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TACKLING THE ILLEGAL PRACTICE OF UNDER-REPORTING EMPLOYEES' WAGES: LESSONS FROM THE REPUBLIC OF MACEDONIA

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Abstract
Recently, there has been growing recognition that some formal employees receive from their formal employers two wages, namely an official declared wage plus an additional undeclared (envelope) wage, which reduces the tax and social contributions paid to the authorities. The aim of this paper is to evaluate two competing approaches for tackling this illegal practice, namely a conventional rational economic actor deterrence approach which increases the penalties and risks of detection, and an emergent social actor approach that seeks to improve tax morale. To do this, a 2015 nationally representative survey comprising 2,014 face-to-face interviews conducted in FYR of Macedonia is reported. The finding is that 13 per cent of employees surveyed received under-reported wages by an amount that averaged 39 per cent of their net salary, and that in just under half (46 per cent) of reported cases, employees are active instigators of such a wage arrangement. Logit regression analysis reveals no association between employees receiving under-reported wages and the perceived level of penalties and risk of detection, but a strong association with the level of tax morale. The theoretical and policy implications are then discussed.

Keywords: envelope wages; tax morale; informal economy; tax evasion; Southeast Europe.

Jel Classification: H26; J46; K42; O17; P37

INTRODUCTION

In recent years, it has started to be recognised that not all jobs are wholly in either the informal or formal economy. Instead, quasi-formal jobs have been recognised (Williams and Padmore 2013a). These occur where formal employers reduce their wage costs by using the illegal practice of declaring only a portion of the wage of their formal employees and paying the rest as an undeclared ('envelope') wage (Horodnic 2016;

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Merikull and Staehr 2010; Neef 2002; Williams 2007, 2008a, 2009a,b; Williams, Horodnic, and Horodnic 2016). The aim of this paper is to advance understanding of this wage practice by evaluating the effectiveness of different policy approaches for tackling this fraudulent practice of wage under-reporting so as to evade the full social insurance and tax liabilities (Chavdarova 2014; Williams 2009c,d; Woolfson 2007).

The conventional dominant policy approach when tackling the under-reporting of wages has been to deter this illegal wage practice by ensuring that the perceived likelihood and cost of being caught and punished outweighs the benefits (Allingham and Sandmo 1972; Grabiner 2000). This is done by increasing the actual or perceived penalties and risks of detection. Given that there are difficulties in detecting formal employees paid an additional undeclared envelope wage by their formal employers, recent years have seen the emergence of new more indirect social actor policy approach that seeks to enhance voluntary compliance by improving tax morale, namely the intrinsic motivation to pay taxes (Cummings et al. 2009; Kirchler 2007; Murphy 2008). Viewed through the lens of institutional theory, this social actor approach can thus be seen as seeking to align the informal institutions (i.e., the norms, values and beliefs of employers and employees) 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 wage under-reporting using a case study of FYR Macedonia.

To commence, therefore, the next section reviews what is known about the prevalence, nature and distribution of wage under-reporting followed by the literature on these two policy approaches, namely the deterrence and tax morale approaches, so as to formulate some hypotheses regarding the effectiveness of these policy approaches. Following this, the data and variables used to evaluate these hypotheses through a logit regression analysis are introduced, namely 2,014 face-to-face interviews conducted in 2015 in FYR Macedonia. The results are then reported. Finding that there is no significant association between wage under-reporting and the perceived level of penalties and risk of detection, but a significant association with the level of tax morale, the final section concludes by discussing the implications for understanding and tackling wage under-reporting in FYR Macedonia and beyond.

1. TACKLING WAGE UNDER-REPORTING: A LITERATURE REVIEW

Over the past decade or so, a small tributary of scholarship has drawn attention to how some formal employers decrease their tax and social security payments and thus wage costs by pursuing the illegal practice of paying their formal employees two salaries; an official declared salary and an additional undeclared ('envelope') wage. This is thought to happen usually at the job interview stage. Alongside agreeing an official declared wage, which is detailed in a formal written contract, the employer verbally states that the employee will receive an additional 'envelope wage' not declared to the authorities for tax and social security purposes (Chavdarova 2014; Williams 2009a; Woolfson 2007). Verbal agreements, of course, are not by definition illegal. Indeed, in many countries they hold the same weight in law as written contracts. Nevertheless, this particular verbal contract to under-report salaries, which supersedes the formal written contract, is by definition illegal. It is an agreement to fraudulently under-report to the state the full wage

paid to an employee in order to evade the full tax and social security payments owed by the employee and employer.

Most early studies of such wage under-reporting were small-scale qualitative studies in East-Central European nations, such as Bulgaria (Chavdarova 2014), Estonia (Merikull and Staehr 2010), Latvia (Merikull and Staehr 2010; OECD 2003; Sedlenieks 2003), Lithuania (Merikull and Staehr 2010; Woolfson 2007), Romania (Neef 2002), Russia (Williams and Round 2008) and Ukraine (Round, Williams, and Rodgers 2008; Williams 2007). For instance, the study in Lithuania by Woolfson (2007) is an in-depth case study of one person. Although the Ukraine survey covers 600 households, it is limited to three localities (Williams 2007), whilst the evidence from Russia is based on interviews with 313 households in three districts of Moscow (Williams and Round 2007).

Despite being unrepresentative studies, they nevertheless provide clues to its extensiveness in the early stages of the transition process in these post-socialist societies. For example, in Ukraine, 30 per cent of formal employees reported being paid an additional envelope wage (Williams 2007) and 65 per cent in Moscow (Williams and Round 2007). Two surveys in 1998 and 2002 similarly reveal that in Latvia, 19.5 per cent of employees in 1998 and 9.6 per cent in 2002 received envelope wages, in Estonia, 16.3 per cent and 22.5 per cent respectively and in Lithuania, 7.2 per cent and 11.7 per cent (Merikull and Staehr 2010). These studies, however, were undertaken in post-socialist societies at the height of the transition process.

The first cross-national extensive representative survey of the prevalence and distribution of wage under-reporting was a 2007 Eurobarometer survey involving 11,135 interviews with formal employees across the 27 member states of the European Union (EU-27). Analyses of this dataset reveal the prevalence of wage under-reporting 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 under-reported wages, 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). This Eurobarometer survey was repeated in 2013 with 11,025 dependent employees across the EU28 (European Commission 2014), and reveals that one in 33 employees receive under-reported wages with similar variations continuing to persist across the EU regions (Williams and Horodnic 2016). Here, therefore, its prevalence and distribution is not the focus. Instead, the less discussed issue of how this illegal wage practice can be tackled is addressed. To do this, the effectiveness of the two main policy approaches is evaluated.

1.1. Rational economic actor deterrence approach

The view of the non-compliant as rational economic actors has its origins in the classical treatises of Jeremy Bentham (Bentham 1788) and Cesare Beccaria (Beccaria 1797). In their utilitarian theory of crime, citizens are viewed 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 they receive from disobeying the law. Following the popularisation of

this theory of crime by Becker (1968) in the late 1960s, Allingham and Sandmo (1972) applied it to tax non-compliance in the early 1970s. They argued that tax non-compliance occurs when the pay-off is greater than the expected cost of being caught and punished. As such, it was necessary to change the cost/benefit ratio confronting those considering or participating in non-compliance, achieved by raising the actual and/or perceived penalties and risks of detection, and thus the costs side of the equation. This was subsequently widely adopted (e.g., Hasseldine and Li 1999; Richardson and Sawyer 2001). Indeed, this is the dominant policy approach in FYR Macedonia, the country studied in this paper. The amendment of the Law on Labour Relations (Official Gazette of the Republic of Macedonia No. 54/2013) increased the penalties for such wage under-reporting to €7,000 and since 2012, the risks of detection have been improved, not least through strengthened administrative cooperation via electronic data exchange, as well as by pursuing targeted inspections in high-risk sectors (Williams et al. 2014).

However, despite its widespread usage by governments, the evidence that increasing the sanctions and risks of detection elicits compliance is less than conclusive (Varma and Doob 1998). Not only are studies inconclusive that increasing the perceived or actual penalties, and increasing the risks of detection, reduces non-compliance, but the particular problem confronted with under-reporting wages is that this is difficult for tax and labour inspectors to detect. After all, these are formal employees with a formal written contract working for a formal employer and the additional contract is verbal. Consequently, the additional unwritten agreement is not only difficult to detect but also to prove. Despite this, such an approach remains dominant. To evaluate the validity of this rational economic actor deterrence approach in tackling wage under-reporting, therefore, the following hypothesis can be tested:

Rational economic actor deterrence hypothesis (H1): the higher are the perceived penalties and likelihood of detection, the lower is the likelihood of wage under-reporting, ceteris paribus.

> H1a: *the higher are the perceived penalties, the lower is the likelihood of wage under-reporting*.
>
> H1b: *the higher is the perceived likelihood of detection, the lower is the likelihood of wage under-reporting*.

1.2. Social actor approach

Recognising that employers and employees do not always weigh up the cost/benefit ratio since many voluntarily comply even when the benefit/cost ratio indicates that they should not if they were rational actors, a new approach has emerged (Kirchler 2007; Murphy 2008; Murphy and Harris 2007). This 'social actor' approach 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; Torgler 2011; Torgler and Schneider 2007). The objective is therefore to improve tax morale so that there is voluntary compliance in the form of self-regulation (Kirchler 2007; Torgler 2011).

The roots of such an approach are in the classic work of Georg von Schanz (1890) which drew attention to the tax contract between the state and its citizens. Six decades later in the 1950s, this was further developed by the German 'Cologne school of tax psychology' which sought to measure tax morale (see Schmolders 1952, 1960, 1962).

Although the emergence of the rational economic actor deterrence approach from the 1970s led to a decline in the popularity of this social actor approach, over the past decade or so, it has witnessed a revival (Alm et al. 2012; Kirchler 2007; Torgler 2007, 2011). In this approach, the goal is to improve tax morale and therefore increase the level of voluntary compliance (Alm and Torgler 2011; Torgler 2012; Williams 2014).

This social actor approach can be conceptually understood using the lens of institutional theory (Baumol and Blinder 2008; North 1990). All societies possess both formal institutions, which are the laws and regulations defining 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). Viewed through this institutionalist lens, 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 these institutions are not aligned, tax morale will be lower and wage under-reporting more prevalent. To evaluate the validity of adopting this policy approach towards tackling wage under-reporting, therefore, the following hypothesis can be evaluated:

Social actor tax morale hypothesis (H2): the higher is tax morale, the lower is the likelihood of wage under-reporting.

2. DATA AND VARIABLES

2.1. Data

To evaluate these hypotheses on tackling wage under-reporting, data is reported from 2,014 face-to-face interviews conducted in FYR Macedonia 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.

2.2. Variables

To evaluate whether increasing the penalties and risks of detection, and greater tax morale, reduces the likelihood of wage under-reporting, 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 wage under-reporting and the policy approaches, three explanatory variables were used. Firstly, to evaluate whether the perceived risk of

detection influences engagement in wage under-reporting, a categorical variable was used describing the perceived risk of being detected, with value 0 for a very small, value 1 for fairly small risk, value 2 for fairly high risk and value 3 for very high risk. Secondly, to evaluate how penalties are associated with participation, a categorical variable was employed, describing the expected sanctions, with value 0 for those asserting that the normal tax or social security contributions would be due, value 1 for those stating that the normal tax or social security contributions due, plus there would be a fine or value 2 for imprisonment.

Third and finally, to evaluate the association between engagement in wage under-reporting and tax morale, an interval variable 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 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 the responses to these six 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 0.87 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 wage under-reporting 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.
- *Employment status*: a dummy variable with value 0 for full-time employed and value 1 for part-time employed.
- *Sector:* a categorical variable with value 0 for industry, value 1 for household services (including gardening, child and elder care), value 2 for transport, value 3 for retail, value 4 personal services, value 5 for repair services, value 6 for hotel restaurant, cafes, value 7 for agriculture and value 8 for other.
- *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.
- *Estimated share:* a categorical variable for the estimated proportion of the population engaged in undeclared work with value 0 for less than 5 per cent, value

1 for 5 to 10 per cent, value 2 for 10 to 20 per cent, value 3 for 20-50 per cent, and value 4 for over 50 per cent.

- *Type of locality*: a categorical variable with value 0 for rural area or village, value 1 for small or middle-sized town, value 2 for large town and value 3 for Skopje.

Given that there were a 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 the values. This is done using a system of chained equations for each variable with missing values, with fifty imputations simulated for each missing value. Furthermore, population weights are applied based on age and gender to correct for under- and over-representation in the sample.

To evaluate the relationship between wage under-reporting and the perceived penalties and risk of detection, and the level of tax morale, a logit regression analysis is here conducted. Before turning to the findings, and given the sensitive subject under investigation, a comment is required on the reliability of the data. In 93% of the interviews, the interviewers reported good or excellent cooperation from the participant, and average cooperation in 6% of cases. Cooperation was found to be poor in only 1% of cases. Below, we report the results.

3. FINDINGS

Of the 2,014 respondents interviewed in 2015 in FYR Macedonia, 643 were employees in employment, of which 82 (12.8 per cent), which is just under 1 in 8, reported receiving an additional undeclared (envelope) wage from their formal employer for their formal employment, with the mean amount unreported amounting to 39 per cent of their net income. In 46 per cent of cases, this undeclared envelope wage was paid for their regular work, in 35 per cent of cases for overtime/extra work conducted, and in 19 per cent of cases for both their regular and over time work.

It has been so far assumed that under-reporting wages is an employer-instigated practice (e.g., Williams 2007; Woolfson 2007). The finding, however, is that although 54 per cent of employees asserted that under-reporting their wages was suggested by their employer, a further 24 per cent stated that it was a joint idea, and 22 per cent that they as an employee had suggested this arrangement. In just under half (46 per cent) of all cases, therefore, the employee had an active role in deciding to under-report their wages, contrary to the widespread assumption in the literature that this is always employer-instigated. The outcome is that 36 per cent of employees were happy with this arrangement of under-reporting their wage (which was particularly the case among those who had suggested this arrangement), 21 per cent neutral, and just 44 per cent would prefer their wage to be fully declared. Interestingly, this contentment was most common when the verbal contract agreed involved additional conditions to those stated in the written contract, intimating that these additional conditions are often suggested by the employee rather than employer. Such additional conditions prevailed in 40 per cent of all reported cases of wage under-reporting. Some 24.1 per cent of employees receiving an additional undeclared (envelope) wage had verbally agreed to work longer hours, such as when those on a part-time formal written contract actually work full-time in return for their additional undeclared (envelope) wage (and 56 per cent of these employees stated that they had suggested this arrangement to their employer), 15.1 per cent had agreed not

to take their full statutory holiday entitlements (with 83 per cent of these employees stating that they had suggested this arrangement to their employer in return for an additional undeclared wage), and 11.3 per cent had agreed to conduct tasks, or take on responsibilities, not stated in their written contract (with 50 per cent stating that they had suggested this to their employer). It appears, therefore, that including additional conditions in the verbal contract where they agree to under-report wages was less an employer- and more an employee-instigated practice. Given this finding that employees are far from being always passive in the decision to under-report wages, and often active participants in the decision to do so, attention now turns to the distribution of wage under-reporting and how this practice can be tackled.

Which employee groups, therefore, are more likely to receive under-reported wages and in which sectors? And what are their views on the penalties, risks of detection and the acceptability of operating in the undeclared economy (i.e., their tax morale)? Table 1 reports the descriptive results. Examining the employees receiving under-reported wages, male employees are far more likely than female employees (15.1 per cent compared with 10.1 per cent), although women receive a greater proportion of their net income in the form of an undeclared (envelope) wage than men (i.e., 45 per cent compared with 20 per cent). It is also noticeable that the proportion of employees receiving an under-reported wage declines with age, and that a greater proportion of Albanian ethnicity employees are likely to receive envelope wages. Wage under-reporting is also heavily concentrated among those who are part-time employed on their formal contracts.

However, it is not a practice concentrated among those struggling financially. Instead, it is more prevalent among those reporting no financial problems, where it is mostly paid for overtime/extra work conducted. Among those struggling financially, wage under-reporting is less common but more often paid for their regular employment rather than overtime. The prevalence of wage under-reporting, moreover, significantly varies across sectors, being most frequent in the construction sector, followed by agriculture, and hotels, restaurants and cafes.

Turning to the policy measures, no noticeable association seems to exist between detection risk and wage under-reporting. A similar lack of association is noticeable regarding the expected sanctions. However, there does appear to be an association between tax morale and the propensity to receive under-reported wages. While only 8.9 per cent of employees expressing the highest tax morale stated that they received under-reported wages from their formal employer, this share gradually increases up to 39.7 per cent for employees with very low tax morale.

Table 1. Formal employees receiving envelope wages in the 12 months prior to survey

Number of all employees surveyed = 643	% of all employees surveyed	% all employees receiving envelope wages	% of net income received as envelope wages (median)	Envelope wages paid for:			
				Regular work	Overtime/ extra work	Both regular & overtime work	Refusal/ don't know
Gender							
Male	60.0	15.1	20.0	47.3	27.7	21.1	4.0
Female	40.0	10.1	45.0	37.2	45.6	14.1	3.1
Age							
15-24	8.8	20.1	20.0	48.3	19.3	21.6	10.9
25-39	40.3	16.5	40.0	41.1	36.8	19.5	2.5
40-54	38.7	10.1	25.0	44.8	31.2	20.8	3.3
55-64	12.0	6.9	30.0	57.1	42.9	0.0	0.0
65+	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Nationality							
Macedoni	79.3	10.9	30.0	46.1	28.2	22.0	3.7
Albanian	20.7	21.8	25.0	40.5	42.8	13.1	3.7
Employment status							
Full-time employed	91.0	11.9	22.5	42.9	36.2	16.3	4.5
Part-time employed	9.0	25.9	60.0	50.0	19.0	31.0	0.0
Sectors of activity							
Construction	9.2	27.6	20.0	41.1	44.5	14.4	0.0
Industry	19.4	11.2	25.0	22.8	43.4	25.7	8.1
Household services (incl. gardening, child and elderly care)	1.4	11.7	100.0	0.0	0.0	100.0	0.0
Transport	7.5	15.0	75.0	73.6	26.4	0.0	0.0
Personal services	3.5	3.2	0.0	100.0	0.0	0.0	0.0
Retail	9.2	12.0	55.0	87.0	0.0	13.0	0.0
Repair services	3.3	3.9	20.0	100.0	0.0	0.0	0.0
Hotel, restaurant, cafes	7.0	22.3	50.0	32.2	33.2	34.5	0.0
Agriculture	1.4	22.5	15.0	0.0	100.0	0.0	0.0
Other	38.1	9.8	30.0	49.0	25.2	22.2	3.6
Financial situation							
Struggling	19.6	16.1	50.0	30.3	31.6	38.2	0.0
Maintaining	42.9	13.9	20.0	55.9	27.3	13.5	3.3
Just comfortable	34.5	9.3	20.0	39.7	42.7	17.6	0.0
No money problems	3.0	22.0	35.0	0.0	53.8	0.0	46.2
Estimated share							
less than 5%	7.1	2.8	30.0	0.0	0.0	100.0	0.0
5 to 10%	15.0	12.1	15.0	38.4	35.8	8.6	17.2
10 to 20%	17.5	15.1	25.0	54.7	39.7	5.6	0.0
20 to 50%	47.2	13.9	25.0	33.8	33.4	29.8	3.0
50% or more	13.2	16.6	45.0	69.5	30.5	0.0	0.0
Type of locality							
Rural area or village	33.9	17.2	30.0	49.0	28.3	19.9	2.9
Small or middle sized town	10.3	8.7	20.0	43.7	41.2	15.1	0.0
Large town	31.4	12.4	20.0	35.7	43.2	16.2	4.9
Skopje	24.3	10.3	27.5	46.3	26.2	22.4	5.1
Detection risk							
Very small	19.6	13.7	15.0	29.1	45.6	25.3	0.0
Fairly small	26.6	16.2	35.0	52.6	31.6	15.8	0.0
Fairly high	32.3	12.5	30.0	42.4	32.9	12.3	12.5
Very high	21.5	11.9	20.0	48.6	23.4	28.0	0.0
Expected sanctions							
Normal tax or social security contributions due, but no fine	39.0	14.0	35.0	45.5	26.5	22.1	5.9
Normal tax or social security contributions due, plus a fine	55.6	11.4	25.0	45.2	37.4	17.5	0.0
Prison	5.4	20.2	0.0	48.5	32.4	0.0	19.1

Table 1. (*continued*)

Number of all employees surveyed = 643	% of all employees surveyed	% all employees receiving envelope wages	% of net income received as envelope wages (median)	Envelope wages paid for:			
				Regular work	Overtime/ extra work	Both regular & overtime work	Refusal/ don't know
Tax morale							
<2	61.1	8.9	20.0	32.9	36.1	28.0	3.1
2 do 4	21.4	18.9	30.0	57.6	21.3	16.4	4.7
4 do 6	11.8	19.1	30.0	45.3	41.3	7.8	5.7
6 do 8	4.0	19.0	40.0	22.4	59.6	18.0	0.0
8 do 10	1.7	39.7	50.0	75.7	24.3	0.0	0.0
Total	*100.0*	*13.1*	*30.0*	*44.2*	*33.2*	*18.9*	*3.7*

To evaluate whether a statistically significant association between wage under-reporting 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 (authors' own calculations) reports the results of a logit regression analysis.

Starting with the control variables and thus which employee groups should be perhaps targeted by inspectors seeking to tackle wage under-reporting, gender is not significantly associated with wage under-reporting. Although this might seem surprising at first glance due to the descriptive findings, there is a plausible explanation. A sequential model building strategy was applied (i.e., variables were added one at a time), which allowed the effect of each individual predictor to be monitored after adding subsequent covariates. Gender was significant until sector was included in the model. Once introduced, the significance of gender disappeared. This is largely because the majority of construction workers in the survey were men, while women dominate in other sectors, such as retailing and the service sector. Indeed, although there was a moderate correlation between gender and sector, it was inside required limits and therefore both predictors were retained in the model. As the results display, firms from sectors in which women are the majority workforce are less likely to under-report wages. More precisely, the findings are that workers in the construction industry are significantly more likely to under-report wages than workers in all other sectors, and this is significantly the case with regard to manufacturing industry, personal services, the retail sector and other services. On the other hand, no statistically significant differences in propensity to under-report wages was found between individuals working in agriculture and construction workers, and the same applies for workers in household services, hotels, restaurants and cafes, and transport. Beyond this, it also reveals that younger individuals, and those of Albanian ethnicity, are significantly more likely to receive under-reported wages than older age groups and those of Macedoni ethnicity. No statistically significant differences were found however, by whether a person was full- or part-time employed. Neither was any strong statistically significant likelihood of participation identified according to their financial situation, or by whether they inhabited a rural or urban area. This therefore suggests that younger workers and those in the construction sector could be targeted by policy.

Table 2. Logit regressions of the propensity to receive under-reported wages

	Model 1 Coef.(S.E.)	Model 2 Coef.(S.E.)	Model 3 Coef.(S.E.)	Model 4 Coef.(S.E.)
Female	-0.446 (0.261)*	-0.183 (0.293)	-0.181 (0.294)	-0.230 (0.303)
Age	-0.031 (0.010)***	-0.037 (0.012)***	-0.036 (0.012)***	-0.038 (0.012)***
Nationality (RC: Macedoni)				
Albanian	0.705 (0.273)***	0.735 (0.315)**	0.732 (0.352)**	0.484 (0.365)
Employment status (RC: Full-time employed)				
Part-time employed		0.594 (0.405)	0.612 (0.408)	0.554 (0.413)
Sectors of activity (RC: Construction)				
Industry		-1.143 (0.464)**	-1.197 (0.485)**	-1.125 (0.493)**
Household services (incl. gardening, child and elderly care)		-1.07 (1.190)	-1.047 (1.191)	-1.022 (1.278)
Transport		-0.799 (0.555)	-0.813 (0.555)	-0.822 (0.560)
Personal services		-2.892 (1.202)**	-2.888 (1.198)**	-2.932 (1.217)**
Retail		-1.326 (0.621)**	-1.405 (0.617)**	-1.474 (0.638)**
Repair services		-2.478 (1.234)**	-2.437 (1.235)**	-2.308 (1.210)*
Hotel, restaurant, cafes		-0.756 (0.591)	-0.747 (0.596)	-0.646 (0.592)
Agriculture		-0.492 (0.907)	-0.447 (0.903)	-0.655 (0.915)
Other		-1.412 (0.451)***	-1.424 (0.456)***	-1.421 (0.459)***
Financial situation (RC: Struggling)				
Maintaining		-0.367 (0.337)	-0.365 (0.342)	-0.386 (0.353)
Just comfortable		-0.625 (0.369)*	-0.677 (0.384)*	-0.729 (0.391)*
No money problems		0.318 (0.661)	0.259 (0.678)	0.123 (0.684)
Estimated share (RC: 50% or more)				
less than 5%		-2.517 (1.232)**	-2.528 (1.308)*	-2.306 (1.286)*
5 to 10%		-0.228 (0.487)	-0.200 (0.493)	-0.058 (0.510)
10 to 20%		0.046 (0.451)	0.064 (0.459)	0.100 (0.477)
20 to 50%		-0.147 (0.382)	-0.144 (0.386)	-0.018 (0.395)
Type of locality (RC: Rural area or village)				
Small or middle sized town			-0.210 (0.555)	-0.282 (0.561)
Large town			0.244 (0.358)	0.289 (0.368)
Skopje			-0.062 (0.412)	-0.083 (0.412)
Detection risk (RC: Very small)				
Fairly small				0.458 (0.418)
Fairly high				0.114 (0.415)
Very high				0.200 (0.455)
Expected sanctions (RC: Normal tax or social security contributions due, but no fine)				
Normal tax or social security contributions due, plus a fine				-0.082 (0.282)
Prison				0.514 (0.582)
Tax morale				0.150 (0.059)**
Const	-0.633 (0.448)	1.026 (0.789)	0.984 (0.821)	0.434 (0.903)
Number of observations	643	643	643	643
Number of imputations	25	25	25	25
Prob > F	0.000	0.000	0.001	0.000
Pseudo R2	0.054	0.129	0.133	0.151
Area under ROC	0.674	0.751	0.753	0.765

Significance: *p<0.1, **p<0.05, ***p<0.01

Source: Authors' own calculations based on the representative survey of 2,014 individuals in Macedonia
Authors' own work based on the GREY Survey

What policy approaches, therefore, would be effective in tackling wage under-reporting? Table 2 reveals that there is no statistically significant relationship between wage under-reporting and either the risk of detection (refuting H1b) or the level of penalties (refuting H1a). However, tax morale is a significant predictor of the propensity

to receive under-reported wages (confirming H2). The higher the tax morale, the lower is the likelihood of receiving under-reported wages.

To further portray the effects of these explanatory variables on the prevalence of wage under-reporting, Figure 1 outlines the predicted probabilities of a 'representative' employee engaging in wage under-reporting, according to their age and level of tax morale. This 'representative' worker is defined using mean and modal values of the remaining six predictors. That is to say, the representative citizen is a Macedoni male in full-time employment working in manufacturing industry who is maintaining a comfortable financial situation and living in a village, who perceives the probability of being detected by the authorities as fairly high and expects to pay taxes and social security contributions due plus a fine if caught. For simplicity, only the figures for representative workers aged 24, 35, 50 and 62 are shown. This reveals that the probability of receiving under-reported wages ranges from slightly above zero to almost 40 per cent, depending on the age and level of tax morale of the representative employee. For instance, while only four out of 100 workers who are 62 years old and with the highest tax morale (and with all other characteristics as defined above) are expected to receive under-reported wages, it increases to 13 out of 100 for those who find tax evasion absolutely acceptable. For employees aged 24, three in 20 expressing zero-tolerance towards tax evasion are expected to receive under-reported wages, but this rises to some 38 out of 100 for those with a completely permissive attitude towards disobedience with tax legislation.

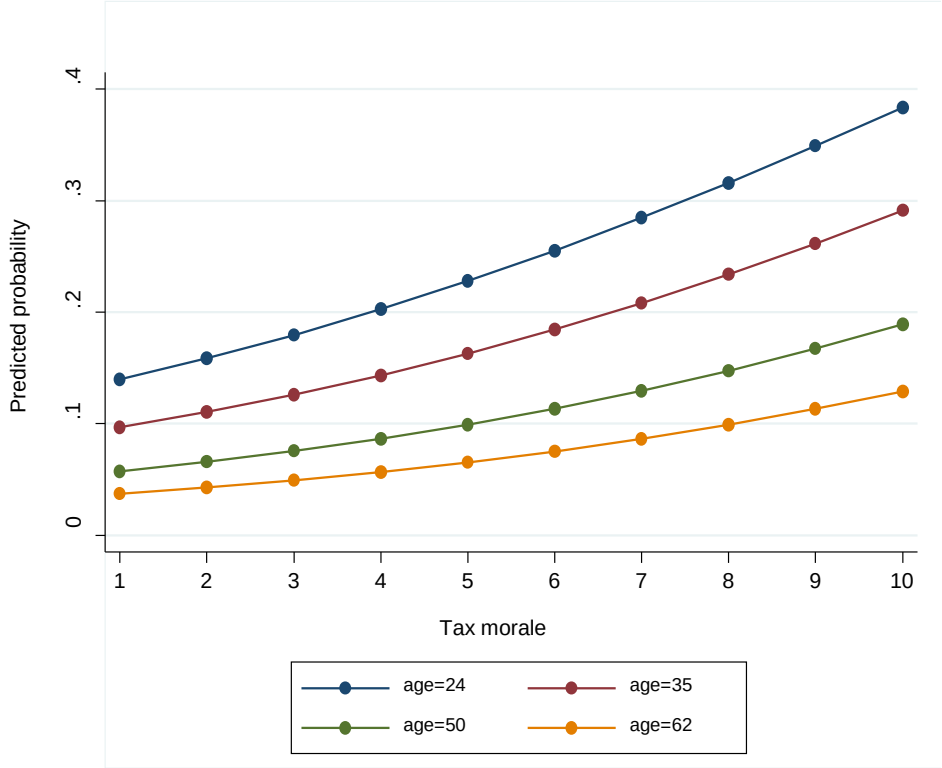

Figure 1. Predicted probability of receiving envelope wages for a 'representative' Macedonian citizen: by tax morale and age

4. DISCUSSIONS AND CONCLUSIONS

This analysis of a 2015 survey of wage under-reporting in FYR Macedonia for the first time reveals that the verbal agreement to pay an additional undeclared (envelope) wage is not purely an employer-instigated strategy to evade tax and social insurance contributions, and that employees are far from being passive in the decision to under-report wages, and in just under half of cases (46 per cent) are active participants in the decision to do so. Until now, however, most policies have targeted purely employers. In this paper, the policy approaches have been evaluated that might reduce the tendency of employees to wish to engage in wage under-reporting.

This has displayed that there is no significant correlation between wage under-reporting and either the detection risk or level of penalties. However, there is a strong significant correlation between tax morale and wage under-reporting. Viewed through an institutional lens, when the norms, values and beliefs of workers do not adhere to those of the state in terms of the codified laws and regulations, there is a greater likelihood of them participating in wage under-reporting. Increasing the perceived or actual level of penalties and risk of detection confronting employees therefore has no impact on the probability of wage under-reporting. The currently widely used deterrence approach thus needs to be at a very minimum complemented by a tax morale 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 wage under-reporting.

Firstly, policy measures can seek to alter the norms, values and beliefs regarding the acceptability of wage under-reporting. This requires marketing campaigns to raise awareness among employees about the benefits of not accepting under-reporting wages and the costs of 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 policy initiatives might range from introducing into the civics curriculum in schools the issue of taxation (ILO 2012), through letters to taxpayers about how their taxes are being spent, to signs stating 'your taxes paid for this' on roads, ambulances and fire engines, and in hospitals, doctors surgeries and schools.

Secondly, however, the formal institutions also need to be reformed, especially in countries such as FYR Macedonia where formal institutional deficiencies result in a lack of trust in government. On the one hand, therefore, policy initiatives are needed to change 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. 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 (Kirchgassner 2010, 2011),

and they believe that they receive the goods and services they deserve for the taxes they pay (Gangl et al. 2013).

These findings about the need for greater emphasis on a tax morale approach, nevertheless, are based on just one dataset in one country and are thus tentative. Further studies in other countries both regarding the active involvement of employees in the decision to under-report wages 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 deterrence and social actor tax morale approaches in preventing the likelihood of wage under-reporting. 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 under-report wages, along with the effectiveness of these contrasting policy approaches in reducing the likelihood of both employees and employers engaging in wage under-reporting, then it will have fulfilled one of its intentions. If this then stimulates governments to consider alternative approaches other than simply deterring employers from wage under-reporting by increasing the penalties and risks of detection, then it will have fulfilled its wider intention.

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