

# Tackling undeclared work in Central and East Europe: an evaluation of competing public sector management approaches\*

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## Abstract

To tackle undeclared work in Central and East Europe, the conventional bureaucratic public sector management approach has used the hard-direct controls of penalties and increasing the risk of detection. Recently, an alternative post-bureaucratic public sector management approach has emerged advocating soft indirect controls to improve tax morale and horizontal trust. Evaluating these competing approaches using evidence from Eurobarometer surveys conducted in 2007, 2013 and 2019 in six Central and East European countries, the finding is that both approaches significantly prevent undeclared work. The outcome is a call for a new 'hybrid' public sector management approach combining the two.

**Keywords:** informal sector; tax compliance; tax morale; bureaucracy; post-bureaucracy; public policy.

**JEL Codes:** J46, O17, P2

## Introduction

Across Central and East Europe and well beyond, undeclared work remains a persistent and prevalent feature of contemporary economies (Williams/Round/Rodgers 2013; OECD 2017; ILO 2018; World Bank 2019). This has negative consequences. Legitimate enterprises suffer unfair competition from the undeclared economy (OECD 2017; World Bank 2019). Businesses in the undeclared economy lack legal protection and cannot access capital to grow (Loayza 2018), undeclared workers experience poorer working conditions (ILO 2015; Williams/Horodnic 2019) and purchasers suffer from a lack of insurance cover and legal recourse (OECD 2017). There are also broader costs to governments, including a loss of tax revenue and regulatory control (ILO 2018; World Bank 2019). As a result, the issue of tackling undeclared work has risen to the top of public policy agendas of supra-national institutions (ILO 2015; European Commission 2016; OECD 2017; World Bank 2019) and national governments (Williams/Puts 2017).

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How, therefore, can undeclared work be tackled? This paper evaluates the effectiveness of two contrasting public sector management approaches and in doing so, advances knowledge in three distinct ways. Theoretically, it evaluates the dominant bureaucratic public management approach that uses hard direct controls to deter undeclared work by increasing the penalties and risks of detection, and the emergent post-bureaucratic public management approach which advocates the use of soft indirect controls to improve citizens tax morale and horizontal trust (in each other). The paper will reveal that they are not mutually exclusive and that a hybridization of the two is the most effective way of tackling undeclared work. Empirically, meanwhile, this paper for the first time reports new evidence and temporal survey data from Eurobarometer surveys on undeclared work repeated in 2007, 2013 and 2019 in six Central and East European countries (Czechia, Estonia, Latvia, Lithuania, Poland and Slovakia). Finally, the policy advance will be to reveal that hard direct and soft indirect controls are both effective in preventing undeclared work and that a hybridisation combining the two is required, which also recognises the interaction effects of using them concomitantly.

To achieve this, the next section reviews the literature on approaches to tackling undeclared work, setting out the contrasting bureaucratic and post-bureaucratic public sector management approaches that use hard direct and soft indirect controls respectively, along with the literature discussing how they might be combined. The third section then presents the data and methodology used 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 that the hard direct controls of the bureaucratic management approach and the soft indirect controls of the post-bureaucratic management approach both significantly reduce undeclared work, and that there are significant interaction effects when used together, the fifth and final section discusses the theoretical and policy implications along with the limitations of the study and future research required.

Throughout this paper, the definition of undeclared work used reflects the consensus among academics and practitioners. 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 and/or labour law purposes, when they should be declared (Williams 2014; Aliyev 2015; Hodosi 2015). If paid activities are illegal in additional respects, such as the goods and services are illegal (e.g., counterfeit products, banned drugs), they are not undeclared work. Instead, they are part of the broader criminal economy. For capturing solely undeclared work, usually survey data (micro-level data) is used in order to identify the number of persons involved in undeclared paid activities (Eurobarometer surveys on undeclared work; survey data by Rockwool Foundation, see: Feld/Larsen 2005). Meanwhile, a broader view, including other forms of illegal work, is used when

measuring the shadow economy which uses macro-level data and is estimated as a % of GDP (i.e., MIMIC method, see: Medina/Schneider 2018).

## Public sector management approaches towards undeclared work: a literature review

Examining the growing literature on how to tackle undeclared work, two contrasting public sector management approaches prevail. First, there is the dominant ‘bureaucratic’ public sector management approach using hard direct controls to deter undeclared work by increasing the perceived and/or actual penalties and risks of detection. Secondly, there is an alternative ‘post-bureaucratic’ public sector management approach which uses soft indirect controls to improve citizens tax morale and horizontal trust (in each other). Each is here reviewed in turn, along with the literature on whether they can be combined.

### *Bueauratic hard direct controls approach*

In the bureaucratic approach, government authorities seek the compliance of citizens by closely monitoring and supervising them, imposing tight rules, highly prescribed procedures and centralised structures in a low commitment, low trust and adversarial culture (Thompson/McHugh 2002; Watson 2003). To do this, ‘enforcement’ authorities have been established (e.g., tax administrations, labour inspectorates, social insurance institutions).

These enforcement authorities have used hard direct controls to deter undeclared work. In Central and East Europe and well beyond, this dominant bureaucratic public sector management approach has adopted a classic utilitarian explanation of participation in undeclared work as a rational economic action taken when the benefits outweigh the expected costs (i.e., the probability of being caught and penalised). The result is that hard direct controls have been adopted to change cost/benefit ratio confronting participants. The seminal paper on this by Allingham and Sandmo (1972) argued that tax non-compliance occurs if the benefits outweigh the costs and therefore that governments need to raise the penalties and probability of detection to increase the costs. This has subsequently become the dominant public sector management approach (Hasseldine/Li 1999; Grabiner 2000; Richardson/Sawyer 2001; Williams/Puts 2017), manifested in the growth of ‘enforcement’ authorities who have been charged with detecting and punishing those who participate in undeclared work.

Despite the development and resourcing of enforcement authorities to detect and punish those engaging in undeclared work (Williams/Puts 2017), the evidence is not clear-cut that this prevents undeclared work. Some find that increasing the likelihood of detection and/or the penalties reduces engagement in undeclared work (Blackwell 2010; Kluge/Libman 2017), and increasing the probability of

detection is often deemed more effective than increasing penalties (Williams/Horodnic 2017a,b). However, other studies find that increasing penalties and the risk of detection has no impact on participation in undeclared work (Hartl/Hofmann/Gangl/Hartner-Tiefenthaler/Kirchler 2015; Williams/Franic 2016). Yet others find that participation in undeclared work increases due to the breakdown of the social contract between the state and its citizens (Murphy 2005, 2008; Murphy/Harris 2007; Kaplanoglou/Rapanos 2015; Hofmann/Hartl/Gangl/Hartner-Tiefenthaler/Kirchler 2017). Therefore, to evaluate this dominant bureaucratic public sector management approach that uses hard direct controls, the following hypothesis can be tested:

*Hard direct controls hypothesis (H1): the greater the perceived penalties and risk of detection, the less likely is engagement in undeclared work.*

*H1a: The greater the perceived penalties, the less likely is engagement in undeclared work.*

*H1b: The greater the perceived risk of detection, the less likely is engagement in undeclared work.*

#### *Post-bureaucratic soft indirect controls approach*

Reflecting the wider management studies literature which has asserted that post-bureaucratic management approaches can be more effective than bureaucratic management approaches in eliciting behavioural change in workplaces (Kanter 1989; Peters 1992; Handy 1995; Kalleberg 2001; Thompson/McHugh 2002; Watson 2003; Du Gay 2005; Reed 2005), a similar approach has emerged in relation to tackling undeclared work. An emergent discussion is whether a post-bureaucratic approach might be more effective in tackling undeclared work (OECD 2017; World Bank 2019). This approach seeks to build a high trust, high commitment culture that aligns the values of citizens, workers and employers with the formal rules so as to foster greater voluntary compliance (Alm/Torgler 2011; Torgler 2011; Williams 2014). To achieve this, soft indirect controls are advocated to engender self-regulation rather than hard direct controls to enforce compliance with the rules. Put another way, this approach recommends a shift from external to internal control methods.

This approach receives its clearest expression in the scholarship based on a variant of institutional theory (North 1990; Helmke/Levitsky 2004). This asserts that undeclared work arises when there is an incongruence between the laws, codes and regulations of the formal institutions and the socially shared unwritten rules of society (Williams/Horodnic/Windebank 2015). This incongruence results in the lack of an intrinsic motivation to pay taxes, which can be measured in terms of tax morale (Alm/Torgler 2006, 2011; Torgler/Schneider 2007; Torgler 2011).

Hence, the goal in this post-bureaucratic approach is to increase tax morale to improve the commitment of citizens to voluntarily comply (Kirchler 2007; Torgler 2011). Indeed, studies of the prevalence of undeclared work conducted in East and Central Europe (Williams/Horodnic 2015, 2017b), as well as in the EU as a whole (Williams et al. 2015; Williams/Horodnic 2017a), OECD countries (Feld/Schneider 2010; Schneider 2010), in different EU member states (Kogler/Batrancea/Nichita/Pantya/Belianin/Kirchler 2013; Williams/Franic 2016; Windebank/Horodnic 2017) and the wider global economy (Torgler/Schneider 2007, 2009), all confirm that participation in undeclared work is lower when there is greater tax morale.

In recent years, this post-bureaucratic management approach has additionally recognised the need to also improve not only tax morale but also horizontal trust between citizens (Baric 2016). The belief is that when citizens believe that others commonly engage in undeclared work, and therefore lack trust that others are being compliant, they are more likely to be non-compliant themselves. Until now, the empirical evidence of this derives from laboratory experiments which reveal that a citizen's compliance depends on their perceptions of whether others are compliant (Traxler 2010). If compliance is perceived as the social norm, people comply (Alm 1999, 2012). However, if it is not seen as the norm, they will be non-compliant (Lefebvre/Pestieau/Riedl/Villeval 2015; Hallsworth/List/Metcalf/Vlaev 2017). Compliance is thus conditional on the perceived behaviour of others (Traxler 2010). Until now, however, the evidence is confined to laboratory experiments. As such, to evaluate this post-bureaucratic approach that associates participation in undeclared work with tax morale and horizontal trust, the following hypothesis can be tested:

*Soft indirect controls hypothesis (H2): the greater the tax morale and horizontal trust, the less likely is engagement in undeclared work.*

*H2a: the greater the tax morale, the less likely is engagement in undeclared work.*

*H2b: the greater the horizontal trust, the less likely is engagement in undeclared work.*

### *Competing or complementary approaches?*

In the broader management studies literature, some scholars have shifted away from viewing the bureaucratic and post-bureaucratic management approaches as discrete and explored the possibilities for a 'hybridization' of these approaches as a way forward (Reed 2005; Thompson/Alvesson 2005). When discussing public sector management approaches for tackling undeclared work, an entirely separate but very similar debate has occurred. Scholars have discussed the hy-

bridization of these two approaches and that it could be more effective. A ‘slippery slope’ approach argues that governments should concomitantly pursue hard direct controls to deter undeclared work and soft indirect controls to improve tax morale (Kastlunger/Lozza/Kirchler/Schabmann 2013; Khurana/Diwan 2014). Indeed, combining them is seen as the most effective way of tackling undeclared work (Kirchler/Hoelzl/Wahl 2008; Wahl/Kastlunger/Kirchler 2010; Muehlbacher/Kirchler/Schwarzenberger 2011; Prinz/Muehlbacher/Kirchler 2013).

However, potentially complex interaction effects exist when using hard direct and soft indirect controls alongside each other. For example, the effects of increasing penalties and the probability of detection may change at different levels of tax morale. Such hard direct controls may reduce undeclared work when tax morale is low but lead to greater undeclared work when tax morale is high due to a resultant breakdown in the social contract between the state and its citizens (Chang/Lai 2004; Kirchler/Kogler/Muehlbacher 2014). In other words, tax morale may moderate the effects of increasing penalties and the risk of detection on participation in undeclared work. Nevertheless, such interaction effects have been so far only investigated in laboratory experiments. There is little survey evidence of lived practice. Neither is there any understanding of whether and how horizontal trust might moderate the effects of increasing penalties and the risk of detection in lived practice. In consequence, the following hypotheses can be tested:

*Moderating effects of tax morale hypothesis (H3): the effects of the perceived penalties and risk of detection on the likelihood of engagement in undeclared work varies by the level of tax morale.*

*H3a: the effects of the perceived penalties on the likelihood of engagement in undeclared work varies by the level of tax morale.*

*H3b: the effects of the perceived risk of detection on the likelihood of engagement in undeclared work varies by the level of tax morale.*

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

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

*H4b: the effects of the perceived risk of detection on the likelihood of engagement in undeclared work varies by the level of horizontal trust.*

## Methodology

### *Data*

To evaluate these hypotheses, data is reported from six Central and East European countries (Czechia, Estonia, Latvia, Lithuania, Poland and Slovakia) from special Eurobarometer surveys 67.3, 79.2 and 92.1 on undeclared work conducted in 2007, 2013 and 2019 respectively. All interviews were conducted in the national language with adults aged 15 years and older. A multi-stage random (probability) sampling methodology was used, 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.

### *Variables*

To evaluate whether engagement in undeclared work in these countries is associated with the perceived level of penalties and risk of detection, and tax morale 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 evaluate the policy approaches, four explanatory variables are used. First, to examine the relationship between the perceived level of penalty and engagement in undeclared work, a dummy variable is used, describing the penalties perceived to result from 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 a fine or prison. Second, to examine the relationship between the risk of detection and engagement 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.

Third, to analyse the association between engagement in undeclared work and tax morale, 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 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; someone receives welfare payments without entitlement (not available in the 2019 sur-



vey), 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 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 0.8665 in 2007, 0.8524 in 2013 and 0.8701 in 2019.

Fourth and finally, to analyse the relationship between engagement in undeclared work and horizontal trust, the assertion is that when citizens view others as commonly engaging in undeclared work, and thus lack trust that others are being compliant, they are more likely be non-compliant themselves. Based on this, 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 measure of horizontal trust has been used in previous studies of undeclared work (Stefanov/Williams/Rodgers 2017; Horodnic/Williams 2019a). A dummy variable is used for horizontal trust with value 1 for those who 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 in line with past studies evaluating engagement in undeclared work (Williams/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), and urban/rural area (see Table 1).

**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



### Analytical methods

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

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

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:

$$\Pr(\mathcal{Y}_j \neq 0 | x_j) = \phi(x_j \beta)$$

The dependent variable of the model ( $\mathcal{Y}_j$ ) 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 (see Table 1 for a description of the variables). Moreover, the interaction term is used for investigating moderating effects. The only differences are that interaction variables are constructed (see model 2 in Table 3 below).

### Findings

Table 2 reveals that in 2007, 8.2 % of the citizens surveyed in these six Central and East European economies (Czechia, Estonia, Latvia, Lithuania, Poland and Slovakia) reported engaging in undeclared work during the previous 12 months, 6.8 % in 2013 and 3.6 % in 2019. In consequence, there has been a marked decline in the proportion of citizens participating in undeclared work over this 12-year period.

Who, therefore, participates in undeclared work, and do those who participate in undeclared work have different perceptions than those who do not in relation to the expected penalties and risks of detection, and tax morale and horizontal trust? As Table 2 reveals, in Central and East Europe, those not engaged in undeclared work are much more likely to perceive the expected sanction as higher than those engaged in undeclared work in all three time periods. They are also more likely to perceive the likelihood of detection as higher than those engaged in undeclared work in all three time periods.

Those engaging in undeclared work have a lower tax morale compared with those not engaging in undeclared work over the whole period from 2007 to

2019. Although the tax morale of both those engaged in undeclared work and those not engaged worsened between 2007 and 2013, it slightly improved between 2013 and 2019, although there was an overall decrease in tax morale between 2007 and 2019. On horizontal trust, participants who do not engage in undeclared work have a much higher level of horizontal trust than those participating in undeclared work in all three time periods, with horizontal trust improving over the 2007 to 2019 period both for those engaged and not engaged in undeclared work.

**Table 2. Descriptive statistics of those engaging and not engaging in undeclared work in Central and East European economies, 2007, 2013 and 2019**

	Participants in undeclared work			Not participating in undeclared work		
	2007	2013	2019	2007	2013	2019
<i>Engaged in undeclared work (%)</i>	8.2	6.8	3.6	91.8	93.2	96.4
Expected sanctions (%)						
Tax or social security contributions due	35	49	51	28	40	42
Tax or social security contributions + fine or prison	65	51	49	71	60	58
Detection risk (%)						
Very small/ Fairly small	78	72	68	62	57	50
Fairly high/ Very high	22	28	32	38	43	50
Tax morale (mean)	4.27	4.61	4.52	2.80	2.87	2.81
Know anyone who works undeclared-horizontal trust (%)						
Yes	89	84	79	44	33	32
No	11	16	21	56	67	68
Gender (%)						
Female	38	36	39	63	60	61
Male	62	64	61	37	40	39
Age (mean)	37	37	44	46	46	50
Occupation (%)						
Self-Employed	14	12	9	6	7	7
Employed	50	52	51	46	48	48
Not working	36	36	40	48	45	45
People 15+ years in own household						
One	19	23	32	20	22	27
Two	42	42	46	43	46	50
Three and More	39	35	22	37	32	23
Children (%)						
No children	93	94	73	95	95	74
Have children	7	6	27	5	5	26

	Participants in undeclared work			Not participating in undeclared work		
	2007	2013	2019	2007	2013	2019
Area (%)						
Rural area or village	33	34	30	37	35	33
Small or middle-sized town	33	34	37	36	37	36
Large town	34	32	33	27	28	31
Difficulties paying bills (%)						
Most of the time	-	22	15	-	12	6
From time to time	-	38	30	-	32	21
Almost never/never	-	40	55	-	56	73

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

Examining the descriptive statistics on who participates in undeclared work, Table 2 reveals that men are more likely than women to undertake undeclared work, and those participating in undeclared work are younger than those not participating, although the mean age of participants in undeclared work has risen from 37 years old in 2007 to 44 years old in 2019. Examining the employment status of undeclared workers, the proportion in formal employment has remained relatively constant at one half of all undeclared workers between 2007 and 2019, whilst the proportion who are self-employed has fallen from 14 % to 9 % of all undeclared workers in this period, and the proportion not working has risen from 36 % to 40 %. Examining the households in which undeclared workers live, there has been a growth over time in the proportion living in single person households, with this increase outstripping the general trend towards single occupancy households. There is also an increase in 2019 in the proportion of undeclared workers who have children compared with 2013 and 2007. However, there is no difference between those working undeclared and not doing so in terms of having children. There appear to be few differences between rural and urban areas. Finally, between 2013 and 2019, there is a marked increase in the proportion of undeclared workers who almost never or never have difficulties in paying the household bills. This tentatively intimates that undeclared work is now less confined to poorer populations in Central and East Europe. Nevertheless, it is a more common practice among those having difficulties in paying the bills most of the time.

To analyse if these descriptive results remain valid when other variables are introduced and held constant, Table 3 reports probit estimates of the likelihood of participating in undeclared work in Central and East Europe in 2007, 2013 and 2019. Starting with who engages in undeclared work, the finding is that men are significantly more likely than women, and younger people significantly more

likely than older people, over all three time periods. The effect of employment status on the propensity to participate in undeclared work varies by year. In 2007, compared with self-employed persons, those employed and not working persons were significantly less likely to engage in undeclared work, and in 2013 only those not working were significantly less likely. By 2019, there were no significant differences by employment status. Although having children is not significantly correlated with participation in undeclared work in any time period, single person households were significantly more likely to do so than larger households in 2013 and to a weaker extent in 2019. Although larger urban areas were significantly more likely to engage in undeclared work in 2007, this tendency has now disappeared and in 2013 and 2019 there were no significant differences between urban and rural areas. Finally, there is a significant association between the ability to pay household bills and participation in undeclared work in both 2013 and 2019. Those who do not have difficulties paying bills, and those from time to time having difficulties, are significantly less likely to participate in undeclared work than people who most of the time have difficulties paying their bills.

Turning to the hypotheses regarding whether participation in undeclared work is significantly associated with the expected penalties and risk of detection, and tax morale and horizontal trust, as well as the interaction effects, Table 3 presents the results. The first finding is that although in 2007, there was no association between the expected penalties and participation in undeclared work, by 2013, a weak significant relationship emerged and continued in 2019. The greater the expected penalty, the less likely were citizens to engage in undeclared work. Similarly, engagement in undeclared work is significantly associated with the perceived risk of detection in all three time periods. The greater the perceived likelihood of detection, the less likely are citizens to engage in undeclared work.

There is also 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.

Table 3. Probit estimates of the propensity to engage in undeclared work in Central and East Europe, 2007, 2013 and 2019

	2007			2013			2019		
	Model 1	Model 2	(Robust se)	Model 1	Model 2	(Robust se)	Model 1	Model 2	(Robust se)
	$\beta$	$\beta$		$\beta$	$\beta$		$\beta$	$\beta$	
Expected sanctions (Tax or social security contributions due) + fine or prison	-0.112 (0.0680)	-0.118 (0.194)		-0.120* (0.0709)	-0.286 (0.184)		-0.0157 (0.0809)	0.345* (0.197)	
Detection risk (Very small/ Fairly small)	-0.184** (0.0728)	0.224 (0.184)		-0.150** (0.0748)	-0.135 (0.189)		-0.238*** (0.0861)	-0.308 (0.195)	
Fairly high/ Very high	0.122 (0.0147)	0.148** (0.0770)		0.161*** (0.0270)	0.118*** (0.0277)		0.124*** (0.0169)	0.152*** (0.0281)	
Tax morale	0.935*** (0.0796)	0.966*** (0.157)		0.861*** (0.0763)	1.025*** (0.133)		0.769** (0.0884)	0.852*** (0.156)	
Horizontal Trust									
Gender (Female)	0.383*** (0.0634)	0.380*** (0.0636)		0.314*** (0.0717)	0.312*** (0.0718)		0.361*** (0.0833)	0.361*** (0.0838)	
Male	-0.0117** (0.00196)	-0.0116*** (0.00196)		-0.0121** (0.00245)	-0.0124** (0.00248)		-0.00726*** (0.00267)	-0.00734*** (0.00269)	
Age (Exact age)									
Occupation (Self-employed)	-0.360*** (0.103)	-0.358*** (0.103)		-0.185 (0.120)	-0.183 (0.120)		-0.180 (0.148)	-0.192 (0.148)	
Employed	-0.284** (0.106)	-0.281** (0.106)		-0.271* (0.125)	-0.272* (0.127)		-0.140 (0.152)	-0.152 (0.152)	
Not working									
People 15+ years in own household (One)	-0.133 (0.0916)	-0.125 (0.0914)		-0.225** (0.0940)	-0.234** (0.0946)		-0.164 (0.100)	-0.163 (0.101)	
Two	-0.151 (0.0959)	-0.147 (0.0961)		-0.258*** (0.0977)	-0.276*** (0.0977)		-0.216 (0.121)	-0.221 (0.121)	
Three and more									
Children (No children)	0.0781 (0.127)	0.0943 (0.126)		-0.0381 (0.149)	-0.0407 (0.147)		-0.0678 (0.105)	-0.0591 (0.105)	
Having children									
Area (Rural area or village)	0.0800 (0.0770)	0.0747 (0.0770)		-0.000794 (0.0845)	0.00410 (0.0849)		0.00173 (0.0994)	-0.0000041 (0.0986)	
Small or middle-sized town									

	2007		2013		2019	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	$\beta$ (Robust se)	$\beta$ (Robust se)	$\beta$ (Robust se)	$\beta$ (Robust se)	$\beta$ (Robust se)	$\beta$ (Robust se)
Large town	0.232*** (0.0811)	0.220*** (0.0816)	0.0585** (0.0895)	0.0516 (0.0897)	0.0102 (0.104)	0.0113 (0.104)
Difficulties paying bills (Most of the time)						
From time to time			-0.224** (0.0978)	-0.221** (0.0975)	-0.329** (0.148)	-0.336** (0.150)
Almost never/ never			-0.390*** (0.0965)	-0.388** (0.0968)	-0.573*** (0.138)	-0.577*** (0.140)
Interactions						
Sanction x Tax morale		-0.00160 (0.0313)		0.0525 (0.0340)		-0.0348 (0.0338)
Detection x Tax morale		-0.0890*** (0.0345)		0.0447 (0.0360)		-0.0321 (0.0340)
Sanction x Horizontal Trust		0.0272 (0.168)		-0.0768 (0.157)		-0.320* (0.183)
Detection x Horizontal Trust		-0.136 (0.164)		-0.308* (0.161)		0.293 (0.183)
Constant	-1.695*** (0.201)	-1.834*** (0.260)	-1.454*** (0.227)	-1.371*** (0.256)	-1.638*** (0.291)	-1.811*** (0.315)
N	4220	4220	4052	4052	4341	4341
Pseudo R <sup>2</sup>	0.2047	0.2080	0.2351	0.2384	0.1932	0.1986
Log pseudolikelihood	-9479731	-9440252	-768900	-7656457	-536.8574	-533.2973
$\chi^2$	331.00	361.40	319.63	322.19	260.72	255.70
p>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Source: 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 the informal economy. Therefore, we use the available data, with no imputation, to keep minimize bias.

To examine whether tax morale and horizontal trust moderate the effects and effectiveness of penalties and risk of detection, model 2 in Table 3 presents the interactions. The impact of penalties on the likelihood of engagement does not vary by the level of tax morale. Although in 2007 the effect of risk of detection on the likelihood of engaging in undeclared work significantly varied by the level of tax morale, the significance of this effect disappeared in 2013 and 2019. Meanwhile, the effects of the level of penalties on the likelihood of engagement in undeclared work does not significantly vary by the level of horizontal trust in 2007 and 2013, although there was a weak statistically significant association in 2019. In 2019, the greater the horizontal trust, the more do higher expected penalties reduce participation in undeclared work. This suggests that higher penalties are more effective as a policy tool when horizontal trust is greater. However, the effects of the risk of detection on participation in undeclared work do not vary according to the level of horizontal trust in either 2007 or 2019, although there was a weak association in 2013.

## Discussion and conclusions

This paper has evaluated the bureaucratic approach that uses hard direct controls to deter undeclared work by increasing penalties and the risk of detection, and the post-bureaucratic approach which uses soft indirect controls to improve tax morale and horizontal trust, as well as the interaction effects. Reporting data from the 2007, 2013 and 2019 Eurobarometer surveys, the hard direct controls of the bureaucratic management approach and the soft indirect controls of the post-bureaucratic management approach both significantly prevent undeclared work, and that there are some weak but significant interaction effects when they are used together. In 2019, higher penalties are found to be significantly (albeit weakly) more effective as a policy tool when horizontal trust is greater, doubtless because citizens will believe that fewer are engaged in undeclared work and therefore that their chances of being caught are higher. Table 4 summarises the findings regarding the hypotheses. Here, the theoretical and policy implications are considered.

Theoretically, the contribution of this paper is to show that the bureaucratic and post-bureaucratic approach is not an either/or choice. Instead, both approaches are significantly associated with preventing undeclared work. As such, this survey evidence supports the laboratory experiments asserting that both approaches are effective. The outcome is a call for both approaches to be used. However, caution is urged due to the interaction effects. Although it appears that the effects of hard direct controls (increasing penalties and risk of detection) on engagement in undeclared work do not significantly vary recently by the level of tax morale, their recent effects do appear to vary significantly (albeit weakly) by the level of horizontal trust. In future studies, therefore, greater understanding is



required of these interaction effects, especially the specific contexts in which horizontal trust affect the impacts of hard direct controls.

**Table 4. Summary findings of hypotheses**

Hypothesis	2007	2013	2019
<i>Hard direct controls hypothesis (H1):</i>			
<i>H1a:</i> The greater the perceived penalties, the less likely are citizens to engage in undeclared work.	Reject	Accept	Reject
<i>H1b:</i> The greater the perceived risk of detection, the less likely are citizens to engage in undeclared work	Accept	Accept	Accept
<i>Soft indirect controls hypothesis (H2):</i>			
<i>H2a:</i> the greater the tax morale, the less likely are citizens to engage in undeclared work.	Accept	Accept	Accept
<i>H2b:</i> the greater the horizontal trust, the less likely are citizens to engage in undeclared work	Accept	Accept	Accept
<i>Moderating effects of tax morale hypothesis (H3):</i>			
<i>H3a:</i> the effects of the perceived penalties on the likelihood of engagement in undeclared work varies by the level of tax morale.	Reject	Reject	Reject
<i>H3b:</i> the effects of the perceived risk of detection on the likelihood of engagement in undeclared work varies by the level of tax morale.	Accept	Reject	Reject
<i>Moderating effects of horizontal trust hypothesis (H4):</i>			
<i>H4a:</i> the effects of the perceived penalties on the likelihood of engagement in undeclared work varies by the level of horizontal trust.	Reject	Reject	Accept
<i>H4b:</i> the effects of the perceived risk of detection on the likelihood of engagement in undeclared work varies by the level of horizontal trust.	Reject	Accept	Reject

These findings also have important policy implications. Conventionally, Central and East European countries relied on the bureaucratic management approach of using the hard-direct controls of penalties and increasing the risk of detection when tackling undeclared work (Williams/Puts 2017). Less attention was given to improving tax morale and horizontal trust as advocated by the post-bureaucratic approach. This study reveals a need not only to continue to improve the effectiveness of penalties and the risks of detection but also to develop tools for improving tax morale and horizontal trust. How, therefore, can this be achieved?

On the one hand, to improve the effectiveness of penalties and the risk of detection, a first approach might be to provide penalties that both increase the costs of undeclared work and benefits of declared work. In Greece, for example, employers caught employing undeclared workers face a fine of EUR 10,500 for each undeclared employee. However, from August 2018, the employer can hire them

on a declared contract within 10 days to decrease to: EUR 7,000 if they hire the employee for 3 months; EUR 5,000 if they are hired for 6 months, and EUR 3,000 if they are hired for 12 months. Prior to the new penalties system, only 32 % of detected undeclared workers were hired by the employer, with two-thirds hired on a part-time basis. For the period August 2018 – February 2019 since the introduction of the new penalties system, 45 % of detected undeclared employees have been hired by the employer, all of them on a full-time basis, and 91 % for 12 months (European Platform Tackling Undeclared Work 2019a). This sanctions system could be replicated in Central and East European countries.

On the other hand, the risk of detection can be improved by better data mining, analysis and sharing across government, along with better risk assessment techniques, to target inspections and improve their effectiveness. Indeed, the success rate of inspections is often 10 % in Central and East European countries but 80 % in some West European nations (e.g., Belgium) which have well-developed data mining and risk assessment systems (European Platform Tackling Undeclared Work 2018, 2019b).

To improve tax morale, it is necessary to view low tax morale through the lens of institutional theory as reflecting the asymmetry between the laws, codes and regulations and the norms, beliefs and values of citizens (North 1990; Helmke/Levitsky 2004). To improve tax morale, this incongruence needs to be resolved. Firstly, this can be achieved by altering the acceptability of undeclared work. Education and awareness raising about the benefits of declared work are required, such as showing how taxes result in better public goods and services, providing information on how taxes are spent, and using ‘your taxes are paying for this’ banners on ambulances and fire engines, and in hospitals and on construction projects built with public funds. The analysis reveals that the population groups targeted by such campaigns should be men, younger people, and those with difficulties paying the bills. Secondly, this alignment of citizens’ views with the state can be achieved by changing the formal institutions. Past studies reveal this occurs when citizens perceive state authorities as treating them in a respectful, impartial and responsible manner (Murphy 2005), believe they pay their fair share compared with others (Molero/Pujol 2012) and believe they receive the public goods and services deserved for their taxes paid (Kirchgässner 2011). It also requires that perceptions of state corruption are tackled since there is a strong significant correlation between the perceived high levels of state corruption and engagement in undeclared work on the one hand (Torgler/Schneider 2007, 2009) and between the perceived high levels of state corruption and a lack of citizens’ trust in government on the other hand (Horodnic/Williams 2019b).

Meanwhile, to improve horizontal trust, Central and East European governments must cease publishing figures on the large size of the undeclared economy due to its negative effect on horizontal trust. Instead, messages need to convey the high level of compliance and previous studies reveal these messages as most effective when they refer to populations close to the citizen targeted, such as in their local area, occupation and/or industry (Hallsworth et al. 2017).

This study, nevertheless, has its limitations. It is important in future to explore whether similar findings are applicable in not only each of the individual countries in Eastern Europe but also in other countries, European regions and global regions. It is also important to experiment with the use of other measures of horizontal trust beyond the one used in this study (i.e. generalised trust).

In sum, if the outcome of this paper is that governments in Central and East European countries recognize the need to move beyond solely the hard direct controls of using penalties and increasing the risk of detection and to also adopt soft indirect measures to improve tax morale and horizontal trust, then one of the intentions of this paper will have been fulfilled. If further evaluations are undertaken of these approaches in other European and global regions, then this paper will have fulfilled its wider intention.

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