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Article

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Administrative Sciences

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Suggested Citation: Williams, Colin (2020) : Evaluating public administration approaches towards tax non-compliance in Europe, Administrative Sciences, ISSN 2076-3387, MDPI, Basel, Vol. 10, Iss. 3, pp. 1-15,
<https://doi.org/10.3390/admsci10030043>

This Version is available at:

<https://hdl.handle.net/10419/240033>

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Article

Evaluating Public Administration Approaches towards Tax Non-Compliance in Europe

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Received: 21 June 2020; Accepted: 6 July 2020; Published: 14 July 2020



Abstract: Those engaging in tax non-compliance have been conventionally explained as rational economic actors partaking when the benefits outweigh the costs, and thus public administrations have sought to enforce compliance using a deterrence approach which increases the risk of detection and penalties. However, many have been found to not engage in tax non-compliance when the benefits exceed the costs. The result has been the emergence of a voluntary compliance approach viewing taxpayers as social actors who engage in tax non-compliance when there is a lack of vertical trust (in governments) and horizontal trust (in others). Using a probit regression analysis of data from special Eurobarometer surveys conducted in 2007, 2013 and 2019, the finding is that although the likelihood of participating in tax non-compliance is largely not associated with the level of penalties and risk of detection, it is significantly associated with the level of vertical and horizontal trust, with participation in tax non-compliance increasing with lower vertical and horizontal trust. The implications for theory and for how public administrations tackle tax non-compliance are then discussed.

Keywords: informal sector; undeclared work; tax evasion; tax morale; tax awareness; institutional theory; fiscal justice; tax commitment; tax co-responsibility; social actor theory; fiscal justice; public policy; European Union

1. Introduction

Tax non-compliance is a prominent feature of the European economy. Some 11.6% of all labour input in the private sector is estimated to be undeclared (Williams et al. 2017) and the undeclared economy is estimated as equivalent to 15.8% of GDP (Williams and Schneider 2016). This has negative impacts on workers, businesses, consumers and the wider society. Those working in the undeclared economy suffer poorer working conditions (Williams and Horodnic 2019b), purchasers of goods and services from the undeclared economy lack insurance cover and legal recourse (OECD 2017), formal enterprises suffer unfair competition from enterprises operating in the undeclared economy (OECD 2017; World Bank 2019) and enterprises operating undeclared lack legal protection and the ability to access capital and grow (Loayza 2018). Meanwhile, governments lose tax revenue and regulatory control over working conditions, which limits their ability to pursue social inclusion (ILO 2018; Krzikallová and Tošenovský 2020; Villar Rubio et al. 2017; Williams and Round 2008; World Bank 2019). The result is that the topic of tax non-compliance has risen up policy agendas in not only supra-national institutions (ILO 2015; European Commission 2016; OECD 2017; World Bank 2019) but also national governments in Europe as well as beyond (ILO 2018, 2020; Williams 2019).

When explaining and tackling tax non-compliance, the dominant theoretical perspective for some half a century has been that those engaging in tax non-compliance are rational economic actors partaking in such endeavours when the benefits outweigh the costs, and thus public administrations have pursued an enforced compliance approach, which seeks to deter involvement in such endeavours by increasing the risk of detection and severity of the penalties (Allingham and Sandmo 1972). However, the recognition that many do not engage in tax non-compliance when the benefits are greater than

the costs has led to the emergence of an alternative voluntary compliance approach (Alm et al. 2012; Kirchler 2007; Williams et al. 2015). This views taxpayers as social actors and explains engagement in tax non-compliance as resulting from a lack of vertical trust in government (Alm et al. 2010; Jun and Yoon 2018; Torgler 2007) and more recently also from a lack of horizontal trust in each other (Hallsworth et al. 2017; Lefebvre et al. 2015). The aim of this paper is to evaluate these competing theorisations in relation to Europe.

To achieve this, the next section reviews the enforced compliance and voluntary compliance approaches, founded on rational economic actor and social actor theorisations of taxpayers, respectively, and whether they are mutually exclusive or not. The third section then introduces the data and methodology to evaluate these theories, namely a probit regression analysis of Eurobarometer special surveys conducted in 28 European countries in 2007, 2013 and 2019, each involving some 27,000 interviews. The findings are then reported in the fourth section. Revealing that although the likelihood of participating in tax non-compliance is not generally associated with the level of penalties and risk of detection, but is significantly associated with the level of vertical and horizontal trust, and some interaction effects, the final section discusses the theoretical and policy implications of these findings.

Throughout this paper, tax non-compliance is examined by analysing paid activities that are lawful as regards their nature but are not declared to, and hidden from, the public authorities, taking account of the differences in the regulatory systems of countries (European Commission 2007b, 2016; OECD 2017; Shahid et al. 2017; Williams 2005, 2011, 2017). Such tax non-compliance is widely known across the European Union as undeclared work. If the goods and services exchanged are unlawful (e.g., the production or trafficking of drugs, firearms, persons or money laundering forbidden by law), it is part of the wider criminal economy, namely the shadow economy (often defined as including both the undeclared economy and the criminal economy), and if there is no monetary payment, it is part of the unpaid sphere.

2. Explaining and Tackling Tax Non-Compliance: Literature Review and Hypotheses Development

Reviewing the burgeoning literature on explaining and tackling tax non-compliance, it quickly becomes apparent that two theoretical perspectives exist. Here, each is evaluated and, following this, the scholarship that discusses whether they are mutually exclusive or not.

2.1. Enforced Compliance: Rational Economic Actor Theory

The origin of the view that those engaged in tax non-compliance are rational economic actors is the classic utilitarian theory of crime that explains crime to occur when the benefits outweigh the costs (Bentham 1983). In the contemporary period, this rational economic actor view of crime was re-popularised in the late 1960s by Becker (1968). He argued that crime could only be solved by increasing the penalties and risks of detection to make acting lawfully a rational economic decision. A few years later, Allingham and Sandmo (1972) applied the same theoretical lens to explaining and tackling tax non-compliance. They argued that non-compliance occurs when the benefits exceed the costs and argued for an enforced compliance approach whereby public administrations increase the penalties and risks of detection to alter the cost/benefit ratio facing taxpayers.

Subsequently, this enforced compliance approach, based on a view of the non-compliant as rational economic actors, has been widely adopted as a way of explaining and tackling tax non-compliance and adopted by public administrations across Europe and well beyond (Grabiner 2000; Hasseldine and Li 1999; Richardson and Sawyer 2001). Indeed, a 2017 survey of the official government representatives on the European Commission's European Platform Tackling Undeclared Work found that these representatives of the public administrations involved in tackling the undeclared economy across 31 European countries ranked penalties as the most important and effective policy measure for tackling the undeclared economy, followed by improving the risk of detection (Williams and Puts 2017; Williams 2019). Despite the widespread use of this deterrence approach by public administrations

across Europe and well beyond, the evidence that increasing the penalties and risk of detection reduces tax non-compliance is mixed (see Table 1).

Table 1. Relationship between increasing penalties and risk of detection and tax non-compliance.

Finding	Studies
Reduces participation	(Blackwell 2010; Dubin and Wilde 1988; Feld and Frey 2002; Friedland 1982; Friedland et al. 1978; Klepper and Nagin 1989; Kluge and Libman 2017; Mas'ud et al. 2015; Mazzolini et al. 2017; Schwartz and Orleans 1967; Slemrod et al. 2001; Webley and Halstead 1986; Witte and Woodbury 1985).
Risk of detection reduces participation more than penalties	(Alm 1999; Friedland 1982; Webley and Halstead 1986; Williams and Horodnic 2017a, 2017b).
No effect	(Hartl et al. 2015; Shaw et al. 2008; Williams and Franic 2015, 2016).
Increases participation	(Chang and Lai 2004; Hofmann et al. 2017; Kaplanoglou et al. 2016; Mohdali et al. 2014; Murphy 2005, 2008; Murphy and Harris 2007).

As Table 1 displays, a body of earlier literature, supporting the enforced compliance approach, found that increasing the penalties and risk of detection reduces tax non-compliance, with most of the scholarship written from within this approach finding that increasing the risk of detection is more effective than increasing the penalties. However, other studies find no association between increasing the penalties and risk of detection and participation in tax non-compliance, and yet other scholarship finds that increasing penalties and risk of detection increases tax non-compliance, due to the resultant breakdown of the social contract between citizens and the state. Therefore, to evaluate this rational economic actor approach, the following hypothesis can be tested:

Enforced compliance hypothesis (H1): *Higher penalties and risks of detection reduce the likelihood of tax non-compliance, ceteris paribus.*

H1a: *Higher penalties reduce the likelihood of tax non-compliance, ceteris paribus.*

H1b: *Higher risks of detection reduce the likelihood of tax non-compliance, ceteris paribus.*

2.2. Voluntary Compliance: Social Actor Theory

The seeds of an alternative approach were sown by Allingham and Sandmo (1972) themselves in their seminal paper establishing the rational economic actor approach. As they stated, 'This is a very simple theory, and it may perhaps be criticized for giving too little attention to nonpecuniary factors in the taxpayer's decision on whether or not to evade taxes' (Allingham and Sandmo 1972, p. 326). Indeed, it has been subsequently found that many do not engage in tax non-compliance when the benefit/cost ratio suggests they should if they were truly rational economic actors (Alm et al. 2010; Kirchler 2007; Murphy 2008).

Drawing its inspiration from a variant of institutional theory (Helmke and Levitsky 2004; North 1990), a voluntary compliance approach has emerged. This explains tax non-compliance to result from the lack of alignment between the laws and regulations of a society's formal institutions and the socially shared unwritten rules of its informal institutions. This asymmetry reflects the level of vertical trust and is measured using the level of tax morale (i.e. the intrinsic motivation to pay taxes). When this asymmetry is greater, tax morale is lower and tax non-compliance is higher (Alm et al. 2010; Torgler 2007, 2011). This finding that tax non-compliance is greater when there is a lower level of vertical trust has been revealed in individual country studies (Vålsan et al. 2020; Williams and Franic 2016; Williams et al. 2016; Windebank and Horodnic 2017), studies of different European regions (Williams and Horodnic 2017b) and in the EU as a whole (Williams and Horodnic 2017a; Williams et al. 2015). To tackle tax non-compliance, the goal is consequently to increase vertical trust to improve the willingness of the population to comply and self-regulate (Kirchler 2007; Torgler 2007, 2011).

No known studies have shown either that there is no association between vertical trust and tax non-compliance, or that there is a negative relationship.

Recently, a second wave of this voluntary compliance approach, which views taxpayers more as social actors, has emerged, arguing that lower tax non-compliance is not only associated with higher vertical trust (between government and citizens) but also higher horizontal trust (between citizens), in the sense of trusting other individuals to be compliant (Baric 2016; Fellner et al. 2013; Horodnic and Williams 2020). Individuals are found to be more likely to engage in tax non-compliance if they live in a community in which tax non-compliance is more pervasive, not least because this leads to fewer concerns about being detected and punished, but also because they view everybody else as engaged, so see no reason to adhere to the rules of the game. Until now, this finding that tax non-compliance is conditional upon the behaviour of others has been revealed only in laboratory experiments (Alm 1999, 2012; Alm et al. 1999; Chang and Lai 2004; Fellner et al. 2013; Hallsworth et al. 2017; Lefebvre et al. 2015; Traxler 2010). Again, no known experiments have shown either that there is no association or that there is a negative relationship. Until now, however, the findings on horizontal trust have been largely limited to laboratory experiments. In consequence, to evaluate the social actor approach, the following hypothesis can be tested:

Voluntary compliance hypothesis (H2): *Higher vertical and horizontal trust reduces the likelihood of tax non-compliance, ceteris paribus.*

H2a: *Higher vertical trust reduces the likelihood of tax non-compliance, ceteris paribus.*

H2b: *Higher horizontal trust reduces the likelihood of tax non-compliance, ceteris paribus.*

2.3. Syntheses of the Theories

Most scholarship explaining tax non-compliance adopts either an enforced compliance rational economic actor approach or a voluntary compliance social actor theorisation. Nevertheless, a body of literature has questioned whether these approaches can be combined to better explain and tackle tax non-compliance. This has pursued two distinct approaches.

A first 'responsive regulation' approach has combined them by depicting a regulatory pyramid with policy initiatives to build vertical (and horizontal) trust, used first on the majority of the population, and the deterrents of the enforced compliance approach used last, only on those who have failed to self-regulate and become voluntarily compliant (Braithwaite 2002, 2009; Job et al. 2007). A second 'slippery slope' approach alternatively combines these approaches by concurrently using both the deterrence approach of rational economic actor theory and the voluntary compliance measures of enhancing vertical and horizontal trust (Kirchler et al. 2008; Khurana and Diwan 2014; Kogler et al. 2013; Prinz et al. 2013). Based largely on laboratory experiments, using both approaches concurrently (rather than consecutively) is identified as most effective (Kogler et al. 2013; Muehlbacher et al. 2011; Williams and Horodnic 2017a).

Nevertheless, there may be interaction effects when combining the approaches, especially concurrently. Increasing the risks of detection and penalties may result in different outcomes at varying levels of vertical trust. When there is high vertical trust, the introduction of tougher penalties and greater detection might destroy the social contract between the state and the population and increase tax non-compliance (Chang and Lai 2004; Kirchler et al. 2014). However, when there is low vertical trust, this might not occur. Until now, there is little comprehension of these interactions between penalties and detection risks and vertical and horizontal trust. In consequence, the following hypotheses can be evaluated:

Moderating effects of vertical trust hypothesis (H3): *The effects of higher penalties and risks of detection on the likelihood of tax non-compliance are moderated by vertical trust, ceteris paribus.*

H3a: *The effect of higher penalties on the likelihood of tax non-compliance is moderated by vertical trust, ceteris paribus.*

H3b: *The effect of higher risks of detection on the likelihood of tax non-compliance is moderated by vertical trust, ceteris paribus.*

Moderating effects of horizontal trust hypothesis (H4): *The effects of higher penalties and risks of detection on the likelihood of tax non-compliance are moderated by horizontal trust, ceteris paribus.*

H4a: *The effect of higher penalties on the likelihood of tax non-compliance is moderated by horizontal trust, ceteris paribus.*

H4b: *The effect of higher risks of detection on the likelihood of tax non-compliance is moderated by horizontal trust, ceteris paribus.*

3. Methodology

3.1. Data

To evaluate these hypotheses, data is here reported from special Eurobarometer surveys 67.3, 79.2 and 92.1 conducted in 2007, 2013 and 2019, respectively (European Commission 2007a, 2013, 2019). For each survey, some 27,000 interviews were conducted in 28 European countries (the 27 European Union member states and the UK). A multi-stage random (probability) sampling method was used, which ensured that on the issues of age, gender, region and locality size, both the national and each level of the sample is representative in proportion to the population size. All interviews were conducted in the national language with adults aged 15 years and older.

3.2. Variables

The dependent variable is a dummy variable with value 1 for respondents answering ‘yes’ to the 2007 survey question of ‘Did you yourself carry out any undeclared activities in the last 12 months for which you were paid in money or in kind?’ and to the 2013 and 2019 surveys question of ‘Apart from a regular employment, have you yourself carried out any undeclared paid activities in the last 12 months?’, and value 0 otherwise.

To evaluate the theories, four explanatory variables are used. First, to examine the perceived penalty for engaging in tax non-compliance, a dummy variable is used, with value 0 for normal tax or social security contributions due and value 1 for normal tax or social security contributions due, plus a fine or prison. Second, to examine the perceived risk of detection, a dummy variable is used with value 0 for a very small or fairly small risk and value 1 for a fairly high or very high risk.

Third, to analyse vertical trust, tax morale is used because a lack of trust in formal institutions is manifested in low tax morale (Alm and Torgler 2006), and is thus a proxy measure of the lack of vertical trust between citizens and government, which is tailored to the issue under investigation. Participants were asked to rate the acceptability of five types of tax non-compliance using a 10-point Likert scale (where 1 means absolutely unacceptable and 10 means absolutely acceptable), namely: an individual is hired by a household and s/he does not declare the payment received to the tax or social security authorities even though it should be declared; a firm is hired by a household and it does not declare the payment received to the tax or social security authorities; a firm is hired by another firm and it does not declare its activities to the tax or social security authorities; a firm hires an individual and all or a part of the wages paid to him/her are not officially declared, and someone evades taxes by not declaring or only partially declaring their income. An aggregate tax morale index for each respondent was constructed by collating their responses to the five questions. The index is represented in the original 10-point Likert scale format, meaning that the lower the index value, the higher is their tax morale. The Cronbach’s Alpha coefficient of the scale, which shows a good internal consistency of the scale (Kline 2000), is 0.8622 in 2007, 0.8625 in 2013 and 0.8888 in 2019.

Fourth and finally, to analyse horizontal trust, participants were asked ‘Do you personally know any people who work without declaring their income or part of their income to tax or social security institutions?’ This proxy measure of horizontal trust has been used in previous studies of tax non-compliance (Williams et al. 2015; Horodnic and Williams 2020). This is a dummy variable with value 1 for those who know someone who participates in tax non-compliance and 0 otherwise.

Meanwhile, and similar to past studies evaluating engagement in tax non-compliance (Horodnic and Williams 2020; Williams and Horodnic 2017a), the control variables selected are:

- Gender: A dummy variable with value 0 for females and 1 for males;
- Age: A continuous variable indicating the exact age of a respondent;
- Employment status: a categorical variable grouping respondent by their employment status with value 1 for self-employed, value 2 for employed, and value 3 for not working;
- People 15+ years in own household: a categorical variable for people 15+ years in respondent’s household (including the respondent) with value 1 for one person, value 2 for two persons, value 3 for three persons or more;
- Children: a dummy variable for the presence of children up to 14 years old in the household with value 0 for individuals with no children and value 1 for those having children;
- Difficulties paying bills: a categorical variable for the respondent difficulties in paying bills with value 1 for having difficulties most of the time, value 2 for occasionally, and value 3 for almost never/never;
- Area: a categorical variable for the area where the respondent lives with value 1 for rural area or village, value 2 for small or middle-sized town, and value 3 for large town.

3.3. Analytical Methods

Probit regression analysis is used for testing hypotheses about the relationship between a categorical dependent variable and one or more categorical or continuous independent variables (Greene 2018). In consequence, it is here employed. The maximum likelihood method is used to estimate the least squares function. The log-likelihood function for probit is

$$\ln L = \sum_{j \in S} \omega_j \ln \phi(x_j \beta) + \sum_{j \notin S} \omega_j \ln \{1 - \phi(x_j \beta)\} \quad (1)$$

where ϕ is the standard cumulative normal and ω_j denotes the optional weights. $\ln L$ is maximized. Using probit analysis, the following model is adopted:

$$\Pr(y_j \neq 0 | x_j) = \phi(x_j \beta) \quad (2)$$

The dependent variable of the model y_j is binary, which represents engagement in tax non-compliance, x represents the explanatory variables including the control variables, which are expected penalty, detection risk, level of tax morality, level of horizontal trust, gender, age, employment status, people 15+ years in own household, children, difficulties paying bills, and area. Moreover, the interaction term is used for investigating moderating effects.

4. Results

Table 1 displays that in 2007, 6.2% of the European citizens surveyed reported participating in tax non-compliance in the form of undeclared work in the prior year, 4.5% in 2013 and 3.7% in 2019. In consequence, the proportion of European citizens engaging in tax non-compliance has declined from one in 16 to one in 27 citizens.

Those who are compliant perceive the expected punishment as higher than those engaging in tax non-compliance in both 2007, 2013 and 2019, perhaps explaining their compliance. The compliant also perceive the risk of detection as higher than those who are non-compliant in all three surveys, again intimating that this might explain their compliance. Turning to the issue of vertical trust,

measured using tax morale, the finding is that the non-compliant have a lower average tax morale than the compliant in all three time periods, and a considerably lower level of horizontal trust than the non-compliant in all the surveys, even if horizontal trust has improved between 2007 and 2019, both for the tax compliant and non-compliant.

Examining who engages in tax non-compliance, the finding is that men are far more likely than women to do so in all three surveys. So too are younger people more likely to engage in tax non-compliance. Turning to the employment status of the tax non-compliant, there is a broad consistency in the results over the 2007 to 2019 period. Those in self-employment are consistently over-represented among the tax non-compliant, and those not working consistently under-represented. Those living in households composed of three or more adults are over-represented in the tax non-compliant and those living in two-adult households under-represented in all survey years. In 2019, moreover, there was an increase in the share of the tax non-compliant who have children, although there was little difference between those who were compliant and not in terms of having children. Examining differences between rural and urban areas, there appears to have been a shift over time with a smaller share of the tax non-compliant being in a village or rural area and a growth in the proportion in small or middle-sized towns. Those with difficulties most of the time in paying bills are more likely to be tax non-compliant and those who almost never or never have difficulties are less likely to do so. Nevertheless, a greater proportion of the tax non-compliant population was composed of those who almost never or never have difficulties in paying the household bills in 2019 compared with 2013, tentatively suggesting that the tax non-compliant has become less confined to poorer populations over time.

To analyse whether these descriptive findings continue to be valid when other variables are held constant, probit estimates of the likelihood of tax non-compliance in 2007, 2013 and 2019 are reported in Table 2. Starting with who is more likely to be tax non-compliant, the finding is that men were significantly more likely to participate in tax non-compliance than women in 2007, 2013 and 2019, as were younger people. Those in jobs and not working are both significantly less likely to participate in tax non-compliance than the self-employed in all three surveys. Households with two or more adults are significantly less likely than single-person households to be non-compliant in all three time periods, whilst having children or not is not significantly associated with the likelihood of participating in tax non-compliance in 2007 and 2013 but in 2019, those with children were significantly less likely to be non-compliant than those without children. Although there were no significant variations between those living in urban and rural areas in their likelihood of participating in tax non-compliance in 2007 and 2013, in 2019, those living in large urban areas were significantly less likely to be non-compliant compared with those in rural areas or a village. Finally, those who almost never/never have difficulties paying bills, and those from time to time having difficulties, were significantly less likely to be non-compliant than those having difficulties most of the time in both 2013 and 2019.

Table 2. Descriptive statistics for the tax non-compliant and non-compliant in Europe.

	Participating in Tax Non-Compliance			Not Participating in Tax Non-Compliance		
	2007	2013	2019	2007	2013	2019
% of surveyed population	6.2	4.5	3.7	93.8	95.5	96.3
Expected penalty (%)						
Tax or social security contributions due	30	37	34	23	28	27
Tax or social security contributions + fine or prison	70	63	66	77	72	73
Detection risk (%)						
Very small/Fairly small	81	73	70	64	60	55
Fairly high/Very high	19	27	30	36	40	45
Tax morale—vertical trust (mean)	3.75	3.7	3.87	2.35	2.26	2.39
Know anyone who works undeclared—horizontal trust (%)						
Yes	89	84	82	44	34	37
No	11	16	18	56	66	63

Table 2. Cont.

	Participating in Tax Non-Compliance			Not Participating in Tax Non-Compliance		
Gender (%)						
Female	37	37	40	57	54	54
Male	63	63	60	43	46	46
Age (mean)	38	39	41	48	49	51
Employment status (%)						
Self-Employed	12	12	12	6	7	7
Employed	48	42	45	44	43	45
Not working	40	46	43	50	50	48
People 15+ years in household						
One	22	26	26	22	23	24
Two	44	42	45	47	49	51
Three and More	34	32	29	31	28	25
Children (%)						
No children	93	95	72	95	95	76
Having children	7	5	28	5	5	24
Area (%)						
Rural area or village	38	35	32	36	34	33
Small or middle-sized town	35	37	40	37	38	38
Large town	27	28	28	27	28	29
Difficulties paying bills (%)						
Most of the time	-	22	17	-	12	6
From time to time	-	32	28	-	28	24
Almost never/never	-	46	55	-	60	70

Source: 2019 Eurobarometer 92.1 survey, 2013 Eurobarometer 79.2 survey and 2007 Eurobarometer 67.3 survey.

Evaluating the hypotheses, although in 2013, the greater the expected penalties, the significantly less likely were citizens to participate in tax non-compliance, the significance of this association is not apparent in either 2007 or 2019. Meanwhile, participation in tax non-compliance is not associated with the risk of detection in any of the three years the survey was conducted. In consequence, although the enforced compliance higher penalties hypothesis H1a was confirmed in 2013, it was not valid in either 2007 and 2019, and H1b that the risk of detection is associated with the likelihood of participation was not confirmed in 2007, 2013 or 2019.

Examining the voluntary compliance hypothesis, however, there is a strong significant association between vertical trust and participation in tax non-compliance in all three surveys. The higher the level of vertical trust, measured in terms of tax morale, the lower is the likelihood of tax non-compliance (confirming hypothesis H2a). It is similarly the case with horizontal trust. The greater the trust in others, the significantly lower is the likelihood of tax non-compliance (confirming hypothesis H2b). (Table 3).

Table 3. Probit estimates of propensity to be tax non-compliant in Europe.

	2007	2013	2019
	β (Robust se)	β (Robust se)	β (Robust se)
Expected penalty (Tax or social security contributions due) + fine or prison	-0.0846 (0.106)	-0.241 ** (0.101)	-0.0490 (0.0985)
Detection risk (very small/fairly small)			
Fairly high/very high	-0.0272 (0.100)	0.0181 (0.0985)	0.00333 (0.0875)
Tax morale	0.170 *** (0.0161)	0.169 *** (0.0174)	0.124 *** (0.0150)
Horizontal Trust	0.958 *** (0.0876)	0.953 *** (0.0799)	0.878 *** (0.0828)
Gender (Female)			
Male	0.324 *** (0.0331)	0.267 *** (0.0381)	0.218 *** (0.0368)
Age (Exact age)	-0.0145 *** (0.00102)	-0.0150 *** (0.00121)	-0.0157 *** (0.00116)

Table 3. Cont.

	2007	2013	2019
	β (Robust se)	β (Robust se)	β (Robust se)
Employment status (Self-employed)			
Employed	−0.267 *** (0.0564)	−0.233 ***(0.0641)	−0.285 *** (0.0617)
Not working	−0.155 *** (0.0575)	−0.106 (0.0644)	−0.169 ***(0.0625)
People 15+ years in household (One)			
Two	−0.155 ***(0.0433)	−0.240 ***(0.0470)	−0.0984 ** (0.0470)
Three and more	−0.190 *** (0.0468)	−0.254 *** (0.0517)	−0.153 *** (0.0523)
Children (No children)			
Having children	0.0556 (0.0629)	−0.0794 (0.0834)	−0.118 *** (0.0447)
Area (Rural area or village)			
Small or mid-sized town	−0.0428 (0.0382)	−0.0363 (0.0438)	0.0129 (0.0433)
Large town	−0.0301 (0.0419)	−0.0638 (0.0479)	−0.0947 ** (0.0468)
Difficulties paying bills (Most of the time)			
From time to time		−0.174 *** (0.0543)	−0.329 *** (0.0608)
Almost never/never		−0.237 *** (0.0515)	−0.398 *** (0.0553)
<i>Interactions</i>			
Penalty x Tax morale	0.0136 (0.0183)	0.0402 ** (0.0199)	0.0217 (0.0163)
Detection x Tax morale	−0.0580 *** (0.0194)	−0.0283 (0.0203)	−0.0351 ** (0.0155)
Penalty x Horizontal Trust	−0.0566 (0.0930)	0.0199 (0.0886)	−0.0653 (0.0891)
Detection x Horizontal Trust	−0.0337 (0.0878)	−0.127 (0.0878)	−0.165 ** (0.0831)
Constant	−1.747 *** (0.131)	−1.551 *** (0.136)	−1.275 *** (0.138)
	N	19245	18992
	Pseudo R2	0.2076	0.2296
	Log pseudolikelihood	−3559.126	−2674.144
	χ^2	1287.32	1101.89
	p>	0.0000	0.0000

Source: 2019 Eurobarometer 92.1 survey, 2013 Eurobarometer 79.2 survey and 2007 Eurobarometer 67.3 survey. Notes: Significant at *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors in parentheses. All coefficients are compared to the benchmark category, shown in brackets. When multiple imputation techniques are used (ten imputations were simulated through a system of chained equations for every missing value) for addressing the missing responses issue, the same variables are significantly associated with tax non-compliance. Thus, we use the data with no imputation to minimize bias.

Analysing whether vertical and horizontal trust moderate the effects of penalties and risk of detection, the finding is that the impact of the level of penalties on the likelihood of tax non-compliance does not vary by the level of vertical trust (refuting H3a). Neither do the effects of the risk of detection on the likelihood of non-compliance significantly vary by the level of horizontal trust (refuting H4a). However, the impact of the perceived risk of detection on the likelihood of tax non-compliance varied by the level of tax morale, but only in 2019. It did not significantly vary in 2007 and 2013. The lower the tax morale, the more likely is the risk of detection to influence non-compliance. It is similarly the case that the impact of the perceived risk of detection on the likelihood of tax non-compliance varied by the level of horizontal trust, but only weakly in 2019. This was not significant in 2007 and 2013. In 2019, therefore, the lower the level of horizontal trust, the more likely was the risk of detection to influence tax non-compliance.

5. Discussion and Conclusions

To evaluate the validity of enforced compliance and voluntary compliance perspectives, and the effects of combining them, data has been reported from the 2007, 2013 and 2019 special Eurobarometer surveys. The finding is that, with the exception of 2013 when increasing the penalties had a weak significant impact on the likelihood of tax non-compliance, no significant association has been identified between increasing the risk of detection and penalties and participation in tax non-compliance. However, greater vertical and horizontal trust is significantly associated with a lower likelihood of tax non-compliance in all three surveys, and there are some significant interaction effects when they

are used together. Table 4 summarises the findings. Here, the theoretical and policy implications are considered.

Table 4. Summary findings of hypotheses.

Hypothesis	2007	2013	2019
<i>Enforced compliance (H1):</i>			
H1a: higher penalties reduce the likelihood of tax non-compliance	Reject	Accept	Reject
H1b: higher risks of detection reduce the likelihood of tax non-compliance	Reject	Reject	Reject
<i>Voluntary compliance (H2):</i>			
H2a: higher vertical trust reduces the likelihood of tax non-compliance.	Accept	Accept	Accept
H2b: higher horizontal trust reduces the likelihood tax non-compliance	Accept	Accept	Accept
<i>Moderating effects of vertical trust (H3):</i>			
H3a: effect of higher penalties on the likelihood of tax non-compliance is moderated by vertical trust	Reject	Reject	Reject
H3b: effect of higher risks of detection on the likelihood of tax non-compliance is moderated by vertical trust	Reject	Reject	Accept
<i>Moderating effects of horizontal trust (H4):</i>			
H4a: effect of higher penalties on the likelihood of tax non-compliance is moderated by horizontal trust	Reject	Reject	Reject
H4b: effect of higher risks of detection on the likelihood of tax non-compliance is moderated by horizontal trust	Reject	Reject	Reject

This paper advances theoretical explanations of tax non-compliance in three respects. Firstly, it finds little evidence to support the enforced compliance approach based on the rational economic actor theorisation, but support is found for the voluntary compliance explanation based on the view of taxpayers as social actors. Secondly, it reveals that the recent calls resulting from laboratory experiments to expand voluntary compliance theory to include horizontal trust are here confirmed in lived practice by these surveys of European citizens. Third and finally, this study reveals that there are some important interaction effects. Increasing the expected risk of detection is effective in reducing tax non-compliance for those with lower vertical and horizontal trust. Future research could evaluate whether these findings are valid in other global regions. It could also extend the current research by seeking to identify the rationales for a lack of vertical trust by evaluating the specific formal institutions (e.g., judiciary, politicians, tax administrations) in which trust is lacking, which leads to greater tax non-compliance. Future research could also investigate other forms of horizontal trust beyond generalized trust considered in this paper.

The findings of this study also have important implications for the policy approaches of public administrations when tackling tax non-compliance. For some five decades, national governments have focused upon a deterrence policy approach, which emerged out of the rational economic actor enforcement perspective and sought to increase the penalties and risks of detection. Indeed, a large amount of government resources has been dedicated to developing enforcement authorities (e.g., tax administrations, labour inspectorates, social security institutions) and their competencies to detect and punish tax non-compliance. However, this paper reveals the need for a shift away from the deterrence approach and towards a focus upon improving voluntary compliance (McGee et al. 2016; Villar Rubio et al. 2015; Žofčinová et al. 2018).

This will require these enforcement authorities to acquire new competencies and legal mandates beyond detecting and penalising the non-compliant. To see this, it is necessary to understand, on the one hand, how vertical trust can be enhanced and, on the other hand, horizontal trust. From the perspective of institutional theory, low vertical trust is a direct result and measure of the non-alignment of the laws and regulations of formal institutions and the norms, beliefs and values of informal institutions (Helmke and Levitsky 2004; North 1990). To reduce this asymmetry, either the formal institutions or the informal institutions can be changed. Changing the acceptability of tax non-compliance (i.e., altering the informal institutions) can be pursued using education and awareness-raising campaigns. An example is the 2020 #EU4FairWork awareness-raising campaign being pursued collectively by the 27 member states of the European Union. The focus of this campaign is upon promoting the benefits of tax

compliance, rather than the costs of tax non-compliance. During the current coronavirus pandemic, for example, the campaign has focused upon how being compliant means that one can gain access as a business or worker to the short-term financial support packages being offered by governments to the self-employed and businesses (for details of these schemes, see [IMF 2020](#)). This paper has identified the population groups such campaigns might target. At a European level, those with a greater likelihood of being non-compliant are men, younger people, the self-employed, single-person households, those with no children, those in villages and rural areas, and most of the time with difficulties paying the bills.

On the other hand, the asymmetry between formal and informal institutions can be resolved, and therefore vertical trust improved, by changing the formal institutions. Previous research reveals that the likelihood of tax non-compliance is significantly lower when there is a perception of procedural fairness in state institutions, namely citizens believe that they paying their fair share ([Molero and Pujol 2012](#)), a belief that there is procedural justice, namely citizens view government authorities as treating them impartially and respectfully ([Horodnic 2018](#); [Murphy 2005](#)), and a belief that there is redistributive justice, namely citizens believe that they receive the public goods that they deserve given the taxes that they pay ([Kogler et al. 2013](#)). All these initiatives promote a more 'customer-friendly' perception of state authorities rather than the 'cops and robbers' approach of the enforced compliance model, which often viewed citizens as non-compliant criminals who had to be detected and caught by the enforcement authorities.

It is not just improvements in vertical trust that needs to be the policy focus of public administrations in this voluntary compliance social actor approach. There is also a need to improve horizontal trust. A starting point would be for governments to refrain from publishing press releases on how tax non-compliance is widespread. This is because it has direct deleterious effects on horizontal trust. Instead, messages could perhaps focus upon the high levels of compliance. Indeed, previous research reveals that these messages are more effective in eliciting compliant behaviour when they are directly targeted and tailored, including data on the high compliance levels in the respondent's occupation, sector and/or local vicinity ([Hallsworth et al. 2017](#)).

Before concluding, it is necessary to state that this paper has largely confined itself to evaluating the impact of the dominant policy measures pursued by enforcement authorities, such as tax administrations, on tax compliance. There are two limitations of doing so. On the one hand, the influences of other country-level dynamics and internal characteristics of businesses have not been considered which might influence tax compliance, such as national tax planning strategies, the attitudes of the national tax accountancy professions to compliance, corporate social responsibility strategies, gender diversity on boards, specific national tax legislation, and so forth ([Vacca et al. 2020](#)). These country-level dynamics and internal characteristics of businesses need to be examined in future studies. On the other hand, there are wider structural determinants beyond the remit of tax administrations, which influence the level of tax compliance. For example, previous research reveals that tax compliance is significantly correlated with not only the level of Gross Domestic Product (GDP) per capita but also well-being in general, captured in the indicators that comprise the Social Progress Index and Human Development Index (see [Williams and Horodnic 2019a](#)). Although important determinants of tax compliance, this paper has confined itself to evaluating the reforms within the remit of tax authorities, namely whether enforced or voluntary compliance strategies are effective at reducing non-compliance.

In conclusion, if the outcomes of this paper are evaluations of these theorisations, and the interactions between them, in other global regions or countries, to determine the wider validity of the findings in this paper, then one intention of this article will have been fulfilled. If the outcome is also that governments in Europe and beyond start to transcend the currently dominant enforced compliance rational economic actor approach focused on increasing the risk of detection and penalties, and more attention is given to building vertical and horizontal trust, then the broader intention of this paper will have been achieved.

Funding: This research received no external funding.

Conflicts of Interest: The author declares no conflict of interest.

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