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Tackling Falsely-Declared Salaries in Bulgaria: Evidence from a 2015 Survey

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Summary

Recently, there has been growing interest in the illegal wage practice where formal employers pay their formal employees two wages, namely an official declared wage plus an additional undeclared (envelope) wage, which reduces the tax and social contributions that are paid to the authorities. The aim of this paper is to evaluate the prevalence and nature of this illegal practice in Bulgaria and the effectiveness of different policy approaches for tackling this practice. Until now, two competing policy approaches have been advocated, namely a conventional rational economic actor approach which seeks to increase the perceived or actual penalties and probability of being caught, and an emergent social actor approach that seeks to improve tax morale. Reporting a 2015 nationally representative survey comprising 2,004 face-to-face interviews conducted in Bulgaria, the finding is that just under 1 in 7 formal employees (14.4 per cent) reported receiving an additional undeclared (envelope) wage from their formal employer, with the mean amount of their net income unreported amounting to 29.8 per cent. Contrary to the widely-held assumption that this illegal wage practice is always purely the decision of employers, a key finding is that this is the case in less than two-thirds (65.3 per cent) of reported cases. Employees in some one-third of cases asserted that it was either a joint idea or that they had suggested this illegal arrangement. Adopting an evidence-based approach to evaluating how this should be tackled, a logit marginal effects regression analysis reveals little support for the rational economic actor approach that seeks to reduce falsely-declared salaries by increasing the penalties and probability of being caught, but strong support for the social actor approach that decreases instances of falsely-declared salaries by improving tax morale. The paper concludes by discussing implications for theory and policy.

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1. Introduction

Over the past few years, there has been a growing recognition that not all jobs are wholly in either the informal or formal economy. Instead, it has been recognised that some jobs are neither wholly formal nor wholly informal (Williams and Padmore, 2013a). A prominent example of such an employment relationship is when formal employers engage in the illegal practice of declaring only a portion of the wage of their formal employees and pay the rest as an undeclared ('envelope') wage so as to evade the full social insurance and tax liabilities (Horodnic, 2016; Karpuskiene, 2007; Meriküll and Staehr, 2010; Williams et al., 2016; Žabko and Rajevska, 2007). The aim of this paper is to advance understanding of the prevalence and nature of this illegal wage practice and the effectiveness of different policy approaches for tackling falsely-declared salaries (Chavdarova 2014; Williams 2009c,d; Woolfson 2007).

The dominant policy approach when tackling falsely-declared salaries has been to deter this practice by ensuring that the perceived likelihood and cost of being caught and punished outweighs the benefits (Allingham and Sandmo, 1972). Here, therefore, the spotlight is on increasing the actual or perceived sanctions and risks of detection. Given the difficulties in detecting falsely-declared salaries, a new more indirect social actor approach has emerged which seeks to improve tax morale, namely the intrinsic motivation to pay taxes (Alm et al., 2010; Cummings et al., 2009; Kirchler, 2007; Murphy, 2008; Torgler, 2007), so as to encourage greater voluntary compliance. Viewed from the perspective of institutional theory, this social actor approach is therefore seeking to bring the informal institutions (i.e., the norms, values and beliefs of employers and employees) into line with the codified laws and regulations of the formal institutions (Webb et al., 2009). This paper begins to evaluate which of these two approaches is better suited to tackling falsely-declared salaries using a case study of Bulgaria.

To commence, therefore, section 2 reviews the literature on the prevalence, nature and distribution of falsely-declared salaries followed by the literature on these two policy approaches and their compatibility, so as to formulate hypotheses. Section 3 then introduces the data and variables used to evaluate these hypotheses through a logit regression analysis, namely 2,004 face-to-face interviews conducted in 2015 in Bulgaria. Section 4 then reports the results. Revealing little support for the rational economic actor approach that seeks to reduce falsely-declared salaries by increasing the penalties and probability of being caught, but strong support for the social actor approach that seeks to increase voluntary compliance by improving tax morale, section 5 then discusses the implications for understanding and tackling falsely-declared salaries in Bulgaria and beyond.

2. Tackling falsely-declared salaries: a literature review

In recent years, a small body of scholarship has shown how some formal employees are paid by their formal employer two salaries; an official declared salary and an additional undeclared ('envelope') wage. This is considered to be usually agreed at the job interview. Besides agreeing to pay an official declared wage, detailed in a formal written contract, a verbal agreement is reached regarding an additional 'envelope wage' which is not declared to the authorities for tax and social contribution purposes (Chavdarova, 2014; Williams, 2009a; Woolfson, 2007). Although verbal agreements are not by definition illegal, this particular verbal contract to falsely declare the salary is illegal. It is an agreement to fraudulently under-report to the state the salary paid to an employee so as to evade the full tax and social security contributions owed by the employee and employer.

Early studies of the issue of falsely-declared salaries were small-scale qualitative studies in East-Central European nations, such as Bulgaria (Chavdarova, 2014), Estonia (Meriküll and Staehr, 2010), Latvia (Kukk and Staehr, 2014; Meriküll and Staehr, 2010; OECD, 2003; Sedlenieks, 2003), Lithuania (Meriküll and Staehr, 2010; Woolfson, 2007), Romania (Neef, 2002), Russia (Williams and Round, 2008) and Ukraine (Round, Williams and Rodgers, 2008; Williams, 2007). A study in Lithuania by Woolfson (2007) for instance is an in-depth case study of one person, whilst Sedlenieks (2003) in Latvia reports 15 face-to-face interviews in Riga. Although the Ukraine study covers 600 households, this was limited to three localities (Williams, 2007), whilst the Russia study of 313 households covered only three districts of Moscow (Williams and Round, 2007). These studies, however, were unrepresentative and mostly undertaken in post-socialist societies at the height of the transition process.

The first representative cross-national survey of the prevalence and distribution of falsely-declared salaries was a 2007 Eurobarometer survey involving 11,135 interviews with formal employees across the 27 member states of the European Union (EU-27). Analyses reveal the prevalence of falsely-declared salaries across the EU-27 as a whole (Williams, 2009a; Williams and Padmore, 2013a,b), as well as in South-Eastern Europe (Williams, 2010, 2012a; Williams et al., 2011), the Baltic region (Williams, 2009d) and East-Central Europe (Williams, 2008a,b, 2009b,c, 2012b; Williams and Round, 2008). Across the EU-27, 5.5 per cent of formal employees were found to receive falsely-declared salaries, with the undeclared wage amounting to on average 43 per cent of their gross wage, with its prevalence much lower in Western and Nordic nations than in Southern and East-Central Europe, as was the share of the gross wage received as an envelope wage lower (e.g., Williams, 2009a, 2013). Repeated in 2013 with 11,025 dependent employees in the EU28 (European Commission, 2014), one in 33 employees were found to receive falsely-declared salaries with the regional variations being the same to those in the 2007 survey (Williams and Horodnic, 2016). Here, therefore, the focus is less upon its prevalence and distribution and more upon how this illegal wage practice can be tackled. To do this, the effectiveness of the two main policy approaches is evaluated.

Rational economic actor perspective

The view of the non-compliant as rational economic actors derives from the utilitarian theory of crime (Beccaria, 1797; Bentham, 1788) which views citizens as evaluating the opportunities and risks, and as breaking the law if the expected penalty and risk of being caught is smaller than the benefits received from disobeying the law. Following its popularisation by Becker (1968) in the late 1960s, Allingham and Sandmo (1972) applied it to tax non-compliance, arguing that tax non-compliance occurs when the pay-off is greater than the expected cost of being caught and punished. The resultant approach was to change the cost/benefit ratio confronting citizens, achieved by increasing the penalties and risks of detection. This was subsequently widely adopted by governments (e.g., Hasseldine and Li, 1999; Job et al., 2007; Richardson and Sawyer, 2001).

Indeed, this rational economic actor perspective is dominant in Bulgaria which has sought to increase the sanctions as well as the likelihood of detection, such as by increasing workplace inspections, and improving data mining and sharing across government (Dzhekova and Williams 2014; Williams and Franic 2016a; Williams et al. 2014). Indeed, a review of the measures used to tackle the hidden economy in Bulgaria between 2005 and 2009 reveals that the majority were deterrence measures, with 64 measures alone related to tougher sanctions and improving the probability of being caught through monitoring, data exchange, and more efficient inspections (CSD 2009). This is further reinforced in other reviews which reveal the shift towards higher penalties and improving the probability of being caught (Loukanova and Beslov 2007; Daskalova 2013).

Despite this, the evidence that increasing sanctions and the risks of detection results in compliance is less than conclusive (Alm et al., 1992, 1995; Slemrod et al., 2001; Varma and Doob, 1998). Moreover, the additional problem confronted with falsely-declared salaries is that this is difficult for tax and labour inspectors to detect; these are formal employees with a formal written contract working for a formal employer and the additional contract is verbal. Hence, the additional unwritten agreement is not only difficult to detect but also to prove. In consequence, to evaluate the effectiveness of this rational economic actor approach in tackling falsely-declared salaries, the following hypothesis can be tested:

Rational economic actor hypothesis (H1): the higher are the perceived penalties and probability of detection, the lower is the likelihood of falsely-declared salaries.

H1a: the higher are the perceived penalties, the lower is the likelihood of falsely-declared salaries.

H1b: the higher is the perceived probability of detection, the lower is the likelihood of falsely-declared salaries.

Social actor approach

Recently, there has been recognition that employers and employees do not always evaluate the cost/benefit ratio confronting them because many voluntarily comply even if the cost/benefit ratio suggests that they should not if they were rational actors (Alm et al., 2010; Kirchler, 2007; Murphy, 2008; Murphy and Harris, 2007). The outcome has been the emergence of a 'social actor' approach. This views non-compliance 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). Improvements in tax morale are thus sought so that voluntary compliance and self-regulation occurs (Kirchler, 2007; Torgler, 2007, 2011).

In the classic treatise of von Schanz (1890), attention was drawn to the tax contract between the state and its citizens. Six decades later, the German 'Cologne school of tax psychology' further advanced this by seeking to measure tax morale (see Schmölders, 1952, 1960, 1962; Strümpel, 1969). Although this approach declined in popularity from the 1970s with the emergence of the rational economic actor approach, over the past decade or so, there has been a revival (Alm et al., 2012; Kirchler, 2007; Torgler, 2007, 2011, 2012; Williams, 2014).

This approach can be conceptually understood using institutional theory (Baumol and Blinder, 2008; North, 1990). Every society has both formal institutions, namely laws and regulations defining the legal rules of the game, as well as informal institutions, namely 'socially shared rules, usually unwritten, that are created, communicated and enforced outside of officially sanctioned channels' (Helmke and Levitsky, 2004, p. 727). Viewed from this institutionalist perspective, tax morale measures the asymmetry between the formal institutions (i.e., 'state morale') and informal institutions (i.e., 'civic morale') in the realm of tax non-compliance. When there is asymmetry, tax morale will be lower and falsely-declared salaries more prevalent. The solution, therefore, is to reduce this asymmetry. To evaluate this, the following hypothesis can be evaluated:

Social actor tax morale hypothesis (H2): the higher is tax morale, the lower is the likelihood of falsely-declared salaries.

Alternative or complementary approaches

Currently, most governments across the world adopt a rational economic actor approach and seek to increase the penalties and probability of being caught (see Dekker et al. 2010; Williams et al. 2013). When the social actor approach has been considered, it has been viewed in two competing ways. On the one hand, it has been viewed as an alternative to the rational actor approach which adopts a different view of participants and is not compatible with a rational economic actor model (Eurofound, 2013; Williams, 2014a). On the other hand, these approaches have been viewed as complementary, as displayed in the "slippery slope" approach which argues that governments can pursue not only "enforced" compliance by increasing the penalties and risks of detection, but also "voluntary" compliance by improving tax morale (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 argument has been that pursuing both concurrently is the most effective approach (Kogler et al., 2015).

There is recognition however, that pursuing these approaches together may have complex interaction and mediating effects. When tax morale is high, some argue that increasing the penalties and risks of detection leads to greater non-compliance 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; Kirchler et al. 2014; Murphy and Harris 2007). The consequent argument is that increasing the perceived sanctions and risks of detection may have different effects depending on the level of tax morale. To start to evaluate these interactions and dynamics, therefore, the relationships between deterrents, tax morale and falsely-declared salaries can begin to be tested by evaluating the following hypothesis:

Interactions hypothesis (H3): the effect of the perceived sanctions and risk of being caught on the likelihood of falsely declared salaries varies at different levels of tax morale.

H3a: the effect of perceived sanctions on the likelihood of falsely-declared salaries varies at different levels of tax morale.

H3b: the effect of perceived risk of being caught on the likelihood of falsely-declared salaries varies at different levels of tax morale.

3. Data and Variables

Data

To evaluate the effectiveness of different approaches for tackling falsely-declared salaries, data is reported from 2,004 face-to-face interviews conducted in Bulgaria between July and October 2015. This survey analysed not only the nature of the verbal contract between employers and employees when agreeing an undeclared (envelope) wage but also which employees receive envelope wages, and the relationship between receiving envelope wages and the perceived penalties and risk of detection, and level of tax morale. To collect this data, a multi-stage random (probability) sampling methodology was used to ensure that on the issues of gender, age, region and locality size, the national level sample, as well as each level of the sample, was representative in proportion to its population size. In every household the 'closest birthday' rule was applied to select respondents, while every subsequent address was determined by the standard 'random route' procedure.

Variables

To evaluate whether increasing the penalties and risks of detection, and greater tax morale, reduces the likelihood of falsely-declared salaries, the dependent variable used is a dummy variable with recorded value 1 for employees who answered 'yes' to the question: "Sometimes employers prefer to pay all or part of the salary or the regular salary of the remuneration for extra work or overtime hours cash-in-hand and without declaring it to tax or social security authorities. Did your employer pay you all or part of your income in the last 12 months in this way?"

To evaluate the association between falsely-declared salaries and the policy approaches, three explanatory variables were used. Firstly, to evaluate whether the perceived risk of detection influences engagement in falsely-declared salaries, a categorical variable was used describing the perceived risk of being detected, with value 1 for a very small, value 2 for fairly small risk, and value 3 for fairly high or very high risk. Secondly, to evaluate how penalties are associated with participation, a dummy variable was employed, describing the expected sanctions, 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 engagement in falsely-declared salaries and tax morale, an interval variable was used by constructing an index of self-reported attitudes towards the acceptability of different types of undeclared work based on a 10-point Likert scale. Rather than use a single question to assess tax morale, this survey 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) 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; (2) A firm is hired by a household for work and it does not declare the payment received to the tax or social security authorities; (3) a firm is hired by another firm for work and it does not declare its activities to the tax or social security authorities; (4) a firm hires an individual and all or a part of the wages paid to him\her are not officially declared and (5) someone evades taxes by not declaring or only partially declaring their income.

Collating the responses to these five questions, and giving equal weighting to each response, an aggregate 'tax morale index' is constructed for each individual. The Cronbach's Alpha coefficient of the scale is 0.78 which shows an 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.

Based on previous studies evaluating falsely-declared salaries in terms of the important socio-demographic and socio-economic variables influencing participation (Williams and Horodnic, 2015a,b, 2016; Williams and Padmore, 2013a,b), the control variables selected are:

- *Gender*: a dummy variable with value 0 for women and 1 for men.
- *Age*: an interval variable indicating the exact age of the respondent.
- *Marital status*: a categorical variable with value 1 for married/remarried, value 2 for cohabiting and value 3 for single/divorced.
- *Household size*: a categorical variable of the number of adults in the household with value 1 for one person, value 2 for two people, value 3 for three people and value 4 for four or more people.
- *Financial situation*: a categorical variable with value 0 for no money problems, value 1 for just comfortable, value 2 for maintaining, and value 3 for struggling.
- *Personal income*: a categorical variable with value 1 for less than 35 euros per month, value 2 for 350-699 euros per month, value 3 for 700-999 euros per month and value 4 for 1000 or more euros per month.
- *Type of locality*: a categorical variable with value 1 for rural area or village, value 2 for small or middle-sized town, and value 3 for large town.
- *Regions:* a categorical variable with value 0 for North Central, value 1 for North Eastern, value 2 for North Western, value 3 for South Central, value 4 for South Eastern, and value 5 for South Western.

Given the considerable number of missing values and inconclusive answers (i.e., refusal and ‘don’t know’) across the dependent and independent variables, multiple imputation was used to predict these values. This was achieved using a system of chained equations for each variable with missing values, with fifty imputations simulated for each missing value. Furthermore, population weights were applied based on age and gender to correct for under- and over-representation in the sample.

To evaluate the relationship between falsely-declared salaries and the perceived penalties and risk of detection, and the level of tax morale, a logit regression analysis is here conducted.

4. Findings

Of the 2,004 respondents interviewed in 2015 in Bulgaria, 1,126 were employees in employment, of which 162 (14.4 per cent), which is just under 1 in 7, reported receiving an additional undeclared (envelope) wage from their formal employer for their formal employment, with the mean amount unreported amounting to 29.8 per cent of their net income. In 47.5 per cent of cases, this undeclared envelope wage was paid for their regular work, in 21.0 per cent of cases for overtime/extra work conducted, and in 25.9 per cent for both their regular and over time work. The remaining 5.5 per cent either refused to answer or did not know.

It has been so far assumed that falsely-declaring salary is instigated by employers (e.g., Sedlenieks, 2003; Williams, 2007; Woolfson, 2007). The finding, however, is that although 65.3 per cent of employees asserted that falsely-declaring salary was suggested by their employer, a further 29.1 per cent stated that it was a joint idea, and 2.3 per cent that they as an employee had suggested this arrangement. The remaining 3.4 per cent either refused to answer or did not know. In just under one-third (31.4 per cent) of cases of falsely declaring salaries, therefore, the employee had an active role in deciding to do so, contrary to the widespread assumption in the literature that this is always employer-instigated. Indeed, 31.2 per cent of employees were happy with this arrangement of their salary being falsely declared, 33.7 per cent neutral, and 27.4 per cent would prefer their wage to be fully declared, with the remaining 7.7 per cent either refusing to answer or not knowing.

Interestingly, those most likely to be happy with this arrangement also agreed in their verbal contract to additional conditions not stated in their written contract, suggesting that these additional conditions might be suggested by the employee to the employer as compensation for paying the additional undeclared wage. Such additional conditions prevailed in 50.2 per cent of all reported cases of falsely-declared salaries being paid.

Firstly, 27.8 per cent of employees receiving falsely-declared salaries had verbally agreed to work longer hours than stated in the formal contract, such as when those on a part-time formal written contract actually work full-time (but in only 50 per cent of cases did employees state that falsely declaring the salary was suggested by their employer compared with 65.3 per cent overall, and 64 per cent were happy with receiving envelope wages compared with 31.2 per cent overall).

Secondly, 19.6 per cent had agreed to conduct tasks, or take on responsibilities, not stated in their written contract (with envelope wages instigated by their employer in 54 per cent of these cases and 42 per cent of them were happy with this arrangement).

Third and finally, 8.8 per cent had agreed not to take their full statutory holiday entitlements (with falsely declaring the salary suggested by their employer in 67 per cent of these cases and only 20 per cent were happy with this arrangement). Of those with no additional conditions attached, in 75 per cent of cases it suggested by the employer and only 18 per cent were happy with this arrangement.

Therefore, including additional conditions in the verbal contract is not always employer-instigated, and those with additional conditions are more likely to be happy with this wage arrangement than those with no additional conditions attached. Given this finding that employees are often active participants in the decision to receive falsely-declared salaries, attention now turns to the distribution of falsely-declared salaries and how this practice can be tackled.

Which employee groups are more likely to receive falsely-declared salaries? And what are their views on the penalties, risks of detection and the acceptability of operating on an undeclared basis (i.e., their tax morale)? Table 1 reports the descriptive findings. This reveals that male employees are far more likely than female employees to receive falsely declared salaries (17.6 per cent compared with 12.9 per cent), and that the proportion of employees receiving falsely-declared salaries declines with age, although it rises again for those aged over 55, and the proportion of their net income received as an envelope wage increases. Falsely-declared salary arrangements are also heavily concentrated among those cohabiting and in larger households. However, it is not concentrated among those struggling financially but rather, among those reporting no financial problems. Examining personal income, it is concentrated among two polar opposite groups, namely those in the lowest and highest income groups. No differences exist however between urban and rural localities, and regionally, it appears to be more prevalent in the North Central, South Central and South Eastern regions.

Turning to the policy measures, those who perceive the risk of detection as fairly high/very high are the most likely to receive envelope wages. No marked association exists, however, regarding the expected sanctions. However, there is a strong association between tax morale and the propensity to receive falsely-declared salaries. While only 8.5 per cent of employees expressing the highest tax morale received envelope wages from their formal employer, this share gradually increases up to 22.9 per cent for employees with very low tax morale.

Table 1. Formal employees receiving falsely-declared salaries in prior year, 2015

	% of all employees surveyed	% employees receiving envelope wage	% of net income received as envelope wage	Envelope wages paid for:			
				Regular work	Overtime/ extra work	Both regular & overtime work	Refusal/ don't know
Gender							
Male	52.2	17.6	28.8	47.8	20.7	26.8	4.8
Female	47.8	12.9	30.9	48.7	20.0	24.2	7.1
Age Groups							
15 - 24 years	7.9	16.5	25.2	60.2	8.4	19.6	11.8
25 - 34 years	23.1	19.1	27.2	61.3	14.8	21.5	2.4
35 - 44 years	25.9	14.6	26.2	36.7	28.5	28.9	5.8
45 - 54 years	23.0	12.6	35.8	43.4	27.3	26.2	3.2
55 - 64 years	17.3	17.1	35.0	42.1	17.2	30.3	10.4
65 years+	2.9	0.0					
Marital status							
Married/ Remarried	66.1	12.0	31.8	47.2	21.2	26.7	4.9
Cohabitating	12.8	26.9	28.0	50.5	23.7	23.7	2.1
Single	21.2	19.4	26.8	48.0	16.1	25.5	10.4
Household Size							
One	7.4	11.0	28.5	26.1	32.0	41.9	0.0
Two	27.3	14.1	35.4	42.0	22.2	26.5	9.4
Three	34.2	12.9	29.2	55.6	17.0	21.3	6.0
Four or more	31.1	20.1	26.6	49.4	20.2	26.4	4.0
Financial situation							
Very comfortable	1.2	31.4	36.9	0.0	0.0	100.0	0.0
Just comfortable	20.8	19.4	28.7	45.7	17.2	26.2	10.9
Maintaining	60.7	13.3	27.4	47.7	23.5	26.6	2.2
Struggling	17.3	16.9	37.9	57.4	19.0	14.4	9.3
Personal income							
< 350 euros	10.8	27.3	37.6	63.7	13.3	16.1	6.9
350-699 euros	61.2	12.9	26.7	48.8	22.7	26.5	2.0
700-999 euros	18.8	12.8	24.6	36.9	20.5	30.5	12.1
> 1000 euros	9.2	19.7	30.8	40.9	27.1	23.4	8.6
City size							
Rural area	20.8	15.8	27.0	29.4	37.4	27.8	5.4
Small/medium town	23.3	14.9	29.6	51.6	12.8	33.6	2.1
City	55.9	15.4	30.7	53.8	17.1	21.9	7.3
Regions							
North Central	8.6	29.1	27.5	24.9	27.6	22.6	24.9
North Eastern	10.9	6.2	22.6	78.4	21.6	0.0	0.0

North Western	9.6	12.2	42.8	15.8	62.7	21.5	0.0
South Central	20.4	27.1	25.1	43.5	23.8	29.9	2.8
South Eastern	14.7	21.6	29.8	65.2	9.8	25.0	0.0
South Western	35.9	7.0	41.3	62.2	2.9	29.6	5.2
Tax morale							
Upper quartile	24.5	8.5	33.8	47.9	40.2	8.4	3.5
Upper middle quartile	25.4	10.0	27.3	47.4	13.6	39.0	0.0
Lower middle quartile	25.0	18.7	24.5	60.4	21.8	10.2	7.6
Lower quartile	25.1	22.9	33.1	37.9	15.6	41.7	4.9
Detection risk							
Very small	32.9	16.4	37.9	57.8	13.2	29.0	0.0
Fairly small	41.9	11.9	24.2	50.7	19.2	19.7	10.4
Fairly/Very high	25.2	20.9	25.0	34.7	34.5	25.0	5.9
Expected sanctions							
Tax or social security contributions due	42.0	15.6	29.1	49.2	26.9	20.4	3.4
Plus a fine/ Prison	58.0	14.3	29.3	46.8	16.1	27.4	9.7

Source: authors' calculations from GREY survey

To evaluate whether a statistically significant association between falsely-declared salaries and these explanatory variables exists when the control variables are introduced and held constant, as well as whether any of these control variables are significantly associated with salary under-reporting, Table 2 reports the results of a logit marginal effects regression analysis.

Starting with the control variables and thus which employee groups should be perhaps targeted by tax and labour inspectors seeking to tackle falsely-declared salaries, gender is not significantly associated with falsely-declared salaries. Neither is age. However, single and divorced people are significantly more likely than the married/remarried to receive falsely-declared salaries, perhaps to hide their actual wages so as to reduce payments agreed in divorce settlements. Envelope wages are also significantly more common among those in multiple adult households compared with single adult households. No significant association exists, however, between an employee's financial situation and the receipt of envelope wages. Nevertheless, a strong significant association exists with personal formal income. Those earning over 350 euros are significantly less likely to receive falsely-declared salaries than those earning less than 350 euros per month. So too are those living in large urban areas significantly more likely to receive falsely-declared salaries than those living in rural areas. Finally, significant regional variations exist with those in the South Central and South Eastern regions significantly more likely to receive falsely-declared salaries than those in the North Central region, and those in the other regions significantly less likely. In sum, single and divorced employees, those living in multiple adult households, earning less than 350 euros per month of formal income, in larger urban areas and in the North Central, South Central and South Eastern regions could be targeted by policy.

What policy approaches, therefore, would be effective in tackling falsely-declared salaries? Table 2 reveals a weak but significant relationship between falsely-declared salaries and the risk of detection, but not in the direction proposed by the rational economic actor approach. Individuals perceiving the risk of detection as fairly high/very high are 9.2 per cent more likely to receive falsely-declared salaries (refuting

Table 2. Logit marginal effects regression analysis of the propensity to falsely-declare salaries.

	Coefficient (Standard error)
Tax morale	0.043*** (0.012)
Detection risk (BG: Very small)	
- Fairly small	-0.027 (0.040)
- Fairly high/Very high	0.092* (0.055)
Expected sanctions (BG: Tax or social security contributions due)	
- Plus a fine/ Prison	-0.073* (0.040)
Interaction term	
- Fairly small* Tax morale	-0.004 (0.014)
- Fairly high/Very high* Tax morale	-0.015(0.015)
- Plus a fine/ Prison* Tax morale	-0.004 (0.013)
Female	-0.033 (0.022)
Age	-0.001 (0.001)
Marital status: (BG: Married/Remarried)	
- Cohabitating	0.069* (0.036)
- Single	0.077** (0.031)
Household Size: (BG: One Person)	
- Two	0.088*** (0.034)
- Three	0.056* (0.033)
- Four or more	0.122*** (0.035)
Financial situation (BG: Very comfortable)	
- Just comfortable	-0.152 (0.133)
- Maintaining	-0.189 (0.132)
- Struggling	-0.142 (0.135)
Personal income (BG: Less than 350 euros)	
- 350-699 euros	-0.170*** (0.045)
- 700-1000 euros	-0.143*** (0.053)
- More than 1000 euros	-0.129**(0.064)
City size (BG: Rural area)	
- Small/medium town	-0.016 (0.028)
- City	0.060**(0.028)
Regions (BG: North Central)	
- North Eastern	-0.088* (0.049)
- North Western	-0.096*(0.050)
- South Central	0.115**(0.045)
- South Eastern	0.103*(0.054)
- South Western	-0.126*** (0.035)
Number of imputations	50
N	1126

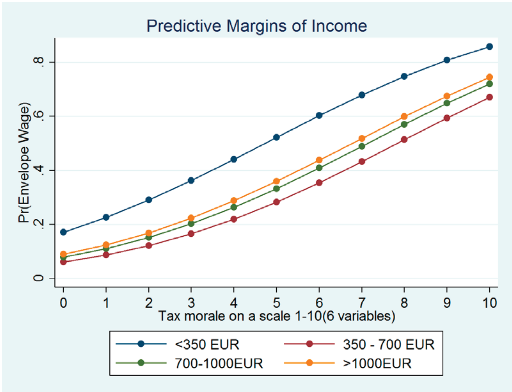
****, **, and * indicate significance at the 1, 5 and 10 percent level respectively.*
Source: authors' calculations from GREY survey

H1b). However, the rational economic actor approach is confirmed when examining the significance of the relationship between falsely-declared salaries and the level of penalties. Those viewing the sanction as being a fine or prison in addition to the normal tax and social contributions due are 7.3 per cent less likely to receive falsely-declared salaries than those who believe that the normal tax and social contributions owed will need to be paid (confirming H1a). Turning to the social actor approach, there is a strong statistically significant relationship between tax morale and receiving falsely-declared salaries. The higher the tax morale, the lower is the likelihood of receiving falsely-declared salaries (confirming H2). A one unit change in tax morale, for instance, results in a 4.3 percentage point increase in the probability of receiving falsely-declared salaries.

Is it the case however, that decreases in the level of engagement in salary under-reporting would be greater if the government were to combine the social actor and rational economic actor approaches? Table 2 examines the interaction terms between tax morale and the level of sanctions and probability of being caught respectively, in order to investigate if the effects of these two deterrence measures have a different impact on receiving falsely-declared salaries at varying levels of tax morale. The finding is that the effect of the perceived sanctions on the likelihood of engaging in falsely-declared salaries is not significantly different at varying levels of tax morale (refuting H3a). Similarly, the interaction term between the probability of being caught and tax morale is not significant overall (refuting H3b).

To further portray the effects of these explanatory variables on the prevalence of falsely-declared salaries, Figure 1 outlines the predicted probabilities of a 'representative' employee receiving a falsely-declared salary, according to their personal income and level of tax morale (both of which are significant in the regression model in Table 2). This 'representative' worker is defined using mean and modal values of the remaining predictors. This reveals that the probability of receiving a falsely-declared salary ranges from some 6 per cent to 87 per cent, depending on the personal income and level of tax morale of the representative employee. For instance, while only 18 out of 100 workers who earn less than 350 euros per month and with the highest tax morale are expected to receive a falsely-declared salary, it increases to 87 out of 100 for those who find tax evasion absolutely acceptable. For employees earning 350-700 euros per month, eight in 100 with the highest tax morale are expected to receive under-reported wages, but this rises to some 68 out of 100 for those with the lowest tax morale.

Fig. 1. Predicted probability of receiving envelope wages for a 'representative' Bulgarian citizen: by tax morale and formal income



5. Discussion and Conclusions

This analysis of a 2015 survey of falsely-declared salaries in Bulgaria for the first time reveals that the verbal agreement to pay an additional undeclared (envelope) wage is not always purely an employer-instigated strategy to evade tax and social insurance contributions, and that employees in one-third of instances report that they themselves are active participants in the decision to under-report wages. Examining how this practice of falsely-declaring salaries might be tackled, this paper has evaluated the contrasting policy approaches. As Table 3 summarises, this weakly confirms the rational economic actor view that the higher are the perceived penalties, the lower is the likelihood of falsely-declared salaries, but strongly confirms the social actor view that the higher is tax morale, the lower is the likelihood of falsely-declared salaries. Viewed from an institutionalist perspective, therefore, when the norms, values and beliefs of employees are not in symmetry with the codified laws and regulations, there is a greater likelihood of them receiving falsely-declared salaries. The currently widely used rational economic actor approach thus needs to be at a very minimum complemented by a social actor approach.

What policy measures are therefore required to improve tax morale? Given that tax morale is 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; Webb et al., 2009), two sets of policy initiatives can be used to reduce the asymmetry between the formal institutions ('state morale') and informal institutions ('civic morale'), and thus improve tax morale and in doing so, reduce falsely-declared salaries.

Table 3. Evaluation of hypotheses

Hypothesis	Result
H1: The higher are the perceived penalties and probability of detection, the lower is the likelihood of falsely-declared salaries.	
H1a: The higher are the perceived penalties, the lower is the likelihood of falsely-declared salaries.	Weakly confirmed
H1b: The higher is the perceived probability of detection, the lower is the likelihood of falsely-declared salaries.	Not confirmed
H2: The higher is tax morale, the lower is the likelihood of falsely-declared salaries.	Strongly Confirmed
H3: The effect of the perceived sanctions and risk of being caught on the likelihood of falsely declared salaries varies at different levels of tax morale.	
H3a: The effect of perceived sanctions on the likelihood of falsely-declared salaries varies at different levels of tax morale.	Not confirmed
H3b: The effect of perceived risk of being caught on the likelihood of falsely-declared salaries varies at different levels of tax morale.	Not confirmed

Firstly, policy measures can seek to alter the norms, values and beliefs regarding the acceptability of falsely-declaring salaries. This requires marketing campaigns to raise awareness among employees about the benefits of fully declaring salaries and the costs of not doing so in terms of the future benefits foregone. It also requires initiatives to educate citizens about the wider benefits of taxation in terms of the public goods and services that they receive in return for the taxes they pay. Such initiatives might range from introducing into the civics curriculum in schools the issue of taxation (see ILO, 2012), through to the use of letters to employees about how their taxes paid are being spent, to the erection of signs stating 'your taxes paid for this' on for example roads, ambulances and fire engines, and in hospitals, doctors surgeries and schools.

Secondly, however, the formal institutions also need to be reformed, especially in a country such as Bulgaria where formal institutional deficiencies result in a lack of trust in government. On the one hand, therefore, policy measures are required to alter the macro-level conditions that lead to lower tax morale, which includes 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; Horodnic, 2016; Thai and Turkina, 2014). On the other hand, it also involves modernising the formal institutions and quality of governance, not least to overcome the actual and perceived level of corruption. As shown in previous studies, voluntary compliance and tax morale improves when citizens: view the state authorities as treating them in a respectful, impartial and responsible manner (Gangl et al., 2013; Murphy, 2005); believe that they pay their fair share compared with others (Kirchgässner, 2010, 2011; Molero and Pujol, 2012), and they believe that they receive the goods and services they deserve for the taxes they pay (McGee, 2005). If they believe that their taxes are going into the pockets of corrupt politicians or public sector officials, then they will continue to display low tax morale and be willing to continue to falsely-declare their salaries.

These findings about the need for greater emphasis on the social actor approach of improving tax morale when tackling falsely-declared salaries, nevertheless, are based on just one dataset in one country and are thus tentative. Further studies in Bulgaria and in other countries both regarding the active involvement of employees in the decision to falsely-declare salaries and the effectiveness of different policy approaches to prevent this are required. So too is there a need to evaluate from the perspective of employers the effectiveness of the rational economic actor and social actor approaches in preventing the likelihood of falsely-declared salaries. If this paper thus stimulates further evaluations in a wider range of countries of whether employees play a more active role in the decision to falsely-declare salaries, along with the effectiveness of these contrasting policy approaches in reducing the likelihood of both employees and employers engaging in this illegal practice, then it will have fulfilled one of its intentions. If this then stimulates government authorities to consider alternative approaches other than simply deterring employers by increasing the penalties and risks of detection, then it will have fulfilled its wider intention.

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