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**Article**

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UTMS Journal of Economics

**Provided in Cooperation with:**

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*Suggested Citation:* Williams, Colin C. (2021) : Explaining and tackling undeclared work in South East Europe: Lessons from 2019 Eurobarometer survey, UTMS Journal of Economics, ISSN 1857-6982, University of Tourism and Management, Skopje, Vol. 12, Iss. 1, pp. 1-18

This Version is available at:

<https://hdl.handle.net/10419/281887>

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*Original scientific paper*  
(accepted December 07, 2020)

## EXPLAINING AND TACKLING UNDECLARED WORK IN SOUTH EAST EUROPE: LESSONS FROM A 2019 EUROBAROMETER SURVEY

Colin C Williams<sup>1</sup>

### Abstract

The aim of this paper is to evaluate two contrasting ways of explaining and tackling undeclared work. The rational economic actor approach theorizes undeclared work as arising when the benefits of undertaking undeclared work outweigh the costs, and the policy focus is upon deterring undeclared work by increasing the penalties and probability of being caught, whilst the social actor approach theorizes undeclared work as resulting from a lack of vertical trust (in government) and horizontal trust (in others). To evaluate these, evidence from Eurobarometer surveys conducted in 2007, 2013 and 2019 in seven South East European countries is reported. The finding is that although in some time periods there is a significant association between preventing participation in undeclared work and greater perceived penalties and probabilities of detection, there is a strong significant positive association between preventing participation in undeclared work and greater vertical and horizontal trust in all time periods. The theoretical implications are then discussed along with the policy implications.

Keywords: informal sector, shadow economy, tax compliance, tax morale, South East Europe

*JEL Classification:* H26, J46, K34, K42, O17, P2

### INTRODUCTION

Undeclared work remains a prevalent and persistent feature of economies in South East Europe and beyond (ILO 2018; Gashi and Williams 2019; Krasniqi and Williams 2017; Pasovic and Efendic 2018). The result is that it has moved to the top of public policy agendas of both supra-national institutions (European Commission 2016; ILO 2015; OECD 2017; World Bank 2019) and national governments (Efendic and Williams 2018; Gashi and Williams 2018; Kosta and Williams 2018). This is due to its negative impacts. Formal businesses witness unfair competition from those operating undeclared (Andrews et al. 2011; OECD 2017; World Bank 2019). Enterprises operating in the undeclared economy, meanwhile, lack legal protection and are unable to gain access to capital to grow (Loayza 2018), undeclared workers suffer poorer working conditions (ILO 2015; Williams and Horodnic 2019) and purchasers lack legal recourse, insurance cover, and certainty that health and safety regulations have been followed (OECD 2017). There are also broader costs to governments, not least a loss of tax revenue and regulatory control (ILO 2018; Williams 2017; World Bank 2019). For all these reasons,

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explaining and tackling undeclared work is important. Therefore, the aim of this paper is to evaluate two competing ways of explaining and tackling undeclared work and whether it is effective to combine them.

In doing so, knowledge is advanced in three distinct ways. Theoretically, an evaluation is conducted of the rational economic actor approach, which views undeclared work to arise when the benefits outweigh the costs, and the social actor approach which views undeclared work as arising when there is a lack of vertical and horizontal trust, as well as whether these approaches can be combined to more effectively tackle undeclared work. Empirically, evidence is for the first time reported from a Eurobarometer survey conducted in 2007, 2013 and 2019 in seven South-East European countries (Bulgaria, Croatia, Cyprus, Greece, Hungary, Romania and Slovenia). Third and finally, a new policy approach is proposed that supplements increasing penalties and the risk of detection with measures to enhance vertical and horizontal trust.

To commence, the next section reviews the rational economic actor and social actor theorisations and how they might be combined. The third section then introduces the data and methodology to evaluate these approaches, namely a probit regression analysis of the 2007, 2013 and 2019 Eurobarometer surveys on undeclared work. The fourth section reports the results. Revealing a significant association between participation in undeclared work and the perceived level of penalties and risk of detection in some time periods, but a strong significant positive association between participation in undeclared work and the level of vertical and horizontal trust in all time periods, the fifth and final section discusses the theoretical and policy implications.

At the outset, undeclared work needs to be defined. The consensus among academics and practitioners is that undeclared work refers to paid activities that are legal in all respects other than they are not declared to the authorities for tax, social security or labour law purposes, when they should be declared (Aliyev 2015; Boels 2014; Hodosi 2015; Williams 2014). If paid activities are not legal in all other respects, they are not undeclared work. For example, if the goods or services exchanged are illegal (e.g., counterfeit goods), then these exchanges are not undeclared work but part of the wider criminal economy.

## **1. COMPETING THEORISATIONS OF UNDECLARED WORK: A REVIEW**

Reading the burgeoning literature on how to explain and tackle undeclared work, it becomes quickly obvious that there are two main theorisations. Each is here analysed in turn along with whether they are mutually exclusive.

### **1.1 Rational economic actor approach**

Arising out of classic utilitarian theory, the contemporary origins of the rational economic actor approach lie in the work of Becker (1968) who argued that citizens engage in criminal activity if the benefits outweigh the costs and that governments needed to increase the sanctions and risk of detection. A few years later, Allingham and Sandmo (1972) applied this to tax non-compliance. To change the cost/benefit ratio, an increase in the actual and/or perceived penalties and probability of detection was

advocated. Subsequently, this rational actor approach was widely adopted (Grabiner 2000; Hasseldine and Li 1999; Richardson and Sawyer 2001).

Despite governments widely using this approach (see Williams and Puts 2017), the evidence that it is effective are mixed. Some find that increasing the risk of detection and/or sanctions reduces engagement in undeclared work (Blackwell 2010; Kluge and Libman 2017; Mas'ud et al. 2015; Mazzolini et al. 2017). Moreover, increasing the risk of detection is sometimes found to be more effective than increasing sanctions (Alm 1999; Williams, and Horodnic 2017a,b).

However, others find that increasing penalties and the risk of detection has no effect (Hartl et al. 2015; Shaw et al. 2008; Williams and Franic 2015, 2016) or increases noncompliance (Hofmann et al. 2017; Kaplanoglou and Rapanos 2015; Kaplanoglou et al. 2016; Mohdali et al. 2014; Murphy 2005, 2008; Murphy and Harris 2007). Indeed, the most telling critique of this approach is that many citizens voluntarily comply even when the cost/benefit ratio suggests they should not if they are rational economic actors (Alm et al. 2010; Murphy 2008). In consequence, to evaluate this rational economic actor theorisation, the following hypothesis can be tested:

*Rational economic actor hypothesis (H1):* increasing the perceived penalties and probability of detection reduces the likelihood of engaging in undeclared work.

*H1a:* There is negative relationship between the perceived level of expected penalties and engagement in undeclared work.

*H1b:* There is negative relationship between the perceived probability of detection and engagement in undeclared work.

## 1.2 Social actor approach

The finding that even when the benefits outweigh the costs, many citizens do not participate in undeclared work, has led to a new social actor theorisation (Williams and Horodnic 2015; Williams et al. 2015). Inspired by a variant of institutional theory (Helmke and Levistky 2004; North 1990), this explains undeclared work as arising from formal institutional failings that result in an asymmetry between the codified laws and regulations of a society's formal institutions ('state morality') and the socially shared unwritten rules of its informal institutions ('civic morality'). This asymmetry reflects a lack of vertical trust and is measured by the level of tax morale (i.e., the intrinsic motivation to pay taxes).

Indeed, this argument that the higher is the level of vertical trust, measured by tax morale, the lower is the likelihood of participation in undeclared work is confirmed by studies of the EU as a whole (Williams and Horodnic 2017a; Williams et al. 2015), different EU regions (Williams and Horodnic 2015, 2017b) and individual countries (Williams and Bezeredi 2018; Williams and Franic 2015 2016; Williams et al. 2016; Windebank and Horodnic 2017). Based on this view that undeclared work results from a lack of vertical trust (i.e., trust in the state by citizens), resulting in a low intrinsic motivation to pay taxes, measured in terms of tax morale (Alm and Torgler 2006, 2011), the goal is to increase vertical trust (Kirchler 2007; Torgler 2011).

Recently, it has been argued that engagement in undeclared work results not only from a lack of vertical trust (between government and citizens) but also horizontal trust (between citizens), in the form of trusting other individuals to be compliant (Baric 2016). This finding derives mostly from laboratory experiments which reveal that compliance depends on the behaviour of fellow citizens (Chang and Lai 2004; Lefebvre et al. 2015; Traxler 2010) and that individual compliance is more likely if it is the social norm (Alm 2012; Fellner et al. 2013; Hallsworth et al. 2017). The lower the horizontal trust (i.e., the greater the perceived propensity of others to be non-compliant), the less likely are citizens to be compliant. Until now, this theory is confirmed only in laboratory experiments. Real world surveys are lacking. To evaluate this approach therefore, the following hypothesis can be tested:

*Social actor hypothesis (H2):* improving vertical and horizontal trust lowers the likelihood of engagement in undeclared work.

*H2a:* improving vertical trust lowers the likelihood of engagement in undeclared work.

*H2b:* improving horizontal trust lowers the likelihood of engagement in undeclared work.

### 1.3 Integrating the approaches

Until now, in most national governments in South East Europe and beyond, the rational economic actor approach has been the dominant approach, with a focus upon increasing the sanctions and risk of detection (Williams and Puts 2017). Less attention has been given to developing vertical and horizontal trust. However, a body of scholarship has argued that these two approaches are not mutually exclusive and can be combined. A ‘slippery slope’ approach has argued that governments can pursue not only ‘enforced’ compliance by increasing penalties and the risk of detection and thus the power of authorities, but also ‘voluntary’ compliance and thus trust in government (Kirchler et al. 2008; Kogler et al. 2015; Kastlunger et al. 2013; Khurana and Diwan 2014; Muehlbacher et al. 2011; Prinz et al. 2013). In a laboratory experiment, Wahl et al (2010) randomly present different participants with four different descriptions of a fictitious country, in which the authorities are portrayed as trustworthy or untrustworthy and as powerful or powerless. They find that participants paid significantly more taxes when both power and trust were high. Arising out of such laboratory experiments, the argument has been that increasing trust in and the power of authorities, and therefore combining the two approaches, is the most effective way of tackling undeclared work (Kogler et al. 2015; Muehlbacher et al. 2011).

Nevertheless, the interaction effects between increasing the power of authorities and trust in authorities are seemingly complex. For example, higher penalties and increasing the probability of detection may not always have the same effect at different levels of vertical trust. When vertical trust is high, it might result in greater non-compliance due to the breakdown of the social contract between the state and its citizens (Chang and Lai 2004; Kirchler et al. 2014). Survey research on these complex interactions and dynamics is largely absent. This is required to enable a more nuanced understanding of the relationship between deterrents and vertical trust. Nor has there

been surveys on the moderating effects of horizontal trust. As a result, the following hypothesis can be here tested:

*Moderating effects of vertical trust hypothesis (H3):* the effect of penalties and probability of detection on engagement in undeclared work varies by the level of vertical trust.

*H3a:* the effect of the perceived penalties on engagement in undeclared work varies by the level of vertical trust.

*H3b:* the effect of the perceived probability of detection on engagement in undeclared work varies by the level of vertical trust.

*Moderating effects of horizontal trust hypothesis (H4):* the effect of penalties and probability of detection on engagement in undeclared work varies by the level of horizontal trust.

*H4a:* the effect of the perceived penalties on engagement in undeclared work varies by the level of horizontal trust.

*H4b:* the effect of the perceived probability of detection on engagement in undeclared work varies by the level of horizontal trust.

## 2. DATA, VARIABLES AND METHOD

### 2.1 Data

To evaluate these hypotheses, data is reported from seven South East European countries (Bulgaria, Croatia, Cyprus, Greece, Hungary, Romania and Slovenia) for the years 2007, 2013 and 2019, from the special Eurobarometer surveys 67.3, 79.2 and 92.1 respectively on undeclared work. All interviews were conducted in the national language with adults aged 15 years and older. A multi-stage random (probability) sampling methodology was used for these surveys, which ensured that on the issues of gender, age, region and locality size, both the national and each level of the sample is representative in proportion to its population size.

### 2.2 Variables

To evaluate whether engagement in undeclared work in South East Europe is associated with the perceived level of penalties and probability of detection, and vertical and horizontal trust, 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 analyse the association between engagement in undeclared work and the policy approaches, four explanatory variables are used. Firstly, how and whether the perceived level of sanction are related with engagement in undeclared work, a dummy variable is used, describing the penalties associated with engagement in undeclared work with

value 0 for normal tax or social security contributions due and value 1 for normal tax or social security contributions due, plus fine or prison. Secondly, to assess whether the perceived risk of detection is related with participation in undeclared work, a dummy variable is used for the perceived risk of detection with value 0 for a very small or fairly small risk and value 1 for a fairly high or very high risk.

Thirdly, to evaluate the relationship between engagement in undeclared work and vertical trust, tax morale is used as a measure of vertical trust. This is because a lack of trust in formal institutions is manifested in a low tax morale (Alm and Torgler 2006; Torgler et al. 2008), so it is a proxy of a lack of vertical trust between citizens and government. Participants were asked to rate the acceptability of participating in six types of undeclared work using a 10-point Likert scale (where 1 means absolutely unacceptable and 10 means absolutely acceptable), namely: an individual is hired by a household for work 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 for work and it does not declare the payment received to the tax or social security authorities; a firm is hired by another firm for work 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; someone receives welfare payments without entitlement (not available in the 2019 survey), and someone evades taxes by not declaring or only partially declaring their income. An aggregate tax morality index for each respondent was constructed by collating their responses to the six (five in 2019) 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 0.8684 in 2007, 0.8591 in 2013 and 0.9237 in 2019.

Finally, to evaluate the association between participation in undeclared work and horizontal trust, participants in 2007, 2013 and 2019 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 for measuring the horizontal trust has been used in previous studies of participation in undeclared work (Stefanov et al. 2017; Horodnic and Williams 2020). A dummy variable is used for the horizontal trust with value 1 for those who actually know someone who undertakes undeclared work and 0 otherwise. Those answering value 1, 'yes', means that they perceive others to engage in undeclared work and therefore have lower horizontal trust.

Meanwhile, and mirroring previous studies that evaluate participation in undeclared work (Williams and Horodnic 2015, 2017a), the control variables selected are gender, age, employment status, people 15+ years in own household, children, difficulties paying bills (only available for 2013 and 2019 survey), area. Table 1 presents all the control variables used.

**Table 1.** Control Variables used in the analysis: definitions

Variables	Definition
Gender	A dummy variable with value 0 for females and 1 for males
Age	A continuous variable indicating the exact age of a respondent

Occupation	A categorical variable grouping respondent by their occupation 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 3 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

### 2.3 Analytical methods

Probit regression analysis is here used to evaluate the relationship between the dependent and independent variables. This is because probit regression analysis is used for testing hypothesis about relationships between a categorical dependent variable and one or more categorical or continuous independent variables (Aldrich and Nelson 1984; Cameron and Trivedi 2010; Greene 2018). The maximum likelihood method is used for estimating the least squares function. Probit analysis originated in connection with bioassay, and the word probit, a contraction of “probability unit”, was suggested by Bliss (1934). The log-likelihood function for probit is

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

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

$$\Pr(Y_j = 1 | x_j) = \phi(x_j \beta)$$

The dependent variable of the model ( $Y_j$ ) is binary, undeclared work, which represents engagement in undeclared work,  $x$  represents the explanatory variables including the control variables, which are expected sanction, detection risk, level of tax morality, level of horizontal trust, gender, age, employment status, people 15+ years in own household, children, difficulties paying bills (only available for 2013 and 2019 survey), and area. The detailed description of the variables is presented in Table 1 above. Moreover, the interaction term is used for investigating moderating effects. The only differences are here we create interaction variables (see model 2 in Table 3 below).



### 3. RESULTS

Table 2 reveals that in 2007, 4.4% of the South-East European citizens surveyed reported engaging in undeclared work during the previous 12 months, 4.0% in 2013 and 3.4% in 2019. As such, there has been a gradual decline in the proportions engaging in undeclared work over this time period. This table also provides descriptive statistics of who engages in undeclared work and who does not, and the variations in their perceptions regarding the expected sanctions, risks of detection and their tax morality and level of horizontal trust.

In South East Europe, both those engaged in undeclared work and those not engaged in undeclared work perceive the expected sanction level as almost the same in 2007 and 2019. Only in 2013 do those who do not participate in undeclared work perceive the expected sanctions as higher than those participating in undeclared work. Second, and regarding their perceptions of detection, there is an increase in the perceived risk of being detected as fairly high or very high for both those who engage in undeclared work and those who do not engage in undeclared work between 2007 and 2019. Moreover, participants not engaged in undeclared work believe that there is a higher risk of detection than participants engaged in undeclared work.

Third, those engaging in undeclared work have a lower tax morale compared with those not engaging in undeclared work over the period from 2007 to 2019. Although tax morale improved between 2007 and 2013, it became worse between 2013 and 2019 indicating a decrease in vertical trust. Finally, participants who do not engage in undeclared work have a higher level of horizontal trust than who engage in undeclared work in the period from 2007 to 2019, with horizontal trust improving both for those who engage in undeclared work and those who do not engage in undeclared work over the 2007 to 2019 period.

Turning to the descriptive statistics on who engages in undeclared work, the finding is that men are more likely to undertake undeclared work than women, and those engaged in undeclared work are younger than those who do not, although the mean age of participants has steadily risen over the period 2007 to 2019. So too has the proportion of undeclared workers who are self-employed and not working increased over the period 2007 to 2019 whilst the proportion of undeclared workers who are in employment has fallen. Examining the households in which undeclared workers live, there has been a growth over time in the proportion of undeclared workers living in single person households, but this reflects the general trend towards single occupancy households and there is little difference between those working undeclared and those not, in terms of the type of household in which they live. There is also a marked increase in 2019 in the proportion of undeclared workers who have children compared with 2013 and 2007. However, there is not a marked difference between those working undeclared and those not in terms of whether they have children. Moreover, there has been a decline over time in the overall proportion of undeclared work conducted in rural areas, and an increase between 2013 and 2019 in the proportion of undeclared workers who almost never or never have difficulties in paying the household bills, intimating that undeclared work is over time less confined to the poorest sections of society in South East Europe. Indeed, undeclared work remains a common practice among those who have difficulty in paying the bills most of the time.

**Table 2.** Descriptive statistics of those engaging and not engaging in undeclared work in South East Europe, 2007, 2013 and 2019.

	Participating in undeclared work			Not participating in undeclared work		
	2007	2013	2019	2007	2013	2019
<i>Engaged in undeclared work (%)</i>	4.4	4.0	3.4	95.6	96.0	96.6
Expected sanctions (%)						
Tax or social security contributions due	32	41	30	32	30	30
Tax or social security contributions + fine or prison	68	59	70	68	70	70
Detection risk (%)						
Very small/ Fairly small	84	69	69	64	65	51
Fairly high/ Very high	16	31	31	36	35	49
Tax morality – vertical trust (mean)	3.67	3.21	3.62	2.24	2.11	2.45
Know anyone who works undeclared-horizontal trust (%)						
Yes	91	80	84	46	39	44
No	9	20	16	54	61	56
Gender (%)						
Female	36	30	38	58	55	55
Male	64	70	62	42	45	45
Age (mean)	38	39	44	48	47	48
Occupation (%)						
Self-Employed	11	10	13	7	8	9
Employed	54	40	48	37	39	49
Not working	35	50	39	56	53	42
People 15+ years in own household						

One	15	20	19	19	19	15
Two	42	44	45	43	45	50
Three and More	43	36	36	38	36	35
Children (%)						
No children	92	93	75	96	96	73
Having children	8	7	25	4	4	27
Area (%)						
Rural area or village	35	36	31	32	32	36
Small or middle-sized town	27	31	30	32	29	28
Large town	38	33	39	36	39	36
Difficulties paying bills (%)						
Most of the time	-	35	26	-	25	14
From time to time	-	35	34	-	38	37
Almost never/never	-	30	40	-	37	49

Source: authors' calculations from 2019 Eurobarometer 92.1 survey, 2013 Eurobarometer 79.2 survey and 2007 Eurobarometer 67.3 survey

To evaluate whether these descriptive results remain the same when other variables are introduced and held constant, Table 3 reports probit estimates of the propensity to participate in undeclared work in South East Europe in 2007, 2013 and 2019. Starting with who engages in undeclared work, the finding is that men are more likely than women, and older people are less likely than younger people to do so, over all three time periods. Employment status, however, is not significantly associated with participation in undeclared work, and neither is the size of the household one lives in (except weakly in 2019), whether one has children or whether one lives in an urban or rural area. This is the case across all three time periods. Although there was a weak association between the ability to pay the bills and participation in undeclared work in 2013, there is a strong significant relationship in 2019. Those who do not have difficulties paying bills are significantly less likely to participate in undeclared work than people who have difficulties paying bills most of the time.

Turning to the hypotheses regarding whether participation in undeclared work is significantly associated with firstly, rational economic actor theory, secondly, social actor approach, and thirdly, the interaction effects, Table 3 presents the results. The first finding is that although in 2007, there was no association between the perceived penalties and participation in undeclared work, by 2013, a weak significant relationship

emerged only to disappear again by 2019. Examining whether participation in undeclared work is related to the risk of detection, meanwhile, model 1 reveals a significant negative association in 2007 and 2019, but not in 2013, although the significance of this association disappears in the full model 2 when the interaction effects are included.

Analysing the social actor approach, there is a strong significant association between tax morale and participation in undeclared work over all three periods. The greater the tax morale, the lower is the likelihood of participation in undeclared work. Similarly, there is a strong significant association between horizontal trust and engagement in undeclared work. The greater the trust in others, the significantly lower is the likelihood of engaging in undeclared work.

To examine whether vertical and horizontal trust moderate the effects and effectiveness of penalties and risk of detection, model 2 presents the interactions. The effects of the level of sanction on participation in undeclared work varies by vertical trust in South East Europe in 2013. Similarly, the effects of the risk of detection on participation in undeclared work varies by vertical trust in South East Europe in 2019. However, the effects of the level of sanction on participation in undeclared work does not significantly vary by the level of horizontal trust. However, the effects of the risk of detection on participation in undeclared work do vary according to the level of horizontal trust in 2019.

**Table 3.** Probit estimates of the propensity to participate in undeclared work in Southeast Europe, 2007, 2013 and 2019

	2007		2013		2019	
	Model 1 $\beta$ (Robust se)	Model 2 $\beta$ (Robust se)	Model 1 $\beta$ (Robust se)	Model 2 $\beta$ (Robust se)	Model 1 $\beta$ (Robust se)	Model 2 $\beta$ (Robust se)
Expected sanctions (Tax or social security contributions due)						
+ fine or prison	0.0865 (0.0904)	0.236 (0.308)	-0.171* (0.0944)	-0.121 (0.0837)	0.102 (0.0880)	-0.0174 (0.228)
Detection risk (Very small/ Fairly small)						
Fairly high/ Very high	-0.424*** (0.108)	-0.372 (0.324)	0.0261 (0.0935)	0.221 (0.225)	-0.280*** (0.0790)	0.136 (0.202)
<b>Table 3. (continued)</b>						
Tax morality	0.169*** (0.0209)	0.157*** (0.0394)	0.174*** (0.0249)	0.123*** (0.0448)	0.113*** (0.0162)	0.0984*** (0.0315)
Horizontal Trust	0.912*** (0.116)	1.118*** (0.279)	0.707*** (0.0953)	0.810*** (0.188)	0.721*** (0.0902)	0.932*** (0.183)
Gender (Female)						
Male	0.332*** (0.0860)	0.332*** (0.0861)	0.446*** (0.0923)	0.459*** (0.0923)	0.267*** (0.0770)	0.261*** (0.0771)
Age (exact age)	-0.0125*** (0.00268)	-0.0123*** (0.00270)	-0.0119*** (0.00279)	-0.0122*** (0.00279)	-0.0104*** (0.00255)	-0.0104*** (0.00257)
Occupation (Self-employed)						
Employed	-0.128 (0.142)	-0.127 (0.142)	-0.00289 (0.156)	-0.00291 (0.157)	-0.142 (0.122)	-0.143 (0.123)
Not working	-0.235 (0.149)	-0.236 (0.148)	0.135 (0.155)	0.134 (0.155)	-0.0796 (0.127)	-0.0801 (0.127)
People 15+ years in own household (One)						
Two	-0.0104 (0.126)	-0.0134 (0.126)	-0.186 (0.123)	-0.182 (0.123)	-0.177 (0.110)	-0.183* (0.110)
Three and more	-0.0986 (0.126)	-0.105 (0.126)	-0.193 (0.123)	-0.208 (0.123)	-0.202* (0.110)	-0.204* (0.110)

	(0.128)	(0.128)	(0.132)	(0.1172)	(0.114)	(0.114)
Children (No children)						
Having children	0.200 (0.171)	0.200 (0.171)	0.0898 (0.192)	0.0750 (0.191)	-0.138 (0.0946)	-0.140 (0.0950)
Area (Rural area or village)						
Small or middle-sized town	-0.151 (0.107)	-0.158 (0.108)	-0.0455 (0.110)	-0.0403 (0.110)	0.132 (0.0983)	0.125 (0.0988)
Large town	-0.00543 (0.104)	-0.00939 (0.104)	-0.171 (0.108)	-0.199** (0.0970)	0.0776 (0.0923)	0.0841 (0.0929)
Difficulties paying bills (Most of the time)						
From time to time			-0.162 (0.109)	-0.289*** (0.0976)	-0.355*** (0.104)	-0.346*** (0.104)
Almost never/never			-0.193* (0.115)	-0.181 (0.116)	-0.304*** (0.0988)	-0.296*** (0.0999)
<i>Interactions</i>						
Sanction x Tax morality		0.0430 (0.0451)		0.0911* (0.0504)		0.0545 (0.0337)
Detection x Tax morality		-0.0723 (0.0486)		-0.00490 (0.0508)		-0.0559* (0.0321)
Sanction x Horizontal Trust		-0.326 (0.297)		0.000174 (0.201)		-0.0978 (0.198)
Detection x Horizontal Trust		0.218 (0.289)		-0.266 (0.196)		-0.327* (0.185)
Constant	-2.163*** (0.284)	-2.309*** (0.356)	-1.950*** (0.316)	-1.918*** (0.2489)	-1.741*** (0.238)	-1.834*** (0.290)
N	3597	3597	3558	3558	4835	4835
Pseudo R <sup>2</sup>	0.2125	0.2160	0.1686	0.1732	0.1421	0.1481
Log pseudolikelihood	-510.5023	-508.249	-455.5805	-453.0552	-611.4565	-607.2170
X <sup>2</sup>	210.22	209.10	163.74	167.16	138.02	162.62
p>	0.0000	0.0000	0.0000	0.0000	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 participation in undeclared work. Therefore, we use the available data, with no imputation, to keep bias to a minimum.

#### 4. DISCUSSION AND CONCLUSIONS

To evaluate the dominant rational economic actor approach towards explaining and tackling undeclared work and the emergent social actor approach in South East Europe, evidence is reported from Eurobarometer surveys conducted in 2007, 2013 and 2019 in seven South East European countries. The finding is that although in some time periods there is a significant association between preventing participation in undeclared work and greater perceived penalties and probabilities of detection, there is a strong significant positive association between preventing participation in undeclared work and greater vertical and horizontal trust in all time periods. There are also some weak significant associations on how vertical and horizontal trust moderate the effects and effectiveness of penalties and risk of detection on preventing participation in undeclared work. Table 4 summarises the findings regarding the various hypotheses. Here, the theoretical and policy implications are discussed.

**Table 4.** Summary findings of hypotheses

Hypothesis	2007	2013	2019
<i>Rational economic actor hypothesis (H1):</i>			
<i>H1a:</i> There is negative relationship between the perceived level of expected penalties and engagement in undeclared work.	Reject	Accept	Reject
<i>H1b:</i> There is negative relationship between the perceived probability of detection and engagement in undeclared work.	Accept	Reject	Accept
<i>Social actor hypothesis (H2):</i>			
<i>H2a:</i> improving vertical trust lowers the likelihood of engagement in undeclared work.	Accept	Accept	Accept
<i>H2b:</i> improving horizontal trust lowers the likelihood of engagement in undeclared work	Accept	Accept	Accept
<i>Moderating effects of vertical trust hypothesis (H3):</i>			
<i>H3a:</i> the effect of the perceived penalties on engagement in undeclared work varies by the level of vertical trust.	Reject	Accept	Reject
<i>H3b:</i> the effect of the perceived probability of detection on engagement in undeclared work varies by the level of vertical trust	Reject	Reject	Accept
<i>Moderating effects of horizontal trust hypothesis (H4):</i>			
<i>H4a:</i> the effect of the perceived penalties on engagement in undeclared work varies by the level of horizontal trust.	Reject	Reject	Reject
<i>H4b:</i> the effect of the perceived probability of detection on engagement in undeclared work varies by the level of horizontal trust.	Reject	Reject	Accept

Theoretically, the contribution of this paper is that it has evaluated in South East Europe the rational economic actor and social actor approaches towards explaining and tackling undeclared work. The finding is that these are not competing approaches which are mutually exclusive. Both are required to explain participation in undeclared work. Therefore, future studies should transcend the previous either/or thinking and recognise that both theories are required to more fully explain participation in undeclared work. In future studies, therefore, greater understanding is required of the specific contexts in which each of these approaches apply and more particularly, the weighting that needs to be given to each explanation in different contexts. It is also important to recognise that this paper has only discussed South East Europe. Whether similar findings are applicable in other European regions and other areas of the world now needs to be evaluated.

In terms of the implications for policy, the contribution of this paper is to reveal that the conventional rational economic actor approach focused on deterrents needs to be supplemented by a social actor approach that focuses upon improving vertical and horizontal trust. Reading low tax morale through the lens of institutional theory as measuring the lack of alignment of the laws and regulations of formal institutions with the beliefs, values and norms of informal institutions (Helmke and Levitsky 2004; North 1990), initiatives are needed to reduce this institutional asymmetry.

Firstly, and to change norms, values and beliefs regarding the acceptability of participating in undeclared work, measures are needed to educate citizens and raise

awareness of the benefits of declared work to encourage voluntary compliance. Initiatives could include giving citizens information on how their taxes are spent and putting ‘your taxes are paying for this’ signs on ambulances, in doctor’s surgeries, in hospitals, and on road transport and building sites. The above analysis reveals the population groups usefully targeted by such campaigns, namely men, younger people and those with difficulties paying bills.

Secondly, a modernisation of formal institutions is needed by shifting towards a more customer-friendly approach. Compliance improves when citizens view government as treating them in a respectful, impartial and responsible manner (Gangl et al. 2013; Murphy 2005), believe they are paying their fair share compared with others (Molero and Pujol 2012) and believe they receive what they deserve given the taxes they pay (Kirchgässner 2011).

To improve horizontal trust, governments must not publish figures suggesting high levels of undeclared work exist because this reduces horizontal trust. Rather, messages should convey the high level of compliance. Scholarship reveals that these messages are more effective when they relate to the occupation and local area of the citizen targeted (Hallsworth et al. 2017).

Nevertheless, the limitations to this study need mentioning. It only examines some countries in South East Europe. Caution is needed when extrapolating the findings to other nations and contexts. Moreover, due to the survey questions, only two proxies have been used of vertical and horizontal trust. Future studies could compare the level of trust in different formal institutions and forms of horizontal trust beyond the generalized trust examined here.

In sum, if this paper results in further evaluations of these ways of explaining undeclared work, and the interplay between them, in other countries and regions, then one intention of this paper will have been fulfilled. If the outcome is that governments supplement the deterrent measures used in the rational economic actor approach with measures to improve vertical and horizontal trust, then the fuller intention of this paper will have been fulfilled.

#### ACKNOWLEDGEMENTS

This publication results from financial support provided by the European Union Programme for Employment and Social Innovation “EaSI” (2014–2020) under grant agreement VC/2016/0589 (Service contract to support the European Platform tackling undeclared work). The usual disclaimers apply.

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