appeals to national pride and collective identity could further encourage compliance through patriotic sentiment. By combining fair enforcement with institutional transparency, tax authorities could foster conditions that encourage a move from a fear-driven obligation toward a shared civic commitment grounded in trust.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Data availability

Anonymized data are publicly available at the Mendeley Data Repository: https://data.mendeley.com/preview/2n5rjhydgd?a=23d948a9-1843-44fc-a896-204828c52ed9.

Disclaimer

The opinions expressed herein are those of the authors and do not necessarily reflect those of the Independent Authority of Public Revenue (IAPR).

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Augustinos Dimitras: Writing – review & editing, Visualization, Validation, Supervision, Project administration, Methodology, Conceptualization. **Vasileios Fourlas:** Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Erich Kirchler:** Writing – review & editing, Visualization, Validation, Supervision, Methodology. **George Peppas:** Writing – review & editing, Validation, Supervision, Software, Resources, Investigation, Formal analysis, Data curation.

Declaration of competing interest

The authors declare no competing financial or non-financial interests.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.socec.2025.102480.

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