

IS THE INCIDENCE OF ENVELOPE WAGES LESS PREVALENT IN MORE MODERNISED AND DEVELOPED COUNTRIES? AN EMPIRICAL ANALYSIS BASED ON EU28 MULTILEVEL APPROACH

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Abstract

The paper aims to investigate the validity of modernisation thesis according to which the incidence of envelope wages is less prevalent in more developed and modernised countries, using the EU 28 member states and the multilevel modelling approach. In order to do that, a two-level logistic regression model in which the first level includes individuals' characteristics and the second one quantifies some proxies for modernisation thesis. While most studies provide evidence on the determinants of informality at the level of individual country or cross-country analysis, the present study has the advantage of analysing the prevalence of envelope wages using a special type of models controlling for both micro and macro information. The envelope wage is defined as a registered formal employment agreement, and an extra, undeclared "envelope wage," via a verbal unwritten agreement. In order to capture the incidence of envelope wages, the 2013 Special Euro barometer survey was used.

Empirical results revealed the total validity of the modernisation thesis, in countries with higher levels of economic development, higher qualities of government, a low level of corruption, a higher level of happy planet as well as a higher level of social progress, salary under-reporting is less prevalent. Also, a lower prevalence of envelope wages was proved to be associated with a higher tax morale.

Keywords: envelope wages, modernisation thesis, multilevel modelling, Euro barometer, EU28 member states.

1. Introduction

Wage work represents a formal agreement between the employer and the employee for the work done. Instead, undeclared wages represent a verbal agreement between the two parties involved (Horodnic 2016). According to Williams (2019) undeclared work/wage is known by many names: "envelope wages", "cash-in-hand", "shadow", "informal" etc. Most studies have shown that this verbal agreement is generally initiated by the employer to avoid paying taxes and social security contributions. Williams (2019 :137) explains why employers opt for this form of workers' compensation: "To evade payment of income, value-added or other taxes; To evade payment of social security contributions; To evade certain legal labour standards, such as minimum wages, maximum hours, safety standards". Williams (2013) considers that "enterprises sometimes involve a mixture of informal and formal employment", especially in Central and Eastern European Countries.

The informal sector has a great impact on both the labour force participation rate, and the employment rate, as those working in the informal sector appear to be inactive in the formal sector. For

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this reason, the percentage that shows us the participation rate/employment rate of the employees does not always match reality. Therefore, there are advantages and disadvantages to this form of work remuneration. The advantages, however, can be viewed in the short term and may lead to an increase of the level of wages for people in the informal sector. Consequently this should increase consumption which indirectly influences other sectors of activity, including the formal sector, etc. In contrast, the disadvantages of "envelope wages" consist of lost revenue for authorities, unfair competition among companies, workers with no welfare, sickness or accident insurance etc.

Williamson (2016, 2018) considers that the eradication of undeclared work through different mechanisms directly affects entrepreneurship, the business environment and implicitly the level of development of a country.

The main objective of this paper is to test the validity of modernisation thesis aiming to investigate if the envelope wages are less prevalent in more modernised and developed countries using a multilevel modelling approach. The phenomenon of envelope wages was analyzed in several studies at the level of EU/CEE countries (Williams 2008; Williams and Padmore ,2013; Williams ,2014; Horodnic, 2016).

In order to test the modernisation thesis grounded in an evidence-based approach based on envelope wage characteristics, a staged multi-level logistic regression model based on hierarchical data (individuals grouped in countries) has been employed having as source the data derived from 2013 Eurobarometer survey. Multilevel modelling reflects the between-group variability and the effects of group-level characteristics on the prevalence of envelope wages.

The modernisation theory argues that the likelihood of this type of undeclared work is less dominant in more developed and modernised economies (LaPorta and Shleifer 2014; Lewis, 1959; Williams and Horodnic, 2016; Williams, 2014). The main assumption of this theory is that: the likelihood of envelope wage is lower in more modernised developed economies. The paper is organized as follows. Section two presents a brief overview of the most relevant results in the literature regarding the envelope wage phenomenon, while section three was dedicated to the presentation of the data and methodology, highlighting the main method used in the analysis and also the main proxies for the modernisation thesis. The last section presents the most important empirical results ending with conclusions and discussions.

2. Theoretical background

Traditionally, the terms formal and informal employment are different, from a social, geographical and temporal point of view. In contrast, practical economic and informal formalities are not necessarily distinct and can coexist (Bobek and Wickham, 2018). Informalization involves reducing employment costs and setting incomes below the minimum wage, leading to further erosion in formal-information divisions in some sectors (Bobek and Wickham, 2018).

Williams (2008) analyzed for the first time a common practice in the labour market in Central and East European economies, namely "envelope wages". In his study Williams showed that smaller companies offer a larger percentage of workers' wages in " envelope" compared to larger enterprises. Construction, household and personal services sectors, repair-services sector, transport sector, agricultural sector, hotel and restaurant sector, retail sector, manufacturing sector are sectors where we frequently encounter this form of workers' pay. Williams (2008) considers that "envelope wages, in short, prevails across all economic sectors". The conclusions of this study were also validated by the European Commission 2007; Pedersen 2003; Small Business Council 2004; Williams 2006. Among Central and Eastern Europe countries there are major differences regarding "envelope wages": Czech Republic, Slovenia, Slovakia, Hungary, and Estonia are countries with low portions of the labour force receiving envelope wages. At the other end, we find countries like Romania, Latvia, Bulgaria, Lithuania, and Poland.

Williams (2009) analyzed the incidence of envelope wages in the Baltic Sea region (Estonia, Latvia, Lithuania, Poland) using data from the 2007 Eurobarometer survey. In the Baltic Sea Region, “one in eight workers reported receiving envelope wages in the past 12 months”. The prevalence of envelope wages is different across the Baltic Sea region. Latvia (17% of all employees) and Estonia (8% of all employees) are at opposite’s poles. Lithuania (11% of all employees) and Poland (11% of all employees) sit between these two countries. Williams (2009) found out that workers in this region generally receive envelope wages along with official wages. On the contrary, Merikull and Staehr (2010), could not reach the same conclusion for the Baltic countries.

Analyzing the data from a survey in Bulgaria in 2013, William et al. (2014) indicated that in the process of analysing this phenomenon, the focus need to be on reducing the lack of alignment of formal and informal institutions.

Castells and Portes (1989, p.15) define the undeclared economy as the effort of “a specific form of income production” unregulated by the institutions of society in a legal and social environment in which similar activities are regulated”.

At EU level, undeclared work is defined as "any paid activities that are lawful as regards their nature but not declared to public authorities, taking account differences in the regulatory systems of the Member States"(European Commission, 2007a, p.1; OECD, 2012).

Analyzing informality in Sweden and Latvia, Likić-Brborić et al. (2013) pointed out that an increase in informalization of work and economy was a result of dual tendencies towards informalization both “from above” and “from below”. An important factor influencing this phenomenon is migration, especially in the post-EU enlargement period.

Onoshchenko analyzed informality at work in Ukraine, highlighting that informal activities are diverse in nature and are determined by a variety of reasons. No existing theory explains the informal economy in Ukraine, the solution being the adaptation of policies, removing barriers to formalization and stimulating activities in motion (Onoshchenko, 2012). Modernisation thesis reflects the development perspectives and social changes characterising the transition from traditional to modern societies (Harrison, 1991; Eisenstadt, 1987).

Collaboration at European level on undeclared work is partial and very limited. Therefore, a network needs to be developed to cover tax, social security and undeclared work issues, in order to exchange information, build capacity and operational cooperation not only on this issue. cross-border undeclared work, but also to combat undeclared work at national level (Williams and Nadin, 2012).

Formal employers often pay their formal employees, both with a declared salary and with an undeclared salary, called an envelope salary (Williams, 2010). Even if the rational economic decision would be for employers to pay envelope wages, many do not practice this, but voluntarily comply (Murphy, 2008).

The envelope salary contributes to evading tax and social security obligations. Using Eurobarometer data from 2007 and 2013, it was known that the prevalence of such a particular phenomenon is higher among men, young employees, individuals living in East-Central Europe and Southern Europe or manual workers.

The practice of additional remuneration is more common in countries with a lower level of economic development and less modernized state bureaucrats, fewer social transfers, social protection and labor market actions specially designed to offer protection to vulnerable groups as well as in countries with a high level of severe deprivation and inequalities (Kayaoglu and Williams, 2017).

An increased state morality and civic morality dropped the probability of entering in the unofficial sector for small enterprises (Williams and Horodnic, 2016). The decision of working in the unofficial sector could be attributed to the mismatch between the laws and regulations of the formal institutions as well as to the citizens perceptions regarding these institutions (Williams and Horodnic, 2015).

The higher prevalence of envelope wages is explained by competing theories that manifest themselves differently in each country, such as: a legacy of underdevelopment, also called the modernization thesis; as a result of high taxes, state corruption and overburden regulations as well as an inadequate state intervention in labor and assistance arrangements, leaves workers less fully protected. Using data from the 2013 survey on transnational variations in the incidence of envelope wages, the modernization theory have been supported by the empirical results, this practice being widely spread among poor people, less equal countries, with lower levels of taxation and social protection, and less efficient redistribution through social transfers (Williams, 2014). Other factors that lead to the prevalence of unregistered employment are the registration of low values of GDP per capita, social distribution and state intervention (subsidies and transfers, social contribution expenditures, health expenditures (Krasniqi, and Williams, 2018).

3. Data and Methodology

To evaluate the main determinants of envelope wage, the results of the 2013 Eurobarometer survey of 27563 employees in 28 European countries were used to evaluate the modernisation thesis, having a two-level hierarchical structure with individual respondents at level 1 and countries at level 2. In order to analyse the prevalence of envelope wages among citizens from EU countries, a sample of 11025 employed persons was used.

The research questions of our research are the following: What is the extent of between-country variation in the prevalence of envelope wages? Could between-country differences of this incidence be explained by differences between individual characteristics? Do individual-level variables have different effects in different countries? Does the incidence of envelope wage is smaller in more developed and modernised countries?

In order to test all these, the dependent variable have been build as the percentage of employees receiving envelope wages which is a binary variable coded by 1 for persons who answered ‘yes’ to the question QE10 of Eurobarometer questionnaire regarding if the employer paid the employee in the last year using this way of under-reproting salaries” and 0 otherwise.

As level 1-individual explanatory variables, there have been used the following variables:

- ✓ Gender: a dummy variable with value 0 for women and 1 for men;
- ✓ Age: a continuous variable indicating the exact age(mean centred);
- ✓ Education: a categorical variable with value 1 for 15 years old and under, value 2 for 16–19 years old and value 3 for 20 years old or over.
- ✓ Marital status: a categorical variable with value 1 for unmarried individuals, value 2 for(Re-)Married/Single with partner, value 3 for divorced or separated, value 4 widowed.
- ✓ Occupation of the employee: a categorical variable withvalue 1 for professional (employed doctor, lawyer, accountant, and architect), value 2 forgeneral management, director or top management (managing directors, director general,other director), value 3 for middle management, other management (department head,junior manager, teacher, technician), value 4 for employed position, working mainly at a desk, value 5 for employed position, not at a desk but travelling (salesmen, driver etc.), value6 for employed position, not at a desk, but in a service job (hospital, restaurant, police, fireman etc.), value 7 for supervisor, value 8 for skilled manual worker, and value 9 for other(unskilled) manual worker, servant.
- ✓ Difficulties paying bills: a categorical variable with value 1 for having difficulties most of the time, value 2 for occasionally and value 3 for almost never/never.
- ✓ Firm size: a categorical variable with value 1 for firms with one to four people, value2 for firms with five to nine people, value t3 for firms with ten to 19people, value 4 for firms with 20 to 49 people, value 5 for firms with50 to 99 people, value 6 for firms with 100 to 499 people and value 7for firms with 500 or more than 500 people.

- ✓ People 15 years in own household (household): a categorical variable with value 1 for one person, value 2 for two persons, value 3 for three persons and value 4 for four persons or more.
- ✓ Children: a categorical variable with value 1 for individuals with no children, value 2 for the presence of children less than 10 years old live in respondent's household, value 3 for the presence of children aged 10 to 14 years old and value 4 for the presence of children less than 10 years old and children aged 10 to 14 years old live in respondent's household.
- ✓ Area (area): 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.
- ✓ Region (region): a categorical variable with value 1 for East-Central Europe (Czech Republic, Poland, Slovenia, Estonia, Hungary, Slovak Rep., Romania, Lithuania, Bulgaria, Croatia, Latvia), value 2 for Western Europe (UK, Ireland, Germany, France, Belgium, Luxembourg, Austria, Netherlands), value 3 for Southern Europe (Malta, Cyprus, Italy, Portugal, Spain and Greece) and value 4 for Nordic Nations (Finland, Sweden and Denmark).
- ✓ Perceived risk of detection 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.
- ✓ Expected sanctions: a dummy variable with value 1 for normal tax or social security contributions due, value 2 for normal tax or social security contributions due, plus a fine, and value 3 for prison.
- ✓ "Tax-morality index, index of their attitude towards tax non-compliance, presented in the question QE20 using a 10-point Likert scale (1 equals absolutely unacceptable and 10 equals absolutely acceptable). These are someone receives welfare payments without entitlement, a firm is hired by another firm and does not report earnings, a firm hires a private person and all or part of their salary is not declared, a firm is hired by a household and does not report earnings, someone evades taxes by not or only partially declaring income and a person hired by a household does not declare earnings when it should be declared. The tax morality index for each individual is calculated using the mean score across these six attitudinal questions. Lower values represent higher tax morale, and vice versa" (Williams and Horodnic, 2017, p.92; Williams and Horodnic, 2015a, p.230).

The source of all individual characteristics was the database of 2013 Eurobarometer survey data.

To evaluate the modernization thesis, the explanatory country level variables taken into consideration were the following:

- ✓ GDP per capita in purchasing power standards;
- ✓ European Quality of Government Index;
- ✓ Transparency International's Corruption Perceptions Index (CPI);
- ✓ Human Development Index (HDI);
- ✓ Happy Planet Index (HPI);
- ✓ Social Progress Index (SPI).

Definitions and data sources for all variables are provided in appendix A. All country level predictors were centred around its sample mean obtained from weighting scheme (across all individuals regardless of their country).

The GDP per capita at PPS is used as proxy for the level of economic development and the expected sign is a negative one, considering that if the level of economic development of a country is higher the propensity of participating in undeclared activities will decrease.

Higher scores for European Quality of Government Index imply higher quality of government and corresponding a smaller propensity to participate in undeclared work activities, so a negative sign is expected.

The higher of the CPI index, the less corrupt is the country and therefore the smaller the propensity to be involved in undeclared work activities.

The expected sign for Human Development Index (HDI) is negative, higher the level of human development of a country, smaller will be the participation in undeclared economy.

Happy Planet Index (HPI) is rated on a scale of 0 – 100 and the index is measured by giving higher scores to countries with lower ecological footprints. Higher scores of HPI, smaller propensity for undeclared work activities.

Social Progress Index (SPI) is rated on a scale of 0-100, higher scores of SPI revealing a smaller propensity of working in the unofficial sector.

Multiple imputation methods (through a system of chained equations) have been applied for social progress index for Luxembourg and Malta, based on a regression model of each partially observed variable on the others, creating ten imputations. For the imputation, we have used the predictive mean matching, involving that for each missing value first to find the predicted mean based on the fitted linear regression model based on the GDP per capita. The missing value is imputed by randomly choosing one of the observed values (of the variables being imputed) from those 2 subjects in the dataset who have the 2 closest predicted values to the predicted value for the subject for whom we are imputing).

In order to analyse between-country variation in envelope wages, in the first stage the appropriateness of the multi-level approach was tested by the estimation of a baseline random intercept model without any explanatory variables, the empty two level model with only an intercept and country effects (the null model) has the following specification:

$$\log\left(\frac{\pi_{ij}}{1-\pi_{ij}}\right) = \beta_0 + u_{0j} \quad (1)$$

The intercept β_0 is shared by all countries, while the random effect u_{0j} is specific to county j and it follows a normal distribution with variance $\sigma_{u_0}^2$.

The second stage involved constructing a model with first-level (i.e. individual-level) characteristics in an attempt to understand their effects:

$$\log\left(\frac{\pi_{ij}}{1-\pi_{ij}}\right) = \beta_0 + \beta_1 \cdot X_{ij} + u_j, \quad (2)$$

At the second level, there will be added also the contextual factors to the model. In the third step, the logit random intercept model specification including both, individual level explanatory variables and their interactions, and country level explanatory variables, is the following [85]:

$$\log\left(\frac{\pi_{ij}}{1-\pi_{ij}}\right) = \beta_0 + \beta_1 \cdot X_{ij} + \beta_2 \cdot X_j + u_j, \quad (4)$$

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.

Given the fact that the country-level variables are strongly correlated, sequential models are applied to provide alternative perspectives on the modernisation thesis validation.

4. Empirical results

The percentage of formal employees across the EU-28 is almost 41.6% of the 27563 respondents, while 7.8% were self-employed and more than 50% were not working. Analysing the prevalence of those receiving envelope wages, we will analyse the total of 11025 respondents declaring to be formal employees. From these, only 3% admitted that they received envelope wages. Analysing the distribution of the prevalence of salary under-reporting across EU member states, Latvia (11.6%) and Romania (9.2%) have the highest proportion of those receiving envelope wages, while Germany, Finland and Sweden registered the lowest proportion for those receiving envelope wages.

Table 1. Incidence of Salary under-reporting by EU member state, 2013

Country/Region	% of employees receiving underreported salaries in prior year	Tax morality index of the formal employees
AT - Austria	2.1%	2.58
BE - Belgium	3.6%	2.65
BG - Bulgaria	6.9%	2.50
CY - Cyprus (Republic)	2.0%	1.51
CZ - Czech Republic	4.7%	3.12
DK - Denmark	1.6%	2.01
EE - Estonia	5.5%	2.86
ES - Spain	5.3%	2.01
FI - Finland	1.0%	1.86
FR - France	1.1%	2.12
GE - Germany	0.7%	2.22
GR - Greece	7.0%	1.97
Great Britain	2.2%	1.97
HR - Croatia	8.7%	2.18
HU - Hungary	6.1%	2.96
IE - Ireland	2.4%	2.55
IT - Italy	2.6%	2.47
LT - Lithuania	5.9%	3.14
LU - Luxembourg	2.9%	2.28
LV - Latvia	11.6%	3.94
MT - Malta	0.0%	1.82
NL - The Netherlands	2.6%	2.77
PL - Poland	5.4%	2.93
PT - Portugal	3.3%	2.52
RO - Romania	9.2%	2.27
SE - Sweden	1.3%	1.90
SI - Slovenia	4.4%	2.26
SK - Slovakia	7.6%	3.19
EU-28	3.8%	2.34

At the level of EU-28, salary under-reporting is considered to be most likely unacceptable. Analysing the variations in the tax morality across formal employees of EU countries, it is important to mention that countries such as Cyprus, Finland and Great Britain have highest tax morale, while Latvia, Slovakia, Lithuania, Czech Republic and Slovakia have the lowest tax morale.

The empirical results of Mann-Whitney test revealed that there is a highly statistically significant difference in the mean of tax morality of those admitting to receive envelope wages, revealing that the tax morality of those receiving envelope wages (3.17) is sensibly smaller compared with those not receiving such wages (2.29). Investigating the nature of the relationship between the prevalence of salary under-reporting and tax morality, the positive and statistically significant value of Spearman correlation coefficient (0.08) revealed that the countries with a high prevalence of salary under-reporting have also a lower tax morality.

Table 2. Expected sanctions, detection risk and tax morale by EU region

	EU	East-Central Europe	Nordic Nations	Southern Europe	Western Europe
Receiving envelope wages (%)	3%	6.5%	1.3%	3.8%	1.5%
Sanctions (%)					
Tax or social security contributions due	28.8%	36.7%	7.9%	25.8%	20%
Tax or social security contributions fine or prison	71.2%	63.3%	92.1%	74.2%	90%
Risk of detection (%)					
Small	54.3%	57.8%	89.5%	62.5%	37.1%
High	45.7%	42.2%	10.5%	37.5%	62.9%
Tax morale index(mean)	3.17	3.79	2.87	2.77	2.57
Not receiving envelope wages (%)	97%	93.5%	98.7%	96.2%	98.5%
Sanctions (%)					
Tax or social security contributions due	20.5%	31.3%	18.2%	22.1%	16.1%
Tax or social security contributions fine or prison	79.5%	68.7%	81.8%	77.9%	83.9%
Risk of detection (%)					
Small	56.8%	53.7%	73.7%	55.1%	57.1%
High	53.2%	46.3%	26.3%	44.9%	42.9%
Tax morale index(mean)	2.29	2.75	1.89	2.25	2.18

Regarding the proportion of employees receiving envelope wages, the differences across EU regions revealed the highest share in East and Central Europe (6.5%), compared with 4% for Southern Europe and almost 1.5% for Nordic Nations and Western Europe.

Given that East-Central Europe represent 22 per cent of the formal employees surveyed, and almost 45% of those admitted to receive envelope wages, this practice is heavily concentrated in this region.

Analysing the perceptions of those receiving envelope wages concerning the expected sanctions and detection risk it was revealed that people involved in such practices perceived the sanctions and the risk as being lower than those not receiving this kind of salary (28.8% of those receiving envelope wages consider that tax and social contributions will be due if caught compared with only 20.5% of those not receiving this kind of wages; regarding the risk of detection, 54.3% of those admitting to receive envelope wages consider the risk of detection to be rather small compared with 56.8% of those not involved in such activities. The tax morale (3.17) of those receiving envelope wages is smaller compared with those not involved in such activities (2.29). Also across EU regions, the results are quite similar; people receiving envelope wages tend to have a smaller risk of detection a lower level of expected sanctions and also a smaller level of tax morale compared with those not involved in such activities.

The empirical results of the null model proved that the multilevel is adequate, revealing that the log-odds of the employees' proportion receiving envelope wages in the last 12 months in an 'average' country is estimated to be $\beta_0 = -3.39$.

The between-country variance of the log-odds of receiving salary under-reporting in the last 12 months is estimated as 0.491 with a standard error of 0.168. The high value of Wald test revealed that there is a significant variation between countries in the prevalence of envelope wages.

Based on the value of between-country variance (0.491), the variance partition coefficient (VPC) was determined to be almost 13%, revealing that 13% of the envelope wage variance can be attributed to differences between countries.

Table 3 reports the results of random intercept models that only include individual-level variables for model I and also country level predictors for the validity of modernisation thesis (models II-VII).

The empirical results for the individual level variables pointed out that men are significantly more inclined to accept this type of payment compared with women and this fact is available also for younger employees, as well as those facing difficulties in paying the household bills and also less educated people. Regarding the business types and employee groups' impact on the decision of under-reporting salaries, smaller companies are more likely to underreport wages as well as unskilled and skilled manual workers and those travelling for their jobs.

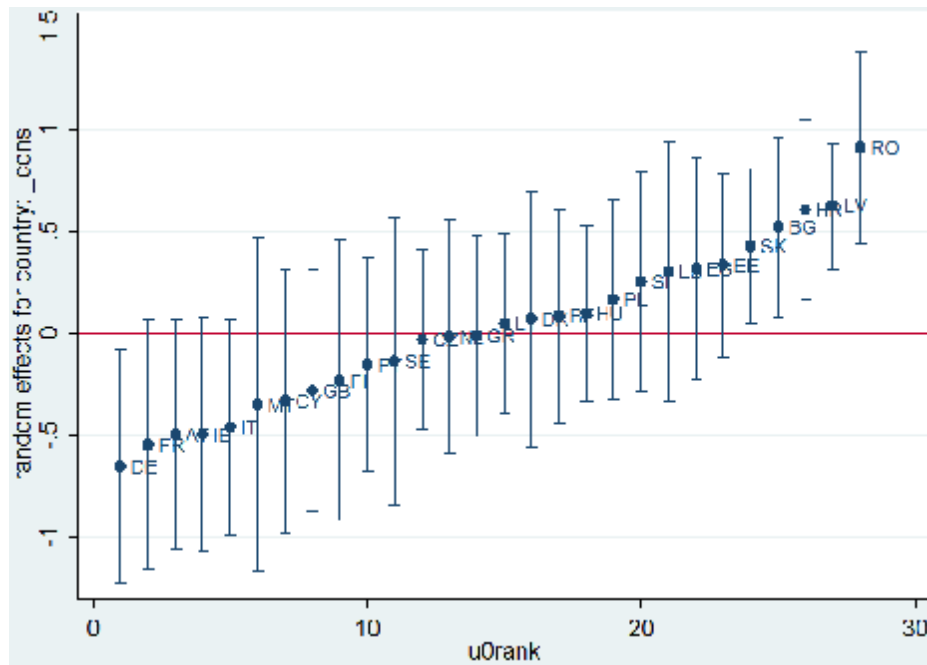
Analyzing how potential level of penalties could impact the prevalence of this practice, the empirical results infirmed any impact of the detection risk on the decision of under-reporting salaries. A higher level of perceived risk of detection do not exhibited any statistical impact on accepting this type pf payment.

However, a significant and relevant result have been obtained regarding the tax morality impact, employees with a lower tax morale are more likely to receive envelope wages. Thus, in tackling this type of practice, attitude towards compliance is fundamental.

Analyzing the results of the models MII-MVII, empirical findings pointed out that the socio-demographic characteristics preserved in all models. The association between tax morale and the incidence of envelope wage is strongly significant in all models. Figure 2 reports the residual level-2 country effects derived from the first model, proving the differences between countries.

Analysing the caterpillar plot, Germany, France and Austria are countries with the lowest probability of receiving envelope wages in the last 12 months (largest negative values of u_j) for which the confidence intervals do not overlap with 0, indicating that they have significantly lower probability of under-reporting than the EU average. At the upper end, Croatia, Latvia and Romania are the countries with intervals that do not overlap with 0 with the highest response probability (largest positive values of u_j), indicating a significantly higher probability of under-reporting compared with the EU-28 average.

Fig.1. Country-level effects taking into consideration individual-level variables (model I)



In order to test the modernization thesis and due to the fact that the country-level variables taken into analysis are strongly correlated (appendix A), six alternative models were estimated in order to provide alternative perspectives on the cross-national variations in the prevalence of under-reporting salaries. Analyzing the empirical results of all six alternative models, the statistical significance of individual characteristics obtained previously preserved also in all models, and also ***the modernization thesis was confirmed by all models.***

Furthermore, employees from countries with a lower level of development (lower level of GDP per capita) are more likely to accept receiving this type of money, the log odds of the incidence of such phenomenon decreases by 0.023 for a one unit increase in GDP per capita. In the third model, salary underreporting is higher among employees living in countries with lower qualities of government; a unit increase in the European Quality of Governance Index, the log odds of receiving envelope wages decreases by 0.38. The fourth model pointed out the influence of corruption perceptions on the propensity of salary under-reporting; a unit increase in the corruption perceptions index (representing a cleaner country) will decrease the log odds of receiving envelope wages decreases by 0.02.

The fifth model revealed that wage under-reporting is much higher in countries with higher level of development; a unit increase in the Human Development Index, the log odds of receiving envelope wages decreases by 10.31. The sixth model pointed out the impact of happy planet index on the decision of receiving envelope wages; a unit increase in HPI, the log odds of receiving envelope wages decreases by 0.04. The last model pointed out the influence of social progress index on the salary under-reporting; a unit increase in the SPI, will decrease the log odds of receiving envelope wages decreases by 0.07.

Therefore, the empirical results strongly and significantly supported the validation of modernization thesis, stipulating thus that in countries with lower levels of economic development, lower qualities of government, a high level of corruption, a lower level of happy planet and a lower level of social progress, salary under-reporting is more prevalent.

Table 3. Multilevel mixed-effects logistic regression of the prevalence of receiving envelope wages

	MODEL I		MODEL II		MODEL III		MODEL IV		MODEL V		MODEL VI		MODEL VII	
	β	$exp(\beta)^3$	β	$exp(\beta)$	β	$exp(\beta)$	β	$exp(\beta)$	β	$exp(\beta)$	β	$exp(\beta)$	β	$exp(\beta)$
GENDER(FEMALE)														
MEN	0.36***	1.43	0.36***	1.44	0.36***	1.44	0.36***	1.43	0.36***	1.44	0.36***	1.43	0.36***	1.43
AGE(MEAN CENTRED:41)	-0.02***	0.98	-0.02***	0.98	-0.0***	0.98	-0.02***	0.98	-0.02***	0.98	-0.02***	0.98	-0.02***	0.98
AGE WHEN STOPPED EDUCATION(1-15)														
16-19	0.45*	1.57	0.45*	1.57	0.45*	1.57	0.46*	1.59	0.51*	1.66	0.45*	1.56	0.42*	1.53
20+	0.14	1.15	0.16	1.17	0.18	1.20	0.19	1.21	0.24	1.27	0.14	1.15	0.15	1.16
OCCUPATION (EMPLOYED POSITION, AT DESK)														
EMPLOYED PROFESSIONAL GENERAL MANAGEMENT, DIRECTOR OR TOP MANAGEMENT	0.43	1.53	0.42	1.51	0.43	1.53	0.44	1.55	0.41	1.51	0.42	1.52	0.41	1.51
MIDDLE MANAGEMENT	0.07	1.08	0.09	1.09	0.12	1.13	0.11	1.12	0.09	1.10	0.05	1.05	0.11	1.12
EMPLOYED POSITION, TRAVELLING	0.76***	2.14	0.76***	2.15	0.78***	2.19	0.78***	2.19	0.78***	2.17	0.75***	2.12	0.77***	2.17
EMPLOYED POSITION, SERVICE JOB	0.31	1.36	0.32	1.38	0.36	1.43	0.35	1.42	0.34	1.40	0.31	1.36	0.34	1.40
SUPERVISOR	0.62	1.86	0.63*	1.89	0.66*	1.94	0.66*	1.93	0.65*	1.92	0.63*	1.89	0.65*	1.91

³Odds ratio.

	MODEL I		MODEL II		MODEL III		MODEL IV		MODEL V		MODEL VI		MODEL VII	
	β	$exp(\beta)^3$	β	$exp(\beta)$	β	$exp(\beta)$	β	$exp(\beta)$	β	$exp(\beta)$	β	$exp(\beta)$	β	$exp(\beta)$
EUROPEAN QUALITY OF GOVERNMENT INDEX (EQI)					-0.38***	0.682								
CORRUPTION PERCEPTION INDEX (CPI)							-0.02***	0.98						
HDI									-10.31***	0.00				
HAPPY PLANET INDEX (HPI)											-0.043***	0.96		
SOCIAL PROGRESS INDEX (SPI)													-0.072***	0.93
OBSERVATIONS	8994		8994		8994		8994		8994		8994		8994	
NO. OF GROUPS	28		28		28		28		28		28		28	
LOG LIKELIHOOD	-1231.80		-1229.71		-1226.16		-1228.56		-1223.73		-1229.57		-1224.98	
WALD CHI2	313.8***		322.28***		334.2***		324.2***		352.8***		320.41***		341.41***	
RANDOM PART IDENTITY: COUNTRY														
VARIANCE (CONSTANT)	0.234		0.151		0.097		0.147		0.046		0.185		0.072	
(INTERCEPT VARIANCE)	0.097		0.084		0.06		0.073		0.046		0.083		0.053	
(STANDARD ERROR VARIANCE AT COUNTRY LEVEL ⁴)	6.64%		4.38%		2.86%		4.27%		1.37%		5.31%		2.14%	
LR TEST	30.33 ***		8.45***		7.70***		15.14***		1.74 *		18.64***		3.96**	

Note: All coefficients are compared to the benchmark category, shown in brackets. All country level indicators were centred to the mean obtained using weighting scheme⁵. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

⁴Variance partition coefficient: measures the proportion of the total residual variance that is due to between-group variation.

⁵For the sample of 11025 respondents.

5. Conclusions

The informal sector has a great impact on both the labour force participation rate, and the employment rate, as those working in the informal sector appear to be inactive in the formal sector. For this reason, the percentage that shows us the participation rate/employment rate of the employees does not always match reality. Therefore, there are advantages and disadvantages to this form of work remuneration. The advantages, however, can be viewed in the short term and may lead to an increase of the level of wages for people in the informal sector. Consequently this should increase consumption which indirectly influences other sectors of activity, including the formal sector, etc. In contrast, the disadvantages of "envelope wages" consist of lost revenue for authorities, unfair competition among companies, workers with no welfare, sickness or accident insurance etc.

The paper aimed to investigate the validity of modernisation thesis according to which the incidence of envelope wages is less prevalent in more developed and modernised countries, using the EU 28 member states and the multilevel modelling approach. In order to do that, a two-level logistic regression model in which the first level includes individuals' characteristics and the second one quantifies some proxies for modernisation thesis.

While most studies provide evidence on the determinants of informality at the level of individual country or cross-country analysis, the present study has the advantage of analysing the prevalence of envelope wages using a special type of models controlling for both micro and macro information.

The envelope wage was defined as a registered formal employment agreement, and an extra, undeclared "envelope wage," via a verbal unwritten agreement.

In order to capture the incidence of envelope wages, the 2013 Special Eurobarometer survey was used.

The empirical results strongly and significantly supported the validity of the modernisation thesis, highlighting that in countries with higher levels of economic development, higher qualities of government, a low level of corruption, a higher level of happy planet as well as a higher level of social progress, salary under-reporting is less prevalent. Also, a lower prevalence of envelope wages was proved to be associated with a higher tax morale.

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