TACKLING THE INFORMAL SECTOR IN EAST-CENTRAL EUROPE

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Abstract

To tackle participation in the informal sector, an emergent literature has called for the dominant deterrence approach, which increases the penalties and risks of detection, to be replaced and/or complemented by a tax morale approach that fosters citizens' commitment to compliance. Applying logistic regression analysis to the results of a Eurobarometer survey of 11 East-Central European countries reveals that, although both approaches reduce the likelihood of participation in the informal sector, deterrence measures reduce participation only when tax morale is low and have little impact when tax morale is high. The paper then discusses the policy implications of these findings.

1. INTRODUCTION

In East-Central Europe, a burgeoning literature has uncovered how employers use the informal sector in multifarious ways to reduce their labour costs, ranging from employing off-the-books workers, through outsourcing to the informal sector, to under-reporting the wages of their formal employees (Williams, Round, & Rodgers, 2013). With an estimated quarter of national income in East-Central Europe, and an equivalent proportion of jobs in the informal sector, not being declared to the authorities (Schneider & Williams, 2013), tackling participation in this sphere is important. However, in contrast to the numerous studies highlighting the extent and nature of the informal sector in East-Central Europe (Aasland, Grødeland, & Pleines, 2012; Kukk & Staehr, 2014; Lukiyanova, 2015; Sauka & Putniņš, 2011; Slonimczyk & Cimpelson, 2015; Torosyan & Filer, 2014; Wallace & Latcheva, 2006; Williams, 2015a, 2015b), rather less attention has been paid to evaluating the different ways in which this sector can be tackled. However, unless effective strategies are developed to tackle the issue of monetary transactions not being declared to the state for tax, social security and/or labour law purposes, not only will governments suffer public revenue losses and have little control over the quality of working conditions, but unfair competition for legitimate businesses will continue to persist (Andrews, Caldera Sanchez, & Johansson, 2011; ILO, 2014; OECD, 2012; TUC, 2008). The aim of this paper, therefore, is to begin to evaluate the two policy approaches that have been proposed for tackling the informal sector.

Until now, the dominant policy approach adopted in East-Central Europe has been one of deterrence which, grounded in a rational economic actor perspective, views participation in the informal sector as occurring when the pay-off is greater than the expected cost of being caught and punished (Allingham & Sandmo, 1972). Consequently, engagement is deterred by increasing the actual or perceived penalties and risks of detection. However, the growing recognition that many citizens do not participate in the informal sector even if the pay-off from participation is greater than the expected costs (Alm, Cherry, Jones, & McKee, 2010; Kirchler, 2007; Murphy, 2008) has begun to lead to the emergence of a 'tax morale' approach, which views engagement in the informal sector as arising when there is a low intrinsic motivation to

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pay taxes (Cummings, Martinez-Vazquez, McKee, & Torgler, 2009; Torgler, 2007a, 2007b). The outcome has been a discussion about whether the conventional deterrence approach should be replaced and/or complemented with an approach that seeks to foster citizens' commitment to compliance (Alm, Kirchler, Muelhbacher, Gangl, Hofmann, Logler, & Pollai, 2012; Alm & Torgler, 2011; Torgler, 2012). Moreover, there is also some emergent recognition that potentially complex interaction effects may exist between increasing the level of penalties and risks of detection, and improving tax morale (Alm et al., 2012).

To evaluate these policy approaches and their interaction effects, therefore, Section 2 introduces the contrasting policy approaches. This displays how governments in East-Central Europe conventionally adopt a deterrence approach based on increasing the penalties and risks of detection, despite the lack of evidence that a deterrence approach is more effective than a tax morale approach. Replacing or combining this with a tax morale approach has, therefore, seldom been considered. Neither is there an understanding of how these approaches interact if used together. To evaluate these contrasting approaches and their interaction effects, therefore, Section 3 introduces the data and methodology used, namely a logistic regression analysis of the results of a 2013 Eurobarometer survey conducted in the 11 East-Central European countries that are member states of the European Union (i.e., Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia). Section 4 then reports the results of the relationship between participation in the informal sector and, on the one hand, the perceived level of penalties and risk of detection and, on the other hand, the level of tax morale, as well as the complex interaction effects. Section 5 discusses the resultant findings in terms of their implications for policy and further research, before conclusions are drawn in Section 6.

At the outset, however, it is necessary to define the informal sector. Here, and reflecting the widespread consensus in both the academic literature and policy circles, the informal sector is defined as paid work that is legal in all respects other than the fact that it is not declared to the authorities for tax, social security or labour law purposes (Aliyev, 2015; Boels, 2014; European Commission, 2007; OECD, 2012; Williams, 2014a, 2014b). If there are additional differences to the formal sector, then it is not part of the informal sector. For example, if the goods and/or services exchanged are illegal (such as illegal drugs), this is not part of the informal sector but part of the wider criminal economy.

2. POLICY APPROACHES TOWARDS THE INFORMAL SECTOR: A REVIEW

It is now recognised that the informal sector is an extensive and persistent feature in East-Central Europe (Kukk & Staehr, 2014; Schneider & Williams, 2013; Williams et al., 2013). There is also recognition that there will be deleterious consequences if the informal sector is not tackled. Economies lose 'natural' competitiveness because productive formal enterprises suffer unfair competition from unproductive informal enterprises (Leal Ordóñez, 2014; Lewis, 2004); governments lose regulatory control over work conditions (ILO, 2014) and tax revenue (Bajada & Schneider, 2005); and customers lack legal recourse and certainty that health and safety regulations have been followed (Williams & Martinez-Perez, 2014). Moreover, informal workers: lack access to credit and financial services; have no entitlement to labour rights such as the minimum wage and sick pay; cannot build up rights to the state pension and other contributory benefits, or access occupational pension schemes; and lack access to health and safety standards, as well as bargaining rights and voice (European Commission, 2007; ILO, 2014; OECD, 2015).

What approaches are available, therefore, for tackling the informal sector? Here, we differentiate two broad but distinct approaches, each of which represents participation in the informal sector in different ways. These are first, a deterrence approach, grounded in a rational economic actor view of participants, that seeks to tackle the informal sector by ensuring that payoff from informal work is outweighed by the costs, and second, a tax morale approach, grounded in a view that participants are social actors and of the informal sector as arising when there is low commitment to compliance. Here, each is considered in turn, along with whether they are viewed as competing or complementary approaches.

Deterrence Approach

The origins of the deterrence approach towards the informal sector lie in the classic utilitarian theory of crime, which views citizens as rational actors who engage in crime when the benefits outweigh the expected penalty and probability of being caught (Bentham, 1788). Becker (1968) popularised this approach towards crime, arguing that by increasing the sanctions and risks of detection confronting those considering or actually disobeying the law, legal behaviour would become the rational choice for citizens. During the early 1970s, this rational actor approach was applied to tax evasion by Allingham and Sandmo (1972) by viewing the non-compliant as rational actors who engage in tax evasion because the benefits are greater than the expected costs of being caught and punished. To change the cost/benefit ratio confronting those engaged in, or thinking about participating in, tax evasion, it was therefore argued that the actual and/or perceived penalties and risks of detection needed to be increased. This deterrence approach was subsequently widely adopted as an approach for explaining and tackling the informal sector (Grabiner, 2000; Gramsick & Bursik, 1990; Hasseldine & Li, 1999; Job, Stout, & Smith, 2007; Lewis, 1982; Milliron & Toy, 1988; Richardson & Sawyer, 2001; Sandford, 1999).

Nevertheless, the evidence that increasing deterrents reduces participation in the informal sector is mixed. Some suggest that increasing the probability of detection reduces the likelihood of engagement in the informal sector, at least for some income groups (Beron, Tauchen, & Witte, 1992; Dubin & Wilde, 1988; Dubin, Graetz, & Wilde, 1987; Kinsey & Gramsick, 1993; Klepper & Nagin, 1989; Slemrod, Blumenthal, & Christian, 2001; Varma & Doob, 1998; Witte & Woodbury, 1985). Similarly, some support the view that increasing fines reduces the informal sector (De Juan, Lasheras, & Mayo, 1994; Elffers & Hessing, 1997; Feld & Frey, 2002; Friedland, 1982; Friedland, Maital, & Rutenberg, 1978; Klepper & Nagin, 1989; Schwartz & Orleans, 1967; Spicer & Lunstedt, 1976; Varma & Doob, 1998; Webley & Halstead, 1986; Wenzel, 2004a, 2004b).

Others, however, argue that increasing penalties either leads to a growth in the informal sector, has no effect, or only has a short-term effect (Elffers & Hessing, 1997; Feld & Frey, 2002; Friedland, 1982; Murphy, 2005; Spicer & Lunstedt, 1976; Varma & Doob, 1998; Webley & Halstead, 1986), and that improving the risks of detection does not result in less non-compliance (Dubin et al., 1987; Dubin & Wilde, 1988; Elffers & Hessing, 1997; Shaw, Slemrod, & Whiting, 2008; Webley & Halstead, 1986). Some also claim it raises the level of non-compliance by breaking down the level of trust between the state and its citizens (Ayres & Braithwaite, 1992; Blumenthal, Christian, & Slemrod, 2001; Brehm & Brehm, 1981; Chang & Lai, 2004; Kagan & Scholz, 1984; Kirchler, Kogler, & Muehlbacher, 2014; Murphy & Harris, 2007; Tyler, Sherman, Strang, Barnes, & Woods, 2007). To evaluate the validity of this deterrence approach, in consequence, the following hypothesis can be tested:

Deterrence hypothesis (H1): the greater the perceived penalties and risk of detection, the lower the participation in the informal sector.

H1a: the greater the perceived penalties, the lower the participation in the informal sector.

H1b: the greater the perceived risks of detection, the lower the participation in the informal sector.

Tax Morale Approach

There has been growing recognition, however, that many comply voluntarily even when the level of penalties and risks of detection suggest that they should not if they were truly rational economic actors (Alm et al., 2010; Kirchler, 2007; Murphy, 2008; Murphy & Harris, 2007). To explain this, a 'tax morale' approach has emerged, which views citizens as social actors and explains engagement in the informal sector to be a consequence of low tax morale, i.e. a low intrinsic motivation to pay taxes (Alm & Torgler, 2006, 2011; Cummings, Martinez-Vazquez, McKee, & Torgler, 2009; McKerchar, Bloomquist, & Pope, 2013; Torgler, 2011; Torgler & Schneider, 2007). Consequently, the objective is to foster the commitment of citizens to comply voluntarily by improving their tax morale, rather than seeking to force them to comply by using threats (Kirchler, 2007; Torgler, 2007a, 2007b, 2011).

The roots of this tax morale approach lie in the work of Georg von Schanz (1890), who first drew attention to the tax contract between the state and its citizens. Some sixty years later, the German 'Cologne school of tax psychology' revived this and constructed measures of tax morale (Schmölders, 1952, 1960, 1962; Strümpel, 1969). Although the emergence of the rational economic actor model from the 1970s resulted in the abeyance of this approach, it has resurfaced since the turn of the millennium (Alm et al., 2012; Kirchler, 1997, 1998, 1999, 2007; Torgler, 2003, 2005a, 2005b, 2006a, 2006b, 2007a, 2007b, 2011). Rather than pursue compliance using deterrence measures in a low commitment, low trust and adversarial culture, using close supervision and monitoring, tight rules, prescribed procedures and centralised structures, this tax morale approach pursues compliance through self-regulation in a high trust, high commitment culture that aligns the values of citizens with the formal rules, so as to engender greater voluntary commitment to compliant behaviour (Alm & Torgler, 2011; Torgler, 2012). It is therefore argued that improvements in tax morale require improvements in certain structural conditions, such as the quality of governance and level of government intervention (Autio & Fu, 2015; Dau & Cuervo-Cazzurra, 2014; Klapper, Amit, Guillen, & Quesdada, 2007; Thai & Turkina, 2014).

As such, when viewed through the lens of institutional theory (Baumol & Blinder, 2008; Efendic, Pugh, & Adnett, 2011; North, 1990), all societies are seen as having formal institutions (codified laws and regulations that define the legal rules of the game) and informal institutions, which are the 'socially shared rules, usually unwritten, that are created, communicated and enforced outside of officially sanctioned channels' (Helmke & Levitsky, 2004, p. 727). Tax morale is seen to provide a measurement of the gap between the formal institutions (here termed 'state morale') and informal institutions (here termed 'civic morale'). When this gap is large, engagement in the informal sector will be more prevalent (Webb, Tihanyi, Ireland, & Sirmon, 2009). To evaluate the validity of this approach, therefore, the following hypothesis can be evaluated:

> *Tax morale hypothesis* (H2): the greater the tax morale, the lower the likelihood of participation in the informal sector.

Interaction Effects: Competing or Complementary Policy Approaches

In East-Central Europe, and as Dekker, Oranje, Renooy, Rosing, & Williams (2010) reveal in a study of senior government officials and social partners on the most important policy approach in their countries, the deterrence approach is seen as the dominant and most effective approach. The vast majority (75%) viewed the increase of penalties and risks of detection as the dominant approach in their countries and 80% also view this as the most effective approach, with the remainder stating that the focus should be upon increasing the benefits of compliant behaviour. None viewed the tax morale approach as the most important or effective.

As such, this tax morale approach has so far found little support in government policy circles, despite the mixed evidence on whether the deterrence approach is effective. Although some of those advocating the tax morale approach have viewed it as an alternative to the deterrence approach (Eurofound, 2013; Williams, 2014a; Williams & Renooy, 2013), most of the tax morale literature has viewed it as complementary. In what has become known as the ‘slippery slope’ approach, it has been argued that governments might pursue not only ‘enforced’ compliance by increasing the penalties and risks of detection and therefore the power of authorities, but also pursue ‘voluntary’ compliance by improving tax morale and therefore trust in authorities (Kirchler, Hoelzl, & Wahl, 2008; Kogler, Muelbacher, & Kirchler, 2015; Kastlunger, Lozza, Kirchler, & Schabmann, 2013; Khurana & Diwan, 2014; Muehlbacher, Kirchler, & Schwarzenberger, 2011; Prinz, Muehlbacher, & Kirchler, 2013; Wahl, Kastlunger, & Kirchler, 2010).

According to the 'slippery slope' approach, when there is no trust in authorities and authorities have no power, the informal sector will be more prevalent. When trust in, and/or the power of, authorities increases, however, the informal sector work reduces.

To illustrate this, Wahl et al. (2010) randomly presented laboratory experiment participants with one of four different descriptions of a fictitious country, in which the authorities are depicted, on the one hand, as either trustworthy or untrustworthy and, on the other hand, as either powerful or powerless. Their results revealed that participants paid significantly more taxes when both power and trust were high. They also revealed that voluntary compliance was highest when the authorities were both trusted and powerful, while enforced compliance was highest when authorities were powerful but not trustworthy. These findings are further reinforced by two additional surveys of real-world taxpayers (Muehlbacher et al., 2011). The outcome appears to be that a combination of greater trust in authorities and the greater power of authorities is the most effective means of tackling the informal sector (Kogler et al., 2015).

However, there is also recognition that increasing the power of authorities and trust in authorities may have complex interaction effects. Applying higher penalties and risks of detection might not always lead to the same outcome. In situations where there is already high tax morale, for example, it is posited that increasing the penalties and risks of detection might lead to greater non-compliance, not least due to a breakdown of trust between the state and its citizens (Ayres & Braithwaite, 1992; Blumenthal et al., 2001; Brehm & Brehm, 1981; Chang & Lai, 2004; Kagan & Scholz, 1984; Kirchler et al., 2014; Murphy & Harris, 2007; Tyler et al., 2007). The intimation, therefore, is that tax morale may moderate the effects of increasing the perceived penalties and risks of detection on participation in the informal sector.

Until now, however, only a few studies have analysed the interaction effect of tax morale and deterrence. Wenzel (2004b) shows that deterrence is only effective when personal norms to comply with tax obligations (defined as personal standards of behaviour the person is motivated to uphold, which is akin to tax morale) are low. A similar tax morale moderation effect is also documented by Cabral, Kotsogiannis & Myles (2015), who find that deterrents (sanctions and detection) play an important role when the morale in the economy is low, but are less important when morale is high. A similar negative association between enforcement and trust in authorities supporting the moderation effect is also reported by Gangl, Hofmann, & Kirchler (2015). To evaluate this moderation effect, therefore, the following hypothesis can be tested:

> *Moderating effects hypothesis* (H3): the effect of perceived penalties and risk of detection on the likelihood of participation in the informal sector is different at varying levels of tax morale.
>
> *H3a:* the effect of perceived penalties on the likelihood of participation in the informal sector is different at varying levels of tax morale.
>
> *H3b:* the effect of perceived risk of detection on the likelihood of participation in the informal sector is different at varying levels of tax morale.

3. METHODOLOGY

Data

In order to analyse the above hypotheses in the context of East-Central Europe, we include data from special Eurobarometer survey no. 402. This survey involved 11,131 face-to-face interviews, which were conducted in April and May 2013 across 11 East-Central European countries that are member states of the European Union. The interviews were conducted in the national language with people aged 15 years and older. In each country, a multi-stage random (probability) sampling methodology was employed, with the number of interviews varying from 500 in smaller countries to 1,500 in the larger nations. This methodology ensured that each country and each level of sample was representative in proportion to its population size in terms of gender, age, region and locality size. A sample weighting scheme was used for the univariate analysis in order to obtain meaningful descriptive results, as recommended in the wider literature (Sharon & Liu, 1994; Solon, Haider, & Wooldridge, 2013; Winship & Radbill, 1994) and the Eurobarometer methodology. However, debate exists as to whether or not to use a weighting scheme for multivariate analysis (Pfefferman, 1993; Sharon & Liu, 1994; Solon et al., 2013; Winship & Radbill, 1994). It was decided, in this instance, not to use a weighting scheme, so as to represent the view of the majority.

In order to investigate this sensitive topic, the face-to-face interviews moved gradually from less sensitive to more sensitive questions. First, participants were asked attitudinal questions regarding their views on the acceptability of various forms of informal work, and also their views on the expected sanctions if caught and the risks of detection. They were then questioned as to whether or not they had purchased goods and services in the informal sector, and finally as to whether or not they had worked in the informal sector. Here, we first focus upon the questions about whether or not they had worked in the informal sector, and then turn our attention to the attitudinal questions asked in order to examine the level of tax morale, and how the participants perceived the penalties and risk of detection in respect to participation in the informal sector.

Variables

The dependent variable used in order to evaluate whether higher penalties and risks of detection and higher levels of tax morale reduce the likelihood of participation in the informal sector in East-Central Europe is whether the interviewee participates in the informal sector. This is a dummy variable with recorded value 1 for persons who answered 'yes' to the following question: 'Apart from a regular employment, have you yourself carried out any undeclared paid activities in the last 12 months?'.

Three explanatory variables are used in order to evaluate the association between participation in the informal sector and the various policy measures. First, to evaluate whether the perceived risk of detection influences the likelihood of participation, a dummy variable is used describing the perceived risk of being detected when participating in the informal sector, with value 0 for a very small or fairly small risk and value 1 for a fairly high or very high risk. Secondly, to evaluate how penalties are associated with the likelihood of participation in the informal sector, a dummy variable is used of the expected sanctions if caught working in the informal sector, with value 0 for the expected sanction being that normal tax or social security contributions will be due, and value 1 for the expected sanction being that normal tax or social security contributions will be due, plus a fine or imprisonment.

Finally, a continuous variable is used based on a 10-point Likert scale in order to evaluate the association between participation in the informal sector and the level of tax morale. Rather than use a single question to assess tax morale, participants are asked to report the acceptability of six types of informal work, where 1 means that they believe it is absolutely unacceptable and 10 means that it is absolutely acceptable. These six types of informal work are:

- 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;
- Someone evades taxes by not declaring or only partially declaring their income.

An aggregate 'tax morale index' is constructed for each participant by collating their attitudes regarding the acceptability of these six forms of informal work, and weighting their view of the acceptability of each form of informal work equally. The Cronbach's Alpha coefficient of the scale is 0.860, which shows a good internal consistency of the scale (Kline, 2000). Here, this index is used in the original 10-point Likert scale format. Therefore, the lower the index value, the higher the tax morale.

Drawing on past studies that identify the socio-demographic, socio-economic and spatial variables which influence participation in the informal sector (Williams & Horodnic, 2015a, 2015b), the control variables selected are:

- *Gender*: a dummy variable with value 0 for women and 1 for men.
- *Age*: a continuous variable indicating the exact age of a respondent.
- *Occupation*: a categorical variable grouping respondents by their occupation, with value 1 for self-employed, value 2 for employed, and value 3 for not working.
- *Marital status*: a categorical variable for the marital status of the respondent, with value 1 for unmarried individuals, value 2 for married/ remarried individuals or single individuals with partners, value 3 for those separated or divorced, and value 4 for those widowed.
- *People 15+ years in own household*: a categorical variable for people aged 15+ years in the respondent`s household (including the respondent), with value 1 for one person, value 2 for two people, value 3 for 3 people, and value 4 for 4 or more people.
- *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's difficulties in paying bills, with value 1 for having difficulties most of the time, value 2 for occasionally having difficulties, and value 3 for almost never/never having difficulties.
- *Area*: a categorical variable for the area where the respondent lives, with value 1 for a rural area or village, value 2 for a small or middle-sized town, and value 3 for a large town.

Analytical Methods

A logistic regression analysis was conducted in order to evaluate the association between participation in the informal sector and the perceived penalties and risk of detection, and the level of tax morale. Only information relating to respondents for whom data was available in respect of each and every control variable was analysed, resulting in 7,141 participants being examined. The results follow.

4. FINDINGS

Of the 7,141 participants interviewed in these 11 East-Central European countries, 4% reported engaging in the informal sector in the past 12 months (see Table 1). Even if this is a lower-bound estimate due to the fact that the issue of participation in the informal sector is a sensitive one, 1 in 26 of these East-Central European countries' citizens reported participating in the informal sector in the past year. The level of participation, moreover, varies across countries. Estonia and Latvia have the highest reported levels of participation in the informal sector (13% and 12% respectively), compared with 7% in Croatia, Lithuania and Slovenia, 5% in Bulgaria, Czech Republic, Hungary and Slovakia, 4% in Romania and 3% in Poland.

Table 1. Participation in informal sector: by expected sanctions, detection risk, and tax morale in East-Central Europe (N = 7,141)

	East-Central Europe	Country:										
		Estonia	Latvia	Croatia	Lithuania	Slovenia	Bulgaria	Czech Republic	Hungary	Slovakia	Romania	Poland
Engaged in informal sector (%)	4	13	12	7	7	7	5	5	5	5	4	3
Expected sanctions (%)												
Tax or social security contributions due	46	37	60	43	69	43	28	23	35	51	56	56
Tax or social security contributions + fine or prison	54	63	40	57	31	57	72	77	65	49	44	44
Detection risk (%)												
Very small/ Fairly small	75	72	76	79	60	86	91	79	40	62	73	91
Fairly high/ Very high	25	28	24	21	40	14	9	21	60	38	27	9
Tax morale	4.1	3.8	5.0	2.7	4.7	3.2	3.7	4.6	3.6	5.5	3.6	4.4
Not engaged in informal sector (%)	96	87	88	93	93	93	95	95	95	95	96	97
Expected sanctions (%)												
Tax or social security contributions due	40	40	47	48	46	38	16	24	19	27	36	61
Tax or social security contributions + fine or prison	60	60	53	52	54	62	84	76	81	73	64	39
Detection risk (%)												
Very small/ Fairly small	58	46	67	65	46	83	67	74	55	56	59	52
Fairly high/ Very high	42	54	33	35	54	17	33	26	45	44	41	48
Tax morale	2.6	2.6	3.5	2.0	2.8	2.0	2.2	2.9	2.8	2.8	2.3	2.8

Table 1 also shows the differences in perception of the expected sanctions, risks of detection and tax morale between those who engage in the informal sector and those who do not. Those engaging in the informal sector are more likely to view the expected sanctions and risk of detection as lower than those not doing informal work. 46% of those engaged in informal work believe that only the normal tax or social security contributions will be due if they are caught, while only 40% of those who were not engaged in informal work hold the same view. 75% of those undertaking informal work perceive the risk of being detected as very small or fairly small, compared with 58% of those not engaged in informal work. Those engaging in informal work also have a lower level of tax morale (4.1) compared with those not engaging in the informal sector (2.6). Moreover, in all countries examined, those participating in the informal sector more commonly view the expected sanctions and risk of detection as lower, and have a lower level of tax morale. As such, participants in the informal sector in all 11 East-Central European countries surveyed perceive a smaller risk of detection, view the severity of the punishment as lower, and have a lower level of tax morale than those not participating in the informal sector.

Table 2. Logistic regressions of the propensity to participate in the informal sector in East-Central Europe

	Model 1				Model 2			
	β		Robust se(β)	Exp(β)	β		Robust se(β)	Exp(β)
Expected sanctions (Tax or social security contributions due)								
Tax or social security contributions + fine or prison	-0.226	**	0.109	0.798	-0.664	***	0.212	0.515
Detection risk (Very small/ Fairly small)								
Fairly high/ Very high	-0.574	***	0.116	0.563	-0.831	***	0.241	0.436
Tax morality	0.342	***	0.025	1.407	0.263	***	0.0379	1.300
Gender (Female)								
Male	0.913	***	0.112	2.491	0.912	***	0.112	2.488
Age (exact age)	-0.033	***	0.004	0.967	-0.034	***	0.004	0.967
Occupation (Self-employed)								
Employed	-0.494	***	0.179	0.610	-0.480	***	0.180	0.619
Not working	-0.510	***	0.188	0.600	-0.501	***	0.188	0.606
Marital status (Unmarried)								
(Re-)Married/Single with partner	0.246		0.165	1.279	0.238		0.164	1.269
Divorced or separated	0.305		0.223	1.356	0.294		0.222	1.342
Widowed	0.267		0.312	1.306	0.255		0.311	1.290
People 15+ years in own household (One)								
Two	-0.466	***	0.175	0.628	-0.474	***	0.175	0.622
Three	-0.484	**	0.190	0.616	-0.499	***	0.189	0.607
Four and more	-0.598	***	0.197	0.550	-0.612	***	0.196	0.542
Children (No children)								
Having children	-0.008		0.129	0.992	-0.014		0.129	0.968
Difficulties paying bills (Most of the time)								
From time to time	-0.702	***	0.141	0.496	-0.694	***	0.141	0.500
Almost never/ never	-1.018	***	0.144	0.361	-1.013	***	0.144	0.363
Area (Rural area or village)								
Small or middle sized town	-0.202		0.127	0.817	-0.199		0.127	0.819
Large town	-0.140		0.131	0.869	-0.144		0.131	0.866
Interactions								
Tax or social security contributions + fine or prison x Tax morality					0.112	**	0.048	1.118
Fairly high/ Very high x Tax morality					0.065		0.054	1.067
Constant	-1.182	***	0.338	0.307	-0.843	**	0.356	0.431
N				7,141				7,141
Pseudo R^2				0.1531				0.1550
Log pseudolikelihood				-1359.8189				-1356.8344
χ^2				452.66				444.71
p>				0.0000				0.0000

Notes:
Significant at *** p<0.01, ** p<0.05, * p<0.1
All coefficients are compared to the benchmark category, shown in brackets.

Table 2 shows the results of a logistic regression analysis, so that we can analyse whether or not these relationships are significant when a range of control variables are taken into account and held constant, as well as the interaction effects of tax morale and deterrents.

Before evaluating the association between policy approaches and participation in the informal sector, it is important to highlight the findings in relation to the groups most likely to participate in the informal sector and, thus, the groups that need to be targeted by public authorities when seeking to tackle the informal sector. Table 2 reveals that men are significantly more likely to participate in the informal sector than women, and younger people are more likely to do so than older people. Those living in smaller households are more likely to participate in informal work than those in larger households, and those facing difficulties with paying their household bills most of the time are more likely to participate in the informal sector than those who have difficulties paying them less frequently. Additionally, when compared to the self-employed, the employed and those not working are significantly less likely to engage in informal work. As such, this identifies the socio-demographic and socio-economic characteristics of those most likely to participate in the informal sector. The next issue to consider, therefore, is to assess which approach is the most effective at tackling the informal sector.

Commencing with the relationship between participation in the informal sector and the perceived level of penalties, when other variables are introduced and held constant, a statistically significant association is identified. Those viewing the expected sanctions to be higher (that is, tax or social security contributions plus a fine or prison) are significantly less likely to participate in the informal sector (confirming H1a). When examining the relationship between participation in the informal sector and the perceived level of risk of being detected, a similar significant association is identified. Those viewing the risk of being caught as fairly high or very high are significantly less likely to participate in the informal sector than those who consider the risk of being caught as fairly small and very small (confirming H1b). These results, therefore, validate the deterrence approach adopted by many governments; increasing the actual or perceived penalties and risks of detection is significantly associated with reductions in the likelihood of participation in the informal sector in East-Central Europe.

When considering the tax morale approach, meanwhile, it is again the case that there is a significant association between engagement in informal work and the level of tax morale. The direction of the association is that the higher the tax morale, the lower the likelihood of participation in the informal sector (confirming H2). This logistic regression analysis therefore reveals a significant association between the likelihood of participating in the informal sector and, not only the risk of detection and level of punishments, but also the level of tax morale.

What, however, is the interaction effect between deterrence and tax morale? It might be the case, for example, that there will be a greater decrease in the level of engagement in the informal sector if a government combines the conventional deterrence approach of increasing sanctions and/or risk of detection with the tax morale approach. It might also be the case that tax morale will moderate the effectiveness and impacts of using deterrents. Model 2 in Table 2 introduces the interaction terms between tax morale and the level of punishment and risk of detection, so as to analyse whether the effects of these two deterrence measures on participation in the informal sector vary by the level of tax morale. The finding is that the impact of the perceived penalties on the likelihood of participation in the informal sector varies at different levels of tax morale (confirming H3a). That is, the effect of the perceived penalties on the likelihood of participation in the informal sector is significantly different at varying levels of tax morale. However, the interaction term between the risk of detection and tax morale is not significant (refuting H3b), meaning that the effect of the risk of detection on the likelihood of participation in the informal sector is not significantly different at varying levels of tax morale.

In order to visually display the interactions between the perceived risks of detection, the expected level of punishment and tax morale, Figure 1 shows the predicted probabilities of a 'representative' East-Central European citizen participating in the informal sector by their level of tax morale and their perception of the likely penalties and risks of detection. The 'representative' East-Central European citizen is derived by taking the mean and modal values of the other independent variables. Consequently, the representative citizen here is a 44-year-old woman who is not working, (re-)married, living in a two person household, located in a rural area or village, has no children, and never, or almost never, faces financial problems. Figure 1 presents the predicted probabilities of this 'representative' East-Central European citizen engaging in the informal economy by their level of tax morale and what they perceive as the likely penalties and risk of detection. This shows that, for those with higher tax morale (below a score of 6), deterrence measures have little impact on reducing the probability of participation in the informal sector. It is only when tax morale is low (above a score of 6) that raising the level of deterrents has an impact, with increasing the perceived risks of detection leading to higher reductions in the likelihood of participation in the informal sector than increasing the expected punishments. It can therefore be tentatively asserted that:

- Increasing tax morale is effective as a means of tackling the informal sector;
- It is only in populations with low tax morale (above a score of 6) that raising the level of deterrents has an impact, with increasing the risks of detection having a greater impact than increasing the penalties.

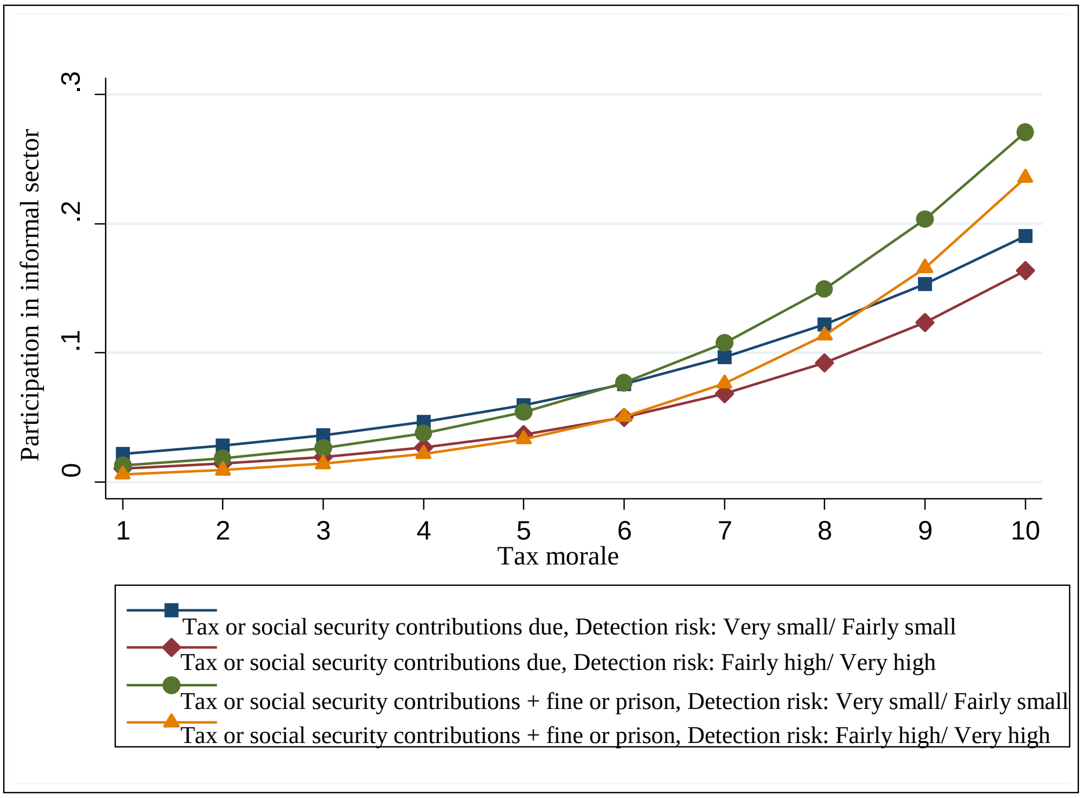

Figure 1. Predicted probability of a "representative" citizen living in East-Central Europe participating in the informal sector: by expected sanctions, detection risk and tax morale

5. DISCUSSION

These results suggest that participation in the informal sector decreases as the expected level of penalties and risk of detection increase, and when tax morale improves. This suggests that both the conventional deterrence and tax morale approaches are effective in decreasing participation in the informal sector. The finding of this paper, however, is that the impact of increasing deterrence varies at different levels of tax morale. Evaluating the probability of the ‘representative’ East-Central European citizen participating in the informal sector, it has been shown that when tax morale is relatively high (above a score of 6), increasing deterrence has little effect on the probability of engagement in the informal sector. It is only when tax morale decreases below a score of 6 that deterrence plays a more significant role in reducing the predicted odds of the 'representative' citizen participating in the informal sector. In such low trust contexts, the greater the level of deterrents, the lower the probability of engagement in the informal sector, with higher expected risks of detection reducing the predicted odds of engagement in the informal sector to a greater extent than higher perceived sanctions.

Consequently, if participation in the informal sector is to be reduced in East-Central Europe, an either-or approach can be adopted. If investment is made in increasing tax morale, it renders a deterrence approach redundant, given that the analysis shows that deterrents are ineffective at high levels of morale. However, if no investment is made in increasing tax morale, deterrents seem effective based on the regression results. So, the question is why would authorities wish to increase tax morale if deterrence works? One answer is that deterrence may well be more costly to sustain. Future research therefore needs to evaluate the costs of each approach in terms of the differential costs of reducing the informal sector by a percentage point using tax morale and deterrents, as well as whether and how these costs vary according to the size of the informal sector. If it is indeed the case that tax morale is more cost-effective, increasing tax morale gradually (and decreasing deterrence proportionally) would make financial sense as a longer term strategy for tax administrations.

Therefore, to achieve this shift towards a tax morale approach, and as discussed in the literature review, low tax morale can be read through the lens of institutional theory as measuring the degree of non-alignment of the laws, codes and regulations of formal institutions and the norms, beliefs and values of informal institutions (Helmke & Levitsky, 2004; North, 1990; Webb et al., 2009). When viewed through this lens, two types of change are required. On the one hand, the norms, values and beliefs regarding the acceptability of participating in the informal sector need altering by, for example, raising awareness about the benefits of formality and paying taxes in terms of the public goods and services received. On the other hand, changes in formal institutions are also needed, particularly in countries where lack of trust in the government results in low tax morale. This requires alterations in the country-level conditions that have been found to be associated with lower tax morale, such as the quality of governance and level of government intervention (Autio & Fu, 2015; Dau & Cuervo-Cazzurra, 2014; Klapper et al., 2007; Thai & Turkina, 2014). For example, previous studies have shown that tax morale is higher when the following exist: procedural justice, which refers to whether or not citizens perceive the government to treat them in a respectful, impartial and responsible manner (Braithwaite & Reinhart (2000); Gangl, Muehlbacher, de Groot, Goslinga, Hofmann, Kogler, Antonides, & Kirchler (2013); Murphy (2005); Taylor (2005); Tyler (1997); Wenzel (2002)); procedural fairness, which refers to the extent to which citizens believe that they are paying their fair share when compared with others (Kirchgässner 2011; McGee, 2008); McGee, Alver, & Alver, 2008; Molero & Pujol, 2012); and redistributive justice, which refers to whether citizens believe they receive the goods and services that they deserve, given the taxes that they pay (Kirchgässner, 2011).

6. CONCLUSIONS

In this paper, we have sought to evaluate the competing approaches for tackling participation in the informal sector in East-Central Europe. To do this, we have evaluated the validity of pursuing not only the conventional deterrence approach, which increases the penalties and risks of detection, but also the emergent tax morale approach and the interaction effects of combining these two approaches. Applying logistic regression analysis to the results of a Eurobarometer survey of 11 East-Central European countries has revealed that, although both approaches reduce the likelihood of participation in the informal sector, deterrence measures only reduce participation when tax morale is low and have little impact when tax morale is high. Whether this is the case in each and every East-Central European country now needs to be evaluated. Taking such an evidence-based approach to policy formulation is important if the effectiveness and efficiency of the fight against the informal sector is to be improved in individual countries.

If this paper therefore contributes to stimulating evaluations of the different policy approaches towards the informal sector and the interaction effects of combining them in individual countries and other global regions, then it will have achieved one of its intentions. If this then results in governments widening their policy approaches when tackling the informal sector beyond the currently dominant deterrence approach, it will have fulfilled its broader intention. As this paper suggests, it can no longer be assumed that the conventional deterrence approach is the only, or even the most effective, way of reducing participation in the informal sector.

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APPENDIX

Table A1. Variables used in the analysis: definitions and descriptive statistics

Variables	Definition	Mode or mean	Min / Max
Participation in the informal sector (dependent variable)	Dummy variable of whether participated in informal sector in past 12 months	Not engaged in informal sector (96%)	0 / 1
Expected sanctions	Dummy for the penalties associated with participation in the informal sector	Tax or social security contributions + fine or prison (59%)	0 / 1
Detection risk	Dummy for the perceived risk of detection	Very small/ Fairly small (59%)	0 / 1
Tax morality	Constructed index of self-reported tolerance towards tax non-compliance	2.7	1 / 10
Gender	Dummy for the gender of the respondent	Female (51%)	0 / 1
Age	Respondent's exact age	44 years	15 / 96
Occupation	Respondent's occupation in categories	Not working (47%)	1 / 3
Marital status	Respondent's marital status in categories	(Re-)Married/ Single with partner (63%)	1 / 4
People 15+ years in own household	People 15+ years in respondent`s household (including the respondent) in categories	Two (46%)	1 / 4
Children	Dummy for the presence of children (up to 14 years old) in the household	No children (72%)	0 / 1
Difficulties paying bills	Respondent's difficulties in paying bills in categories	Almost never/ never (57%)	1 / 3
Area	Size of the area where the respondent lives in categories	Rural area or village (36%)	1 / 3