




Wage regulations and shadow economy in 28 European Countries

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Abstract

Motivation: The regulations are seen as the push factor into shadow sphere. The identification of determinants of shadow economy is crucial element mainly due to policy reasons. However, the analysis of the shadow economy is challenging mainly because of the identification problems. Actors from the shadow sphere hide this activity intently. Additionally determinants, consequences and size of phenomena are changing all the time and vary from country to country.

Aim: The main aim of the article is to analyse the relation of regulations on the labour market related to wages and shadow economy in 28 European countries in 2013 and 2016. Additionally, the author builds the ranking of countries to collate the selected regulations in European countries on the basis of created synthetic measure.

Results: The relation between regulations concerning wages and shadow economy on the low level was identified. The built ranking of countries in 2013 and 2016 was opened by Denmark and Sweden as least regulated countries in the group of 28 European states. Additionally, in 2013 Germany was classified to the group of not regulated elements included in synthetic measure.

Keywords: shadow economy; regulations; informal labour market

JEL: E26; G38; J46

1. Introduction

Shadow economy as well as undeclared work are the phenomenon interdependent with official economy and inseparably connected to each country (Jensen et al., 2009, p. 8).

Shadow economy is understood as all market-based legal production of goods and services that are concealed from public authorities. Undeclared work includes activities performed in the hidden economy and analysed through labour market perspective. In the article, shadow economy is defined as activities that are lawful in their nature but not declared to the public authorities to avoid: payments of taxes, social security contributions, labour market standards, administrative procedures (Buehn & Schneider, 2009, p. 2; European Commission, 1998, p. 4; Williams, 2008, p. 364).

Real economic actions are far more complex than a simple categorization as formal or informal (Godfrey, 2011, p. 233). Official activities as well as shadow ones may be characterized as heterogeneous and intermingled. In practice, the possibility of distinction between formal and informal sphere is not easy. Williams (2008, p. 364) questions clear duality among formal and informal work and highlights intertwining of spheres. In first hypothetical situation, there is no official contract between parties and there is also an option that declared employees receive envelope wages additionally to the official, declared salaries. In the first case, the income from whole work is not declared to state authorities and in the second, only part of acquired income is announced. Regulations affecting level of wages play an interesting role. On one hand, sustain the barrier to work in formal economy but on the other, may encourage to disguise the part of activity, such as night work, weekly rest day or overtime.

According to the voluntary school, actors consider costs and benefits of informality versus to formality (Loayza, 1999, p. 4). Participants of informal sector compare the pros and cons and voluntarily take decisions about activity in informal sector. The voluntarist perspective highlights the role of regulations and taxation in pushing to informal sector (Chen, 2012, p. 5). Maloney (2004, p. 1173) admits, that benefits provision acquired from formal sector is frequently inefficient and of poor quality. That in consequence, increases the attractiveness of informal work.

2. Literature review

The willingness of avoiding legal labour regulations appears in the group of reasons of shadow economy (Alanon & Gomez-Antonio, 2005, p. 1014; Buehn & Schneider, 2009, p. 2; Dell’Anno & Solomon, 2006, p. 2; Medina & Schneider, 2019, p. 6; Portes, 2010, pp. 136–148; Zagorsek et al., 2009, p. 39). Excessive regulations push actors into shadow sphere (Betcherman, 2019, p. 5; Fleming et al., 2000, p. 394; Loayza, 1999, p. 2; Zoido-Lobaton et al., 1999). In this situation, we can observe that ‘order creates disorder’ (Lomnitz, 1988, pp. 42–43).

Minimum wages, maximum working hours, duration of contract, union density, safety standards, paid vacations, sick leave and health insurance are included in the literature as labour market regulations which affect informal work (Buehn & Schneider, 2009, p. 2; Eichhorst et al., 2008, p. 4; Loayza, 1999, p. 6). Aspects connected to taxes as taxes laid on labour, tax complexity or tax morale are also analysed in the literature as determinants of shadow activities (Estrin & Mickiewicz, 2012, p. 564; Fleming et al., 2000, pp. 394–395).

In the theoretical model considering the allocation of labour between official and unofficial sectors of the economy built by Johnson et al. (1997, pp. 185–190) include regulations as determinants of shadow economy. Authors confirmed the negative relation between regulations and unofficial economy by theoretical model which additionally found support with data set. In publication revised in 1999, the association of overregulation with more unofficial activity across countries was confirmed (Friedman et al., 2000, pp. 459–493). However, authors highlight the negative role of overregulation, not regulation itself. Therefore, question arises about the desirable level of regulations.

Loayza (1994, p. 2) argues that regulations in theory are designed to improve workers situation. They should balance the need to protect rights of workers and creation of productive employment opportunities (Kuddo, 2018, p. 6). According to Botero et al. (2004, p. 1343) prevention of discrimination in the labour market and endowment workers with the basic rights are first of four forms of protecting workers through regulations. The example of this form is minimum wage. Regulations of employment relationships such as restriction of hours of work are the second form. Empowerment of labour union and social insurance are the remaining forms of regulations. The protection of workers by government intervention is effective only when severe consequences are not observed. The growth of unofficial economy as consequence is highlighted.

In practise, actors who perform work in informal sector perceive the benefits of doing so to outweigh the costs of going formal (Djankov et al., 2003, p. 63, 65–72). What is essential, the choice of informal sector is the activity that breaks the rules. In other words, this behaviour should not be promoted as desirable (Williams & Windebank, 1998, p. 152).

3. Methods

The taxonomy analysis was performed. Wage regulations as rules affecting the wage level were treated as a multi-dimensional space which is characterized by set of the potential diagnostic variables. In the paper, the effect of labour market regulations affecting wages, namely: monthly minimum wage, premium for night work, premium for work on weekly rest day, premium for overtime work, standard workday and maximum working days per week are considered. The set of potential diagnostic variables were chosen on the basis of merits and formal criteria concerning regulations. To the group of regulations affecting the level of wages would also be included taxes, but they are involved to the estimation

of shadow economy (Kelmanson et al., 2019, p. 16; Medina & Schneider, 2019, p. 10; Schneider, 2016, p. 7). That fact excludes the taxes sphere from analysis of relation between regulations and shadow economy. The data were obtained from Eurostat (2020) and Doing Business (2020) database. 28 European Union countries as objects were selected. The analysis is done mainly for 2016 but in order to have a possibility of comparing the levels of the synthetic measure 2013 is included. Despite the fact that on 1 February 2020 the United Kingdom is no longer part of the European Union to the analysis was included because in chosen years it was the part of community.

In next step, the diagnostic set of variables was analysed in order to keep low level of similarity and low correlation among set of data conditions (variability coefficient which exceed the threshold value of 10%, the Pearson correlation coefficient not more than 0.8) (Malina, 2000, p. 127; Zeliaś, 2000, p. 37). Standard workday and maximum working days per week were excluded from the diagnostic group because variability coefficient does not exceed the threshold value of 10% (4.2% and 5.9% respectively in 2013 and 2016).

After specification of final diagnostic variables, the normalization process was applied (Kukuła, 2000, pp. 224–227). The following formula of zero unitarization method to all variables which were stimulants was used:

$$z_{ij} = \frac{y_{ij} - \min_i \{y_{ij}\}}{\max_i \{y_{ij}\} - \min_i \{y_{ij}\}}, \quad (1)$$

where y_{ij} is the value of analysed j -variable ($j=1, 2, 3, 4$) in i -country ($i=1, 2, \dots, 28$).

In the next step, the synthetic measure was achieved by calculation of mean of final set of diagnostic variables for each country (i -object) (Malina & Wanat, 2000, pp. 134–135). For selected years countries were ordered by synthetic measure of regulations from smallest to largest.

Additionally, to measure the dependence between the synthetic measure of regulations and informal employment the Pearson's correlation coefficient was applied. Assumed the p -value (significance level) of the correlation on the 10% level. Because of the challenge of observation, the sphere which is intentionally hidden, different estimations of shadow economy were used (table 1). First estimation performed by Schneider (2016), second one by Medina & Schneider (2019) and third one by Kelmanson et al. (2019).

4. Results

The ranking of countries ordered by the freest from wage regulations to the strictly regulated in 2016 was opened by Denmark and Sweden (table 2). Denmark and Sweden were located at first two positions also in 2015 and 2017. These countries did not regulate analysed spheres in synthetic measure. Moreover, in 2013 to the group of not regulated analysed spheres belonged Germany.

In 2016 Denmark, Sweden and additionally Belgium, Italy, Spain, Croatia and Germany were classified to the group of countries for which, more than 75% of countries noted higher value of synthetic measure. This group may be characterized as relatively not regulated. However, Slovenia, Malta, Austria, Latvia, Poland, Romania and Lithuania noted the highest synthetic measure in 2016, it is more than 75% of countries noted lower value of measure. Value around median was identified in France and Bulgaria in 2016. In 2016 as well as in 2013 Lithuania ended the ranking with most regulated areas included into synthetic measure (table 2).

The most spectacular changes in ranking within 2013 and 2016 were observed in: Hungary (+6 positions) and Germany (–5 positions). Hungary noticed a huge change, moved from the one before last place to 21st in 2016, it means that in the components of synthetic measure, weakening of regulations were observed (table 2). According to Act CII of 2014 on amendments to the Labour Code the rules of working on Sundays were changed and came into force in 2015 what took effect in promotion (LABREF, 2020). Germany from second position to the seventh one moved within three years, it means that range of regulations were wider in 2016. The drop in the ranking was the effect of introduction of statutory minimum wage as one of the most significant institutional change in Germany after ‘Hartz’ reforms in 2003–2005 (Bonin et al., 2020, p. 1).

The results of the correlation between synthetic measure of regulations and shadow economy pointed that more regulated analysed spheres, the wider range of shadow economy (table 3). In other words, more regulations mean more identified benefits of informality. All relationships were significant on the presupposed value ($p=10\%$). Weak positive levels of correlation were observed in 2013 and 2016 — factors range between 0.3–0.4. In other words, only the slight difference in relation between regulations and different methods of calculated shadow economy was noticed. In case of calculation of shadow economy made by Kelmanson et al. (2019), the relationship amounted to 0.3349 in 2013 and 0.3474 in 2016. In case of estimations performed by Medina & Schneider (2019), connection between two areas was quantified on 0.3609 in 2013 and 0.3387 in 2016. However, taking into consideration calculation of Schneider (2016), the relationship between synthetic measure and shadow economy was higher but still on the low level, because amounted to 0.4157 and 0.4425 respectively (table 3).

5. Conclusion

The question about the way to reduce the attractiveness of the shadow economy is still actual mainly because of the policy reasons. The positive relation between wage regulations and shadow economy was identified. What is interesting, that even the change of one regulation affects the overall picture and in consequence change the position of the country in the built ranking. The change of one ele-

ment affects also pros and cons of activity in the informal sector. What in fact influence the level of shadow economy.

The main challenge for policymakers is to find the level of regulations which preserve workers and do not push into shadow sphere at the same time. Other factors creating the circumstances in which actors take decisions also play an important role. To the group of other regulations not included into synthetic measure active and passive labour market programmes, social security payments would be mentioned (Eichhorst et al., 2008, pp. 4–5; Pilc, 2015, pp. 99–100; Ruge, 2010, pp. 515–520). The examples of factors influencing the level of shadow economy, but not directly connected to the labour market are social structures, level of development, trust in public authorities, acceptance of risk, extent of control rights, corruption and public acceptance of informality (Carter 1984, pp. 211–212; Estrin & Mickiewicz, 2012, p. 564; Oviedo et al., 2009, p. 20). All these elements create environment in which actors evaluate benefits and costs of activities in official and shadow sphere but are difficult to include in the analysis because of the availability of data.

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Appendix

Table 1.
Shadow economy in 28 European countries in 2013 and 2016

Country	2013			2016		
	Shadow economy (Kelmanson et al., 2019)	Shadow economy (Medina & Schneider, 2019)	Shadow economy (Schneider, 2016)	Shadow economy (Kelmanson et al., 2019)	Shadow economy (Medina & Schneider, 2019)	Shadow economy (Schneider, 2016)
Austria	9.40	7.00	7.50	9.60	7.40	7.80
Belgium	21.80	16.60	16.40	22.10	16.90	16.10
Bulgaria	38.10	24.80	31.20	37.80	24.00	30.20
Croatia	36.70	24.00	28.40	35.00	23.60	27.10
Cyprus	32.00	27.00	25.20	30.40	26.70	24.20
Czech Republic	18.00	12.70	15.50	19.40	12.30	14.90
Denmark	18.40	11.90	13.00	18.40	12.10	11.60
Estonia	33.40	19.60	27.60	34.60	20.90	25.40
Finland	19.30	11.10	13.00	20.00	11.40	12.00
France	14.90	11.60	9.90	15.00	12.20	12.60
Germany	15.30	9.90	12.10	16.70	10.70	10.80
Greece	30.40	23.70	23.60	30.20	25.40	22.00
Hungary	26.00	19.90	22.10	26.90	20.50	22.20
Ireland	16.00	11.70	12.20	15.80	9.70	10.80
Italy	26.90	20.00	21.10	27.30	20.60	20.20
Latvia	29.70	18.40	25.50	29.60	18.80	22.90
Lithuania	35.00	20.50	28.00	35.30	21.00	24.90
Luxembourg	9.70	8.70	8.00	9.70	8.70	8.40
Malta	22.60*	22.60	24.30	20.10*	20.10	24.00
Netherlands	13.50	9.00	9.10	13.30	9.10	8.80
Poland	26.70	19.90	23.80	27.80	20.40	23.00
Portugal	24.60	17.50	19.00	24.50	17.10	17.20
Romania	34.90	23.70	28.40	34.80	23.80	27.60
Slovak Republic	19.00	12.90	15.00	19.50	13.20	13.70
Slovenia	29.10	20.80	23.10	28.00	20.20	23.10
Spain	20.50	21.10	18.60	20.30	21.30	17.90
Sweden	19.60	10.20	13.90	18.80	10.90	12.60
United Kingdom	12.60	9.50	9.70	12.90	9.70	9.00

Notes:

* Because of missing value the level acquired from Schneider (2016) research.

Source: Kelmanson et al. (2019, pp. 25–26), Medina & Schneider (2019, pp. 38–49), Schneider (2016, p. 5, 8).



Table 2.
Ranking of 28 European countries in 2013 and 2016

No. in 2013	Country	Synthetic measure in 2013	No. in 2016	Country	Synthetic measure in 2016
1	Denmark	0.0000	1	Denmark	0.0000
2	Germany	0.0000	2	Sweden	0.0000
3	Sweden	0.0000	3	Belgium	0.1250
4	Belgium	0.1250	4	Italy	0.1685
5	Spain	0.1668	5	Spain	0.1941
6	Italy	0.1685	6	Croatia	0.1998
7	Croatia	0.1770	7	Germany	0.2028
8	United Kingdom	0.1911	8	Netherlands	0.2137
9	Ireland	0.2067	9	United Kingdom	0.2187
10	Netherlands	0.2111	10	Ireland	0.2207
11	Slovak Republic	0.2420	11	Czech Republic	0.3013
12	Czech Republic	0.2834	12	Slovak Republic	0.3290
13	Greece	0.3495	13	Greece	0.3495
14	Bulgaria	0.3520	14	France	0.3696
15	France	0.3735	15	Bulgaria	0.3764
16	Estonia	0.3866	16	Estonia	0.4101
17	Finland	0.4049	17	Finland	0.4310
18	Portugal	0.4128	18	Cyprus	0.5000
19	Cyprus	0.5000	19	Luxembourg	0.5056
20	Luxembourg	0.5070	20	Portugal	0.5265
21	Slovenia	0.5750	21	Hungary	0.5301
22	Poland	0.5905	22	Slovenia	0.5725
23	Malta	0.6002	23	Malta	0.6006
24	Romania	0.6116	24	Austria	0.6250
25	Austria	0.6250	25	Latvia	0.6652
26	Latvia	0.6413	26	Poland	0.6792
27	Hungary	0.6503	27	Romania	0.7415
28	Lithuania	0.7916	28	Lithuania	0.8116
quartile 1		0.1876	quartile 1		0.2110
quartile 2 (median)		0.3627	quartile 2 (median)		0.3730
quartile 3		0.5789	quartile 3		0.5407
quartile 4		0.7916	quartile 4		0.8116

Source: Own preparation based on Doing Business (2020), Eurostat (2020).



Table 3.
The Pearson's correlation coefficient between synthetic measure of wage regulations and shadow economy in 2013 and 2016

Year	Shadow economy (Kelmanson et al., 2019)	Shadow economy (Medina & Schneider, 2019)	Shadow economy (Schneider, 2016)
2013	$r=0.3349$ ($p=0.8150$)	$r=0.3609$ ($p=0.0592$)	$r=0.4157$ ($p=0.0278$)
2016	$r=0.3474$ ($p=0.0700$)	$r=0.3387$ ($p=0.0779$)	$r=0.4425$ ($p=0.0184$)

Source: Own preparation based on Doing Business (2020), Eurostat (2020), Kelmanson et al. (2019, pp. 25–26), Medina & Schneider (2019, pp. 38–49), Schneider (2016, p. 5, 8).

