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Evaluating the policy approaches for tackling undeclared work in the European Union

Abstract

When tackling the undeclared economy, an emergent literature has called for the conventional rational economic actor approach (which uses deterrents to ensure that the costs of undeclared work outweigh the benefits) to be replaced or complemented by a social actor approach which focuses upon improving tax morale. Evaluating the validity of doing so using 27,563 face-to-face interviews conducted in 2013 across Europe, multilevel logistic regression analysis reveals that both approaches significantly reduce participation in undeclared work. When tax morale is high, however, deterrence measures have little impact on reducing the probability of participation in undeclared work and it is only when tax morale is low that raising the level of deterrents has greater impacts, with increasing the perceived risks of detection in such contexts leading to higher reductions in participation in undeclared work than increasing the perceived punishments. The paper concludes by calling for more nuanced context-bound policy approaches.

Introduction

This paper evaluates the effectiveness of different policy approaches that can be used to tackle undeclared work. Although there is a growing understanding of the extent and character of undeclared work (ILO, 2013; Schneider and Williams, 2013; Williams, 2014b), little attention has been so far paid to evaluating the various policy approaches available for tackling this phenomenon. However, unless effective strategies are developed to tackle monetary transactions not declared to the state for tax, social security and/or labour law purposes, not only will governments continue to lose considerable public revenue and workers continue to face poor quality working conditions, but the unfair competition that legitimate businesses face will remain (Andrews et al., 2011). How this sphere can be tackled has thus become a matter of growing interest.

Conventionally, a rational economic actor approach has been used by governments when tackling undeclared work. This views participation in undeclared work as arising when the pay-off is greater than the expected cost of being caught and punished (Allingham and Sandmo, 1972), and has resulted in governments seeking to deter participation by increasing the actual or perceived penalties and risks of detection. However, the recognition in academic circles that many citizens voluntarily comply even when the pay-off from undeclared work is greater than the expected costs (Alm et al., 2010; Kirchler, 2007; Murphy, 2008), has resulted in calls for a 'social actor' approach. This views participation in undeclared work as arising when tax morale, defined as the intrinsic motivation to pay taxes (Cummings et al., 2009; Torgler, 2007a,b), is low. The consequent argument by academic scholars has been to call for an approach that elicits greater voluntary commitment to compliant behaviour by improving tax morale (Alm et al., 2012; Alm and Torgler, 2011; Torgler, 2012). Conventionally, these two approaches have been seen as mutually exclusive (Eurofound, 2013; Williams, 2014a). Others, however, have asserted that they should be used alongside each other (Kirchler et al, 2008). The aim of this paper, therefore, is to firstly evaluate the association between participation in undeclared work and on the one hand, increasing the risks of detection and level of penalties and on the other hand, improving tax morale, and secondly, to evaluate the complex interaction

effects between increasing deterrence (i.e., the level of penalties and risks of detection) and tax morale (see Alm et al., 2012). This paper advances knowledge, therefore, by evaluating not only the effectiveness of the rational actor and social actor approaches in reducing undeclared work, but also for the first time the interaction effects. It will reveal that increasing deterrence is only effective in reducing the probability of participation in undeclared work when tax morale is low, and that in such contexts, increasing the risks of detection is more effective than increasing the perceived punishments.

To evaluate these policy approaches and their interaction effects, therefore, section 2 reviews these rational economic actor and social actor approaches along with what is so far known about whether they can be combined. Revealing that governments conventionally adopt a rational economic actor approach and seldom consider either replacing or combining this with a social actor approach, and the lack of evidence on the impacts of these approaches and their interaction effects when combined, attention turns to evaluating their impacts and interaction effects. To do this, section 3 introduces the data and methodology, namely a multilevel logistic regression analysis of 27,563 face-to-face interviews conducted in 2013 in the 28 member states of the European Union (EU28). Section 4 then reports the results. Finding a significant association between participation in undeclared work and the perceived level of penalties and risk of detection on the one hand, and participation in undeclared work and the level of tax morale on the other, as well as complex interaction effects, section 5 then concludes by discussing the need for more nuanced context-bound policy approaches and further research on these policy approaches.

Before commencing nevertheless, undeclared work must be defined. In this paper, and reflecting the consensus in the literature, undeclared work refers to paid work which is legal in all respects other than 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,b). If it is not legal in all other respects, it is not part of the undeclared economy. For example, if the goods and/or services exchanged are illegal (e.g., illegal drugs), then this is not part of the undeclared economy but part of the wider criminal economy.

Reviewing the policy approaches towards undeclared work

Recently, it has been widely recognised that even if the undeclared economy is more prevalent in the developing than developed world, it is an extensive and persistent feature in all global regions that does not appear to be reducing in size over time (ILO, 2013; Jütting and Laiglesia, 2009; Schneider and Williams, 2013). Indeed, with some estimates suggesting that 60% of the global workforce have their main job in the undeclared economy (Jütting and Laiglesia, 2009), tackling undeclared work has become a core issue on the policy agendas of supra-national agencies and governments across the globe (European Commission, 2007; ILO, 2014; OECD, 2014; Williams, 2014a).

How, therefore, can the undeclared economy be tackled? Reviewing the literature, it becomes quickly apparent that there are two distinct approaches grounded in different explanations for participation in undeclared work, namely a rational economic actor approach that tackles undeclared work by ensuring that payoff from undeclared work is outweighed by the costs, and a social actor approach grounded in a view that undeclared work arises when tax morale is low. Here, each is considered in turn along with what is so far known about whether they are contrasting or complementary approaches.

Rational economic actor approach
The origins of a rational economic actor approach towards undeclared work lie in the classic works of both Jeremy Bentham (Bentham, 1788) and Cesare Beccaria (Beccaria, 1797). In

their classic utilitarian theory of crime, people are rational actors who evaluate the opportunities and risks confronting them and disobey the law if the expected penalty and probability of being caught is small relative to the benefits of disobeying the law.

In the study of crime, this rational actor approach became popularised by Becker (1968) during the late 1960s who argued that by increasing the risks of detection and sanctions confronting those flouting the law, compliant behaviour would become the rational choice for citizens. During the early 1970s, in a seminal paper, Allingham and Sandmo (1972) applied Becker's rational actor approach to the issue of tax non-compliance, viewing the non-compliant as rational economic actors who evade tax as long as the pay-off from evasion is greater than the expected cost of being caught and punished. The goal was therefore to change the cost/benefit ratio confronting those engaged or thinking about participating in non-compliance and akin to the study of crime, it was argued that this should be achieved by increasing the actual and/or perceived penalties and risks of detection. This was subsequently widely adopted (e.g., Bernasconi, 1998; Grabiner, 2000; Gramsick and Bursik, 1990; Hasseldine and Li, 1999; Job et al., 2007; Lewis, 1982, Milliron and Toy, 1988; Richardson and Sawyer, 2001; Sandford, 1999).

Until now, however, the evidence that increasing deterrents elicits compliant behaviour in the form of reductions in undeclared work is less than conclusive. Some earlier literature supportive of this rational actor approach found that increasing the probability of detection reduces participation in the undeclared economy, at least for some income groups (Alm et al., 1992, 1995; Beron et al., 1992; Dubin and Wilde, 1988; Dubin et al., 1987; Kinsey and Gramsick, 1993; Klepper and Nagin, 1989; Slemrod et al., 2001; Varma and Doob, 1998; Witte and Woodbury, 1985). Similarly, some also argued that increasing fines reduces the undeclared economy (Alm et al., 1995; De Juan et al., 1994; Elffers et al., 1987; Feld and Frey, 2002; Friedland, 1982; Friedland et al., 1978; Klepper and Nagin, 1989; Schwartz and Orleans, 1967; Spicer and Lunstedt, 1976; Varma and Doob, 1998; Webley and Halstead, 1986; Wenzel, 2004a,b).

However, other literature argues that increasing penalties either leads to a growth in undeclared work, has no effect, or only a short-term effect (Elffers et al., 1987; Feld and Frey, 2002; Friedland, 1982; Murphy, 2005; Spicer and Lunstedt, 1976; Varma and Doob, 1998; Webley and Halstead, 1986) and that increasing the probability of detection does not result in higher levels of compliance (e.g., Dubin et al., 1997; Dubin and Wilde, 1988; Elffers et al., 1987; Shaw et al., 2008; Webley and Halstead, 1986). Some have even claimed that it leads to increased non-compliance, not least due to a breakdown of trust between the state and its citizens (Ayres and Braithwaite, 1992; Blumenthal et al., 1998; Brehm and Brehm, 1981; Chang and Lai, 2004; Kagan Scholz, 1984; Kirchler et al., 2014; Murphy and Harris, 2007; Tyler et al., 2007). Indeed, the most telling rebuttal of the use of deterrents is the suggestion that many voluntarily comply even when the level of penalties and risks of detection would suggest that they should not if they were truly rational economic actors (Murphy, 2008). To evaluate the validity of this rational economic actor approach, therefore, the following hypothesis can be tested:

Rational economic actor hypothesis (H1): the greater the perceived penalties and risk of detection, the lower is the likelihood of participation in undeclared work, ceteris paribus.
H1a: the greater are the perceived penalties, the lower is the likelihood of participation in undeclared work, ceteris paribus.
H1b: the greater are the perceived risks of detection, the lower is the likelihood of participation in undeclared work, ceteris paribus.

Social actor approach

In recent years, an alternative way of explaining and tackling undeclared work has become more prominent. From this viewpoint, individuals are not always rational economic actors with perfect information available to them, but are limited in their ability to compute the costs and benefits, often misperceive or do not perceive the true costs of their actions and are influenced by their social context (Alm, 2011). Reflected in the fact that many voluntarily comply even when the benefit/cost ratio suggests that they should operate on an undeclared basis (Alm et al., 2010; Kirchler, 2007; Murphy, 2008; Murphy and Harris, 2007), a 'social actor' model has emerged that explains participation in undeclared work to result from low tax morale, by which is meant a low intrinsic motivation to pay taxes (Alm and Torgler, 2006, 2011; Cummings et al., 2009; McKerchar et al, 2013; Torgler, 2011; Torgler and Schneider, 2007). The goal, therefore, is to engender a commitment in citizens to self-regulate by improving their tax morale rather than force citizens to comply using threats, harassment and/or bribes (Kirchler, 2007; Torgler, 2007, 2011).

Over a century ago, Georg von Schanz (1890) highlighted the relevance of a tax contract between the state and its citizens. Some six decades or so later the German 'Cologne school of tax psychology' sought to measure tax morale among taxpayers (see Schmölders, 1952, 1960, 1962; Strümpel, 1969), viewing it as an important and integral attitude that was strongly related to tax non-compliance (Schmölders, 1960). Although such research went into abeyance with the rise of the rational economic actor model from the 1970s, since the turn of the millennium, it has begun to resurface (see for example, Alm et al., 2012; Kirchler, 1997, 1998, 1999, 2007; Torgler, 2003, 2005a,b, 2006a,b, 2007, 2011). The goal is to raise tax morale so as to elicit greater voluntary commitment to compliant behaviour (Alm and Torgler, 2011; Torgler, 2012). Rather than governments pursue compliance through close supervision and monitoring, tight rules, prescribed procedures and centralised structures within the context of a low commitment, low trust and adversarial culture, a high trust, high commitment culture is thus pursued to align the values of citizens with the formal rules so as to generate internal control (Williams, 2014a).

Viewing this tax morale approach through the lens of institutional theory (Baumol and Blinder, 2008; North, 1990), which views all societies as having both formal institutions, which are codified laws and regulations that define the legal rules of the game, as well as informal institutions, which are the 'socially shared rules, usually unwritten, that are created, communicated and enforced outside of officially sanctioned channels' (Helmke and Levitsky, 2004: 727), it can be seen that tax morale measures the gap between the formal institutions (which we here term 'state morale') and informal institutions (here termed 'civic morale'). When this gap is large, tax morale will be low and participation in undeclared work more prevalent. To evaluate the validity of adopting this policy approach towards undeclared work, therefore, the following hypothesis can be evaluated:

> Social actor hypothesis (H2): the greater the tax morale, the lower is the likelihood of participation in undeclared work, ceteris paribus.

Contrasting or complementary policy approaches

At present when tackling undeclared work, most governments in both the developed world and beyond pursue a rational economic actor approach that seeks to increase the penalties and probability of detection so as to deter participation. Indeed, examining the opinions of senior government officials across the EU28 on what is the most important approach in their countries, as well as what is the most effective approach, Williams et al. (2013) reveal that just 10% assert view reducing tax morale as the most important approach when tackling undeclared work in their country (most of whom are in Nordic nations). The majority (57%) view the most

important approach as increasing the costs of undeclared work (i.e., increasing the level of punishments and risks of detection) with the remainder (33%) stating that the focus is upon increasing the benefits of compliant behaviour. Similarly, 55% view increasing the costs of undeclared work as also the most effective approach with just 10% again viewing the tax morale approach as the most effective.

Given this current dominance of the rational economic actor approach, a recent emergent discussion in the scholarly literature has been whether the social actor approach should be adopted as either an alternative or complement to the rational actor approach. Although some have viewed this social actor approach as an alternative to the rational economic actor approach (Eurofound, 2013; Williams, 2014a; Williams and Renooy, 2013), the vast majority of the emergent literature has viewed them as complementary rather than competing approaches. In what has become known as the 'slippery slope' approach, the argument is that governments can pursue not only 'enforced' compliance by increasing the penalties and risks of detection and therefore the power of authorities, but also 'voluntary' compliance by improving tax morale and therefore trust in authorities (Kirchler et al., 2008; Kogler et al., 2015; Kastlunger et al., 2013; Khurana and Diwan, 2014; Muehlbacher et al., 2011; Prinz et al., 2013; Wahl et al., 2010). The assertion has been that when there is neither trust in authorities and authorities have no power, then undeclared work will be more prevalent. When trust in, and/or the power of, authorities increases however, then undeclared work reduces.

Wahl et al. (2010) randomly present participants in a laboratory experiment with one of four different descriptions of a fictitious country, in which the authorities were depicted on the one hand, as either trustworthy or untrustworthy and on the other hand, as either powerful or powerless. Their results reveal that participants paid significantly more taxes when both power and trust were high. They additionally reveal that voluntary compliance was highest when the authorities were both trustful and powerful, while enforced compliance was highest when authorities were portrayed as powerful, but not trustworthy. This is further reinforced by two additional surveys of real-world taxpayers (Muehlbacher et al., 2011a,b). The outcome is that a combination of greater trust in authorities and the greater power of authorities is seen as a potent combination. Grounded in this finding, the argument has been that pursuing both is the most effective means of tackling undeclared work (Kogler et al., 2015).

There is an emergent recognition however, that increasing the power of authorities and trust of 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 has been purported 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 and Braithwaite, 1992; Blumenthal et al., 1998; Brehm and Brehm, 1981; Chang and Lai, 2004; Kagan Scholz, 1984; Kirchler et al., 2014; Murphy and Harris, 2007; Tyler et al., 2007). The intimation, therefore, is that increasing the perceived penalties and risks of detection may well have varying effects on participation in undeclared work depending on the level of tax morale in existence. Until now, however, little if no research has been conducted on their complex interactions and dynamics so as to move towards a variegated understanding of the interactions between deterrents and tax morale. To begin to do so and to evaluate whether there is a need for a more nuanced context-bound understanding of the relationship between deterrents, tax morale and participation in undeclared work, the following hypothesis can be tested:

> Interaction effects hypothesis (H3): the effect of perceived penalties and risk of detection on the likelihood of participation in undeclared work is different at varying levels of tax morale, ceteris paribus.

H3a: the effect of perceived penalties on the likelihood of participation in undeclared work is different at varying levels of tax morale, ceteris paribus.

H3b: the effect of perceived risk of detection on the likelihood of participation in undeclared work is different at varying levels of tax morale, ceteris paribus.

Methodology

Data

To analyse these hypotheses, data is reported from special Eurobarometer survey no. 402 conducted in 2013, which involved 27,563 face-to-face interviews across the EU-28. These interviews were undertaken in the national language with adults aged 15 years and older. In each country, a multi-stage random (probability) sampling methodology was employed, with interviews varying from 500 in smaller countries to 1,500 in larger nations, to ensure that on the issues of gender, age, region and locality size, each country as well as each level of sample was representative in proportion to its population size. For the univariate analysis, a sample weighting scheme was used to obtain meaningful descriptive results, as recommended in the wider literature (Sharon and Liu, 1994; Solon et al., 2013; Winship and Radbill, 1994) and the Eurobarometer methodology. For the multivariate analysis however, debate exists over whether to use a weighting scheme (Pfefferman, 1993; Sharon and Liu, 1994; Solon et al., 2013; Winship and Radbill, 1994). Reflecting the majoritarian view, the decision has been taken here not to do so.

Given the sensitive nature of the topic, the interview schedule adopted a gradual approach towards the more sensitive questions. Firstly, participants were asked attitudinal questions regarding the acceptability of various forms of undeclared work and their perceptions of the penalties and risks of detection. This was then followed by questions on whether they had purchased undeclared goods and services and finally, whether they had participated in undeclared work themselves.

Variables

To evaluate whether increasing the penalties and risks of detection, and higher tax morale, reduces the likelihood of participation in undeclared work in the EU28, the dependent variable used is a dummy variable with recorded value 1 for persons who answered 'yes' to the question: 'Apart from a regular employment, have you yourself carried out any undeclared paid activities in the last 12 months?'.

To evaluate the association between participation in undeclared work and the policy approaches, three explanatory variables are used. Firstly, to evaluate whether the perceived risk of detection influences participation, a dummy variable (risk) was used describing the perceived risk of being detected when engaging in undeclared work, 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 participation, a dummy variable (sanctions) was used, describing the expected sanctions if caught doing undeclared work, with value 0 for those asserting that the normal tax or social security contributions would be due and value 1 for those stating that the normal tax or social security contributions due, plus there would be a fine or imprisonment.

Third and finally, to evaluate the association between participation in undeclared work and tax morale, a continuous variable (tax morale) was used by constructing an index of self-reported attitudes towards the acceptability of undeclared work based on a 10-point Likert scale. Rather than use a single question to assess tax morale, this survey thus uses a range of questions by asking the following:

Now I would like to know how you would rate various actions or behaviours. For each of them, please tell me to what extent you find it acceptable or not. Please use the following scale: "1" means that you find it absolutely unacceptable and "10" means that you find it absolutely acceptable: (1) someone receives welfare payments without entitlement; (2) 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; (3) A firm is hired by a household for work and it does not declare the payment received to the tax or social security authorities; (4) a firm is hired by another firm for work and it does not declare its activities to the tax or social security authorities; (5) a firm hires an individual and all or a part of the wages paid to him\her are not officially declared and (6) someone evades taxes by not declaring or only partially declaring their income.

Collating responses to these six questions, an aggregate 'tax morale index' is constructed for each individual. The Cronbach's Alpha coefficient of the scale is 0.863 which shows a good internal consistency of the scale (Kline, 2000). The index is represented here in the 10-point Likert scale original format. The lower the index value, the higher is the tax morale.

Drawing upon previous studies evaluating participation in undeclared work in terms of the important socio-demographic and socio-economic variables determining engagement (Williams and Horodnic, 2015a,b; Williams and Padmore, 2013a,b), the control variables selected are:

- Gender (men): a dummy variable with value 0 for women and 1 for men.
- Age (age): a continuous variable indicating the exact age of the respondent.
- Occupation (occup): a categorical variable grouping respondents by their occupation with value 1 for unemployed, value 2 for self-employed, value 3 for managers, value 4 for other white collars, value 5 for manual workers, value 6 for house persons, value 7 for retired individuals, and value 8 for students.
- Difficulties paying bills (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.
- People 15+ years in own household (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, and value 4 for 4 persons or more.
- Children (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.
- Area (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.
- Region (region): a categorical variable for the region where the respondent lives with value 1 for East-Central Europe, value 2 for Western Europe, value 3 for Southern Europe, and value 4 for Nordic Nations.

In the following analysis, only those respondents were kept for which data on each and every control variable was available, which totalled 20,131 of the 27,563 respondents.

Before analysing the results nevertheless, the reliability of the data collected needs to be briefly discussed, especially given the sensitive topic involved. The finding is that in 93% of the interviews, the interviewers reported good or excellent cooperation from the participant, and average cooperation in 6% of cases. Cooperation was asserted to be poor in only 1% of cases. Nonetheless, the level of excellent and good cooperation was found to be higher in Nordic nations (98% of cases) and lowest in Southern Europe (88% of cases), which intimates

that the sincerity of respondents when answering the questions might have been lower in Southern Europe. Given this caveat, attention turns to an analysis of the results.

Analytical methods

To evaluate the association between participation in undeclared work and the perceived penalties and risk of detection, and the level of tax morale, a multi-level logistic regression analysis is conducted. The analysis was undertaken in two stages. The first stage was to estimate a baseline random intercept model with no explanatory variables, in order to identify whether a multi-level approach was appropriate. The second stage involved constructing a model with first-level (i.e. individual-level) variables in an attempt to understand their effect and thus to test the three hypotheses.

Thus, our final logit random intercept model specification including both, individual level explanatory variables and their interactions, and country level explanatory variables, is the following (Steele, 2009):

$$\log(\frac{\pi_{ij}}{1 - \pi_{ij}}) = \beta_0 + \beta_1 X_{ij} + \beta_2 X_j + u_j$$

where, β_0 is the overall intercept, β_1 is the cluster specific effect, β_2 is the contextual effect, X_{ij} is the vector containing individual level explanatory variables and their interactions, X_j is the vector containing country level explanatory variables and u_j is the group (random) effect.

According to the hypotheses and the control variables listed above, we expect that the full test equation will have the below derivation of the signs. The expected direction of the signs for the control variable was extracted from previous studies on the socio-demographic, socio-economic and spatial characteristics of undeclared work in the European Union (see Williams and Franic, 2015; Williams and Horodnic, 2015b).

$\log(\frac{\pi_{ij}}{1-\pi_{ij}}) =$

$\beta_0 - \beta_1 sanctions_{ij} - \beta_2 risk_{ij} + \beta_3 tax_{ij} + \beta_4 men_{ij} - \beta_5 age_{ij} - \beta_6 occup2_{ij} - \beta_7 occup3_{ij} - \beta_8 occup4_{ij} - \beta_9 occup5_{ij} - \beta_{10} occup6_{ij} - \beta_{11} occup7_{ij} - \beta_{12} occup8_{ij} - \beta_{13} bills2_{ij} - \beta_{14} bills3_{ij} - \beta_{15} household2_{ij} - \beta_{16} household3_{ij} - \beta_{17} household4_{ij} - \beta_{18} children_{ij} - \beta_{19} area2_{ij} - \beta_{20} area3_{ij} + \beta_{21} sanctionsXtax_{ij} + \beta_{22} riskXtax_{ij} - \beta_{23} region2_j - \beta_{24} region3_j + \beta_{25} region4_j + u_j$

Below, we report the results.

Findings

Examining the descriptive findings, Table 1 displays that 4 per cent of participants reported engaging in undeclared work during the past 12 months. Even if participation in undeclared work is a sensitive issue, resulting in this being a lower-bound estimate of the level of participation, 1 in 26 citizens of EU-28 reported engaging in undeclared work in the past year. The level of participation, moreover, varies across EU regions. Nordic nations have the highest participation rates (6 per cent) whilst in East-Central Europe it is 4 per cent, 4 per cent in Western Europe and 3 per cent in Southern Europe. This should be cautiously interpreted given the above discussed variations in the level of cooperation of respondents in Southern Europe compared with Nordic nations. As previous studies reveal however, just because participation rates are higher in Nordic nations does not mean that they have larger undeclared economies. Much of this participation in undeclared work in Nordic nations is composed of one-off and small-scale paid favours for close social relations such as kin, friends and acquaintances, as is also the case in Western Europe, whereas in East-Central Europe and Southern Europe, participation in undeclared work is more often composed of waged employment and/or

undeclared self-employment conducted on a more continuous basis (Eurofound, 2013; Williams and Horodnic, 2015c).

Turning to the relationship between participation in undeclared work and the various policy approaches, Table 1 reveals the differences between those engaged and not engaged in undeclared work regarding their perceptions of the risks of detection, the expected sanctions if caught and their tax morale. Those engaged in undeclared work perceive the expected sanctions and risk of detection as lower than those not doing undeclared work; 32 per cent of those doing undeclared work consider that only the normal tax or social security contributions will be due if caught compared with just 24 per cent of those not engaged in undeclared work. Similarly, 72 per cent of those doing undeclared work perceive the risk of being detected as very small or fairly small, compared with 59 per cent of those not engaged in undeclared work. Those engaging in undeclared work, moreover, have a lower level of tax morale (3.5) compared with those not engaging in undeclared activities (2.2). These trends are the same across all EU regions. As such, participants in undeclared work across all EU regions view the severity of the punishment as lower, a smaller risk of detection and have a lower level of tax morale than those not engaging in undeclared work.

INSERT TABLE 1 HERE

To determine whether these relationships are significant when other control variables are taken into account and held constant, as well as the interaction effects, the first stage was to estimate a baseline random intercept model with no explanatory variables to identify whether a multi-level approach was appropriate. This analysis indicated that over 12 per cent of the variance in supplying undeclared work was accounted for at the country level (Wald = 9.91, df=1, p<0.005), indicating significant variation between countries in the prevalence of supplying undeclared work. Having determined that the multilevel mixed-effects logistic regressions should be used, the second stage involved constructing a model including both, individual level explanatory variables and their interactions, and country level explanatory variables, to test the three hypotheses.

Table 2 reports the results of a multilevel mixed-effects logistic regression analysis of engagement in undeclared work. Before examining the findings regarding the policy approaches, it is important to highlight the groups most likely to participate in undeclared work and thus that need to be targeted. This reveals that men are significantly more likely to participate in undeclared work than women and so too are younger people, those living in smaller households, without children and facing difficulties in paying the household bills. Compared with unemployed people, moreover, only the self-employed and house persons are more likely to engage in undeclared work. This, therefore, provides a clear indication of who needs to be targeted across the EU28 as a whole in terms of the population groups currently most likely to participate in undeclared work.

Turning to the policy approaches and starting with whether participation in undeclared work is associated with 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 (i.e. tax or social security contributions plus a fine or prison) are less likely to engage in undeclared work (confirming H1a). It is similarly the case that a significant association exists between participation in undeclared work and the perceived level of risk of being detected. Those considering the risk of being caught as fairly high or very high are less likely to engage in undeclared work compared with those who consider the risk of being caught as fairly small and very small (confirming H1b). These results, therefore, validate the rational economic actor approach adopted by many governments; increasing the actual or

perceived penalties and risks of detection appears to reduce the likelihood of participation in undeclared work.

INSERT TABLE 2 HERE

Turning to the social actor approach, the finding again is that participation in undeclared work is significantly associated with the level of tax morale. The direction of the association is that the higher the tax morality, the lower is the propensity to participate in undeclared work (confirming H2). This multilevel mixed-effect logistic regression analysis therefore displays a strong association between the likelihood of participating in undeclared work and not only the level of punishments and risk of detection but also the level of tax morale.

Is it the case therefore, that decreases in the level of participation in undeclared work would be greater if a government combines the conventional rational economic actor approach of increasing the level of punishments and/or risk of detection, with the social actor approach of seeking to improve the level of tax morale? Model 2 in Table 3 introduces the interaction terms between tax morale and the level of punishment and risk of detection respectively, in order to investigate if the effects of these two deterrence measures have a different impact on engaging in undeclared work for different levels of tax morale. This reveals that the effect of the perceived penalties on the likelihood of participation in undeclared work is different at different levels of tax morale (confirming H3a). However, the interaction term between the risk of detection and tax morale is not significant overall (refuting the H3b). Table 3 provides a summary of which hypotheses have been confirmed and which not.

INSERT TABLE 3 HERE

To analyse these interactions between the perceived level of punishment, the perceived risk of being detected and tax morality, Figure 1 presents the predicted probabilities of a 'representative' European citizen engaging in undeclared work by their level of tax morale and what they perceive as the likely penalties and risk of detection. Here, the 'representative' European citizen is derived by taking the mean and modal values of the other independent variables. As such, the representative citizen is a 47 year-old retired woman, living in a two person household, located in a small or middle sized town in Western Europe, with no children, who never or almost never has financial difficulties in paying the household bills. As graphically displayed in Figure 1, as trust in authorities (i.e., tax morale) worsens, the predicted odds of this representative citizen engaging in undeclared work is smaller when the power of authorities is strongest (i.e., the risk of being detected is fairly high or very high and s/he expects that the punishment for such a behaviour will be to pay the tax or social contribution due plus they will receive a fine or imprisonment). This reveals the importance of increasing the level of deterrence to prevent participation in undeclared work in contexts where tax morale is low.

However, when there is trust in authorities with tax morale relatively high (i.e., below a score of 5), increasing the power of authorities has only a minor impact on the probability of participating in undeclared work. Indeed, the predicted probability of engaging in undeclared work only reduces when the perceived risk of detection increases, but the perceived level of punishment has no influence on the likelihood of participation. As trust in authorities worsens (i.e., tax morale decreases) however, the power of authorities (i.e., the perceived level of punishment and risk of detection) plays an ever greater role in determining the level of participation in undeclared work. Indeed, it is only when tax morale decreases below a score of 5 that the power of authorities (i.e., the perceived level of punishment and risk of detection) plays a more significant role in reducing the predicted odds of the representative citizen

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engaging in undeclared work. In such low trust environments, the greater the power of authorities, the lower is the probability of participation in undeclared work, with higher risks of detection having a greater impact on reducing participation in undeclared work than higher perceived punishments.

Consequently, when there is high tax morale, the power of authorities has little overall impact on the probability of participation in undeclared work and only increasing the perceived risk of detection that has any positive impact on reducing participation. When tax morale is low (i.e., above 5) however, increasing the power of authorities has a greater impact on reducing participation, with increasing the perceived risks of detection having a greater impact on reducing participation in undeclared work than increasing the perceived punishments.

INSERT FIGURE 1 HERE

Discussion and Conclusions

In recent years, a debate has emerged about how undeclared work should be tackled. Until now, however, there has been little evaluation of the effectiveness of the various policy approaches. In this paper, we have started to evaluate not only the validity of pursuing the conventional rational economic actor approach which seeks to increase the penalties and risks of detection, but also the social actor approach, and the interaction effects of combining these two approaches.

Examining whether increasing the penalties and risks of detection, as well as tax morale, is associated with participation in undeclared work, the finding is that engagement in undeclared work decreases as the perceived level of penalties and risks of detection increase, as well as when tax morale improves. This suggests that both the conventional rational economic actor as well as the social actor approach seem likely to be effective in reducing participation in undeclared work. The intimation, therefore, is that these are not alternative competing approaches but can be combined when tackling participation in undeclared work, as the 'slippery slope' approach has argued (Kirchler et al, 2008). However, and importantly for public authorities, when examining the interaction effects, the finding is that the impact of increasing the power of authorities may vary at different levels of tax morale. Examining this for the probability of the 'representative' EU citizen engaging in undeclared work, the finding is that when trust in authorities and therefore tax morale is relatively high (i.e., below a score of 5), increasing the power of authorities has only a minor impact on the probability of participating in undeclared work, and only in relation to changes in the perceived risk of detection. It is only when trust in authorities worsens and tax morale decreases below a score of 5 that the power of authorities (i.e., the perceived level of punishment and risk of detection) plays a more significant role in reducing the predicted odds of the representative citizen engaging in undeclared work. In such low trust environments, the greater the power of authorities, the lower is the probability of participation in undeclared work, with higher risks of detection reducing the predicted odds of participation in undeclared work to a greater extent than higher perceived punishments.

Overall, in consequence, it appears that if participation in undeclared work is to be reduced, there should be greater focus upon improving tax morale. The conventional rational economic actor approach focused on deterrents is not everywhere and always necessary. This is particularly the case in populations where there is trust in authorities. Indeed, in such populations, increasing the perceived level of penalties and risk of detection has no impact on the probability of participation in undeclared work. The use of deterrents is only influential when tax morale is low. The currently widely used rational actor approach therefore needs to be at a very minimum complemented by a social actor approach which focuses upon improving

tax morale. What policy measures, therefore, can be used to achieve this? Viewing low tax morale through the lens of institutional theory as a measure of the lack of alignment of the laws, codes and regulations of formal institutions and the norms, beliefs and values of informal institutions (Helmke and Levitsky, 2004; North, 1990; Webb et al., 2009), two sets of policy initiatives can be seen as necessary to reduce the gap between the formal institutions ('state morale') and informal institutions ('civic morale'), and consequently induce improvements in tax morale and reduce participation in undeclared work.

On the one hand, policy initiatives are required to alter the norms, values and beliefs regarding the acceptability of undeclared work. These might be firstly, campaigns to raise awareness about the benefits of declared work and costs of undeclared work, and secondly, tax education initiatives to educate citizens about the benefits of taxation in terms of the public goods and services received for the taxes they pay. Policy initiatives that could be pursued range from introducing education about taxes into civic education in schools, through letters to taxpayers about how their taxes are being spent, to signs stating 'your taxes paid for this' in hospitals, doctors surgeries, roads and schools.

On the other hand, however, policy initiatives to reform the products and processes of formal institutions are also required, particularly in nations in which there are formal institutional deficiencies which lead to a lack of trust in government. Firstly, this requires policy initiatives to change the country-level conditions that lead to lower tax morale, such as by increasing the level of expenditure on active labour market policies to support vulnerable groups and the level of expenditure on social protection (Autio and Fu, 2015; Dau and Cuervo-Cazzurra, 2014; Klapper et al., 2007; Thai and Turkina, 2014). Secondly, it involves changing how formal institutions operate. As previous studies on public institutions reveal, trust in government and voluntary compliance improves when citizens believe that their interactions with public authorities will be based on: procedural justice, which refers to citizens believing that the government treats them in a respectful, impartial and responsible manner (Braithwaite and Reinhart, 2000, Gangl et al., 2013; Murphy, 2005; Taylor, 2005; Tyler, 1997, Wenzel, 2002); distributive fairness, which refers to citizens believing that they pay their fair share compared with others (Kirchgässner, 2010, 2011; McGee, 2005, 2008; McGee, Alver and Alver, 2008; Molero and Pujol, 2012), and distributive justice, which refers to citizens believing that they receive the goods and services they deserve given the taxes that they pay (Kirchgässner, 2010, McGee, 2005).

Tackling undeclared work, therefore, not only requires public authorities to pay attention to deterrents such as increasing the perceived penalties and risks of detection (e.g., by increasing workplace inspections), albeit only in low trust environments. It also requires public authorities to also pursue broader initiatives to increase voluntary compliance. This includes not only pursuing macro-level economic and social policy measures (e.g., increasing intervention in the labour market to help vulnerable groups and increasing expenditure on social protection), but also improving the quality of government by focusing upon enhancing procedural and distributive justice and fairness. Indeed, unless such wider initiatives are pursued, asymmetry will persist between formal institutions ('state morale') and informal institutions ('civic morale'), and trust in government and voluntary compliance will remain low, resulting in relatively higher participation in undeclared work. These findings, nevertheless, are based on just one dataset and are thus tentative.

In sum, if this paper stimulates further data collection and evaluations of the different policy approaches used to tackle undeclared work, as well as the interaction effects of combining them, both in individual countries and other global regions, then this paper will have fulfilled one of its intentions. If this then results in governments widening the range of policy approaches and measures used to tackle undeclared work beyond the currently dominant approach of increasing the penalties and risks of detection, then it will have

fulfilled its wider objective. What is certain, however, is that it cannot continue to be assumed that the conventional deterrence approach is the most effective approach, especially in contexts where tax morale is not low.

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Table 1. Supply of undeclared work: expected sanctions, detection risk, and tax morale by EU region (N = 20,131)

	EU 28	Western Europe	Southern Europe	East-Central Europe	Nordic nations
Engaged in undeclared work (%)	4	4	3	4	6
Expected sanctions (%)					
Tax or social security contributions due	32	26	40	46	22
Tax or social security contributions + fine or prison	68	74	60	54	78
Detection risk (%)					
Very small/ Fairly small	72	70	70	75	83
Fairly high/ Very high	28	30	30	25	17
Tax morale (mean)	3.5	3.7	2.6	4.1	2.7
Not engaged in undeclared work (%)	96	96	97	96	94
Expected sanctions (%)					
Tax or social security contributions due	24	19	25	41	18
Tax or social security contributions + fine or prison	76	81	75	59	82
Detection risk (%)					
Very small/ Fairly small	59	59	57	58	71
Fairly high/ Very high	41	41	43	42	29
Tax morale (mean)	2.2	2.1	2.1	2.6	1.8

Table 2. Multilevel mixed-effects logistic regression of propensity to participate in undeclared work

Fixed part	Model 1			Model 2		
	β	se(β)	Exp(β)	β	se(β)	Exp(β)
Constant	-1.465 ***	0.281	0.231	-1.195 ***	0.299	0.303
Expected sanctions (CG: Tax or social security contributions due)						
Tax or social security contributions + fine or prison	-0.204 **	0.079	0.816	-0.645 ***	0.157	0.525
Detection risk (CG: Very small/ Fairly small)						
Fairly high/ Very high	-0.621 ***	0.083	0.538	-0.548 ***	0.164	0.578
Tax morality	0.388 ***	0.020	1.474	0.319 ***	0.034	1.375
Gender (CG: Women)						
Men	0.691 ***	0.078	1.995	0.689 ***	0.078	1.992
Age (exact age)	-0.030 ***	0.003	0.971	-0.030 ***	0.003	0.971
Occupation (CG: Unemployed)						
Self-employed	0.100	0.149	1.105	0.094	0.149	1.098
Managers	-0.824 ***	0.160	0.439	-0.828 ***	0.160	0.437
Other white collars	-0.657 ***	0.150	0.519	-0.657 ***	0.150	0.518
Manual workers	-0.506 ***	0.121	0.603	-0.503 ***	0.121	0.605
House persons	-0.266	0.193	0.766	-0.271	0.192	0.763
Retired	-0.880 ***	0.173	0.415	-0.885 ***	0.173	0.413
Students	-0.564 ***	0.153	0.569	-0.575 ***	0.153	0.563
Difficulties paying bills (CG: Most of the time)						
From time to time	-0.550 ***	0.107	0.577	-0.545 ***	0.106	0.580
Almost never/ never	-0.958 ***	0.109	0.384	-0.952 ***	0.109	0.386
People 15+ years in own household (CG: One)						
Two	-0.332 ***	0.095	0.718	-0.338 ***	0.095	0.713
Three	-0.255 **	0.117	0.775	-0.263 **	0.117	0.769
Four and more	-0.370 ***	0.131	0.691	-0.375 ***	0.131	0.687
Children (CG: No children)						
Having children	-0.149 *	0.086	0.862	-0.146 *	0.086	0.864
Area (CG: Rural area or village)						
Small or middle sized town	-0.094	0.087	0.910	-0.088	0.087	0.915
Large town	-0.110	0.095	0.896	-0.109	0.095	0.897
Region (CG: East-Central Europe)						
Western Europe	-0.003	0.268	0.997	-0.004	0.269	0.996
Southern Europe	-1.166 ***	0.321	0.312	-1.163 ***	0.322	0.313
Nordic Nations	0.714 *	0.377	2.042	0.726 *	0.378	2.066
Interaction terms						
Expected sanctions: Tax or social security contributions + fine or prison x Tax morality				0.123 ***	0.038	1.131
Detection risk: Fairly high/ Very high x Tax morality				-0.020	0.040	0.979
N			20,131			20,131
Random part						
Country-level variance			0.2933***			0.2950***
(Standard error)			0.0947			0.0954
Countries			28			28
Variance at country level (%)			8.19			8.23

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

Table 3. Evaluation of the hypotheses

| Hypothesis	Result (p<0.01)
H1: The greater the perceived penalties and risk of detection, the lower is the likelihood of participation in undeclared work, ceteris paribus.	
H1a: The greater are the perceived penalties, the lower is the likelihood of participation in undeclared work, ceteris paribus.	Confirmed
H1b: The greater are the perceived risks of detection, the lower is the likelihood of participation in undeclared work, ceteris paribus.	Confirmed
H2: The greater the tax morale, the lower is the likelihood of participation in undeclared work, ceteris paribus.	Confirmed
H3: The effect of perceived penalties and risk of detection on the likelihood of participation in undeclared work is different at varying levels of tax morale, ceteris paribus.	
H3a: The effect of perceived penalties on the likelihood of participation in undeclared work is different at varying levels of tax morale, ceteris paribus.	Confirmed
H3b: The effect of perceived risk of detection on the likelihood of participation in undeclared work is different at varying levels of tax morale, ceteris paribus.	Not confirmed
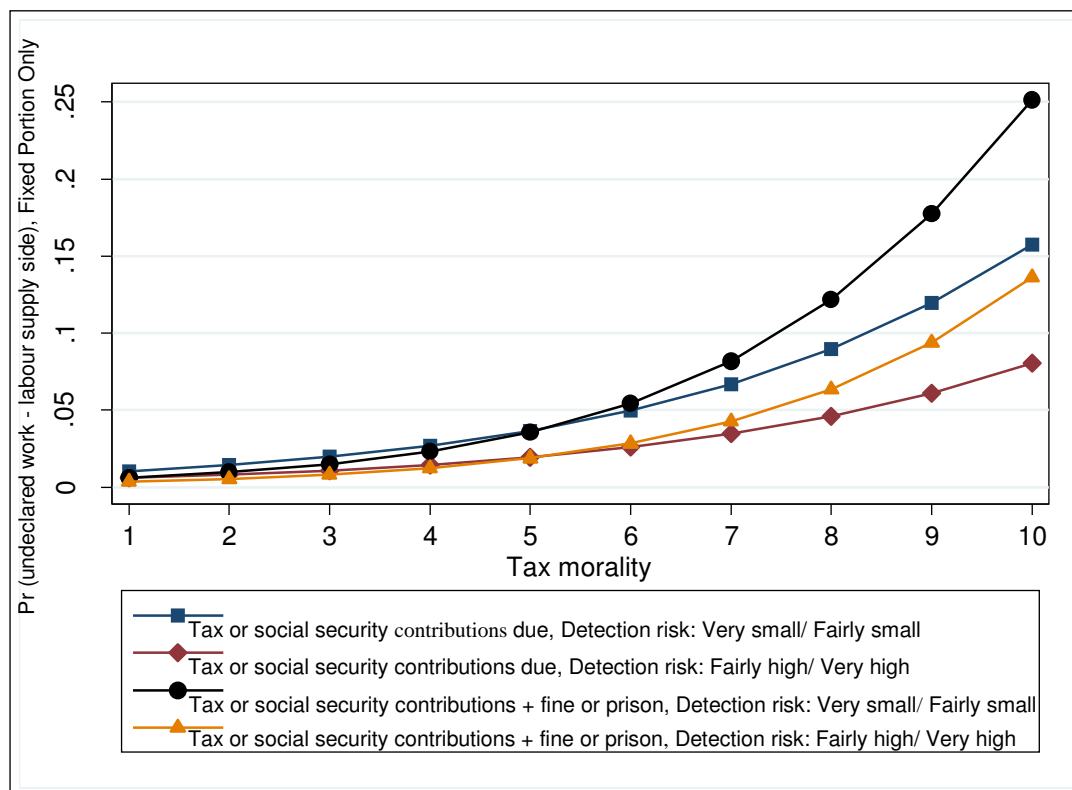
Figure 1. Predicted probability of participation in undeclared work of a "representative" EU citizen: by expected sanctions, detection risk, and tax morality

Appendix

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

Variables	Definition	Undeclared work – labour supply side (N = 20,131)	
		Mode or mean	Min / Max
Supply of undeclared work (dependent variable)	Dummy variable of undeclared paid activities carry out in the last 12 months, apart from a regular employment	Not engaged in undeclared work (96%)	0 / 1
Expected sanctions	Dummy for the penalties associated with participation in undeclared activities	Tax or social security contributions + fine or prison (75%)	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	2.2	1 / 10
Gender	Dummy for the gender of the respondent	Female (51%)	0 / 1
Age	Respondent exact age	47 years	15 / 96
Occupation	Respondent occupation in categories	Retired (25%)	1 / 8
Difficulties paying bills	Respondent difficulties in paying bills in categories	Almost never/ never (61%)	1 / 3
People 15+ years in own household	People 15+ years in respondent`s household (including the respondent) in categories	Two (48%)	1 / 4
Children	Dummy for the presence of children (up to 14 years old) in the household	No children (71%)	0 / 1
Area	Size of the area where the respondent lives in categories	Small or middle sized town (41%)	1 / 3
Region	Region where the respondent lives in categories	Western Europe (52%)	1 / 4