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THE INFORMAL EMPLOYMENT – FACTORS AND PUBLIC POLICIES FOR ITS LIMITATION

The purpose of this study is to outline the perspective public policies to limit informal employment. They are based on a study of its influential factors through The Doing Business international rating in the European Union and the EU candidate countries. For the group of “old” European countries, the priority measures are to improve the contracting procedures in terms of their numbers and time-consuming. For the group of new EU members, such measures are the reductions of the number of procedures to obtain electricity. For EU candidate countries, key steps to improve the regulation of informal employment include the raising legal awareness, reducing specific types of taxes and fees and increasing credit opportunities for business and people.

JEL: E26; E69; J21; J68

Introduction

Regulation of the European labour market is not rigid since each country's government implements its own employment programs and models and has responsibility for it. But in accordance with the yearly Employment Guidelines for the employment policies of the Member States has presented common priorities and targets for the national employment policies, in particular to increasing the employment rate, creating more job opportunities, reducing labour market disparities, supporting training, skills development, and

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entrepreneurship, fighting undeclared work and fostering the transition towards open-ended forms of employment, etc. (EC, 2018). The guidelines were first adopted together ('integrated package') in 2010, underpinning the Europe 2020 strategy. The integrated guidelines remained stable until 2014. Revised integrated guidelines were adopted in 2015. In 2018 the employment guidelines were aligned with the principles of the European Pillar of Social Rights proclaimed in November 2017 by the European Parliament, the Council and the Commission, with a view to drive reforms at a national level and to serve as a compass for a renewed process of convergence across Europe and remained unchanged in 2019 (EC, 2020a; EC, 2020b). Of course, European countries are characterized by different employment problems that need to be addressed. Western European countries traditionally have a higher employment rate and a higher level of labour market infrastructure development. In turn, Central European countries have a fairly balanced and competitive labour market. The countries of Eastern Europe, mainly post-socialist countries, have a lower employment rate, relatively weak institutional development of national labour markets, and a significant "shadowing" of social and labour relations. This issue is also relevant for Ukraine, as the informal employment is quite significant in this country. In addition to the positive changes in the employment area in all European countries, there is such a negative phenomenon as the informal employment, which leads to deterioration of the qualitative characteristics of the economically active population, negates the potential benefits from the implementation of national and regional programs and is a threat to economic and social safety.

The shift in the focus of researchers to the area of informal employment in the economy happened in the process of rethinking of its activities. These investigations by management scholars have been not only because of the significant impact of informal firms on the overall world economy, but also because of the dominant role informal firms play in the economy of many individual nations (Bruton et al., 2012, p. 2). Thai and Turkina have emphasized that 'Understanding the determinants of formal and informal entrepreneurship can be beneficial for managers. Both formal firm and informal firms compete in the market. Since informal firms operate outside the regulatory system, their competition dynamics can be different from formal firms and their activities are not easily traceable. Moreover, a company's supply chain may be made up of both formal firms and informal firms' (Thai et al., 2014, pp. 491-492). Martha Alter Chen has justified definition, "The informal economy is comprised of all forms of 'informal employment' – that is, employment without labour or social protection – both inside and outside informal enterprises, including both self-employment in small unregistered enterprises and wage employment in unprotected jobs" (Chen, 2007).

There is no common terminology in the scientific world to describe the phenomenon of informal employment. Scholars and governments from different countries use different terms to describe informal employment, and there are situations where the same terms have different meanings.

According to the Recommendation of ILO the term "Informal economy" refers to all economic activities by workers and economic units that are – in law or in practice – not covered or insufficiently covered by formal arrangements; and does not cover illicit activities, in particular the provision of services or the production, sale, possession or use of goods forbidden by law, including the illicit production and trafficking of drugs, the illicit manufacturing of and trafficking in firearms, trafficking in persons, and money laundering,

as defined in the relevant international treaties” (ILO, 2015). ILO considers undeclared labour in the context of a broader concept of the informal economy. In 1998, the European Commission introduced the following concept: ‘Undeclared work is therefore defined here as any paid activities that are lawful as regards their nature but not declared to the public authorities, taking into account differences in the regulatory system of Member States’ (EC, 1998; EC, 2007). However, the ILO classification of the informal economy does not cover all types of undeclared employment in the EU. Therefore, a more precise definition of the components of undeclared activities may differ in each country, taking into account the particularities of the law. However, in practice, the meaning of “undeclared labour” in developed countries is mostly the same. Informal employment comprises the total number of informal jobs whether carried out in the formal sector enterprises, informal sector enterprises, or households, during a given reference period. According to documents of the International Labour Organization, ‘Informal employment includes the following types of jobs:

- own-account workers employed in their own informal sector enterprises;
- employers employed in their own informal sector enterprises;
- contributing family workers, irrespective of whether they work in formal or informal sector enterprises;
- members of informal producers’ cooperatives;
- employees holding informal jobs in formal sector enterprises, informal sector enterprises, or as paid domestic workers employed by households;
- own-account workers engaged in the production of goods exclusively for own final use by their household’ (ILO, 2003).

Consequently, the main sign of informal employment is the fact of unregistered employment relationships in the government agencies or non-compliance with legal requirements for the formulation of employment contracts. Therefore, in this research, we used the concept of informal employment (ILO documents), which covers undeclared workers and employees not covered by labour law.

1. Literature Review on Factors That Affect Informal Employment

The research of the factors that affect informal employment is a difficult task, as a significant number of factors may be not included in official statistics or be immeasurable.

Elbahnasawy N. G., Ellis M. A. and Adom A. A. have investigated the political environment that causes governments to choose policies that allow the informal economy to develop. The authors have argued that the political environment affects the government’s incentive to invest in the efficiency of tax collection, and therefore the ability of the government to detect informal production. The results of the research have suggested that efforts to reduce informal production should shift from an emphasis on the proximate causes to political reforms. However, the results have implied that democratic reforms that change the authority pattern

from autocracy to democracy can increase informal economic activity if it increases political instability (Elbahnasawy, et al., 2016, p. 37).

Dibyendu M. and Chandril B. have shown that a democratic government prefers to weaken the enforcement level a bit to keep taxation, provides the level of security of property rights, the integrity of contracts and checks of corruptions can be chosen by a state to regulate informal employment in the economic system. (Dibyendu et al., 2020, p. 266).

B. D. Mathias, Sean Lux, T. Russell Crook, Autry C. and Zaretski R. have leveraged 13,670 responses from entrepreneurs distributed across 59 countries and provided evidence that two constraining institutions, economic and financial regulations lead to more obstacles presented by informal activity (Mathias et al., 2015, p. 253).

Igudia E., Ackrill R., Coleman S. and Dobson C. have found the factors responsible for the origin and expansion of the Nigerian informal economy to include: unemployment, a need to be autonomous/self-employed, corruption of government officials/agencies, participants' desire to pay less tax, and participants' need to survive (Igudia et al., 2016, p. 175).

Researchers have argued that firms choose to be informal or formal partly driven by industry conditions. Based on a large data set of Brazilian businesses, they gave found that firm informality is positively associated with dynamism, yet negatively associated with munificence and concentration (Siqueira et al., 2016, p. 179).

Horvath J. has recognized the importance of a large informal economy and interest rate fluctuations for business cycles in emerging countries and documented a positive relationship between the relative volatility of consumption to output and the size of the informal economy, and countercyclical interest rates in emerging countries (Horvath, 2018, p. 110).

Some researchers have tended to view informality as a forced decision of entrepreneurs by the lack of formal economy employment opportunities (Perry et al., 2007), or by the distrust of the government policy and of various macroeconomic institutions (Maloney, 2004; Rosser et al., 2000). Other researchers have offered an alternative motivation for informality which asserts that participation in societal institutions may be essential to growth, and therefore at least partially voluntary. This model based existence of the informal sector solely on the institutional distortions, market failures, or excessive government regulation (Levenson et al., 1998). In our opinion, the main reasons of informal employment are: lack of knowledge about the procedures of labour relations registration, tax avoidance, social security contributions, preservation of the right to get social benefits, difficulties with access to the ordinary labour market, unemployment, inconsistency of legislation with the realities of the labour market, bureaucracy, not tight enough sanctions.

The literature review has shown that, in spite of a certain amount of scientific research, it is important to identify a set of factors that can affect the informal employment rate to improve the public policy regard to limiting informal employment and reducing its the negative influence on the economy. There are many studies regarding the factors that affect the informal employment rate and the specificities of influence on these factors. But most studies use sociological tools, respectively, they have drawbacks in the non-systematic conduct and complexity of use, when comparing results across countries through different methodologies for collecting and processing information. It is advisable to use the results obtained through

sociological researches to form a common understanding of the problems of informal employment, its scope and peculiarities of manifestation. However, these results are not sufficient to make valid conclusions and take measures to reduce it. Some other investigations are based on official statistics from different countries. The results obtained through formal surveys on informal employment can be used to formulate specific directions of regional or national policy, but due to the limited range of factors analyzed, they may not account the complex impact on the informal employment rate. Our empirical approach is based on the study of ILO and EU regulations, the results of statistical and sociological surveys of undeclared labour in EU and EU Member States, and the experience of labour inspections in EU countries to overcome this phenomenon.

2. Data and Methodology

Geographically, our study included the European Union and EU candidate countries. The data on Informal employment, calculated by the International Labour Organization on household survey micro datasets (the last available date is 2012). This data was selected to avoid incorrect comparisons due to the different approaches of the national statistical services to the assessment of informal employment. ILO estimates of informal employment are based on common operational criteria. As a result, data presented are comparable across countries and regions, but they might differ from national statistics (ILO, 2020).

The framework of measuring informal employment had been developed by the ILO to support the discussion on decent work and the informal economy during the Seventeenth International Conference of Labour Statisticians Geneva, 2002. “It had been tested successfully by a number of countries. It disaggregates total employment (in terms of jobs) according to the type of production unit (formal sector enterprises, informal sector enterprises, households) and by status in employment and the formal versus informal nature of the job. In respect of each status-in-employment category, the ILO had made a proposal for defining informal jobs. Some concern was expressed regarding the use of the term “informal employment”, which is considered rather vague and which might lead to confusion with the term “employment in the informal sector”. Clarification was sought regarding the statistical treatment of illegal workers engaged in activities, which, as such, are not illegal. It was confirmed that such workers would be considered as having informal jobs in accordance with draft guidelines. Subject to the amendments agreed upon, the Conference endorsed the guidelines unanimously’ (ILO, 2003).

Data informal employment in EU countries were selected from official publications made by the ILO (2018) and by the European Commission (2019), data of informal employment in EU candidate countries and Ukraine are obtained from the official ILO website (ILOSTAT, 2020).

In the course of this research, we studied the correlation analysis of the cross-sectional 2012 data. A correlational analysis includes determining the relationship between variables. Consequently, data collected in a cross-sectional can be analyzed using correlational approaches for establishing a relationship between variables. The correlation coefficient has calculated using MS Excel 2016. The equation for the correlation coefficient is as follows:

$$\text{Correl}(x, y) = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sqrt{\sum(x - \bar{x})^2 \sum(y - \bar{y})^2}}$$

where \bar{x} and \bar{y} are the mean of the samples AVERAGE (array1) and AVERAGE (array2) (EE, 2020; ET, 2020; S, 2020).

The correlation analysis provides an output table, a correlation matrix, that shows the CORREL value applied to each possible pair of dimension variables. Correlation analysis has made it possible to establish whether datasets are associated in magnitude, i.e. large values from one dataset are associated with large values of another set (positive correlation), or vice versa, small values of one set are associated with large values of another (negative correlation), or the data of the two ranges are not related in any way (zero correlation).

The correlation analyze is especially useful when more than two dimension variables are used for N array as the cross-sectional data. Cross-sectional data is a type of data collected by observing many subjects at one point or period of time. Analysis of cross-sectional data consists of comparing the differences among selected subjects (Brady et al., 2006; Gujarati et al., 2009). P. M. Robinson has provided a general class of tests for correlation in time series, spatial, spatiotemporal and cross-sectional data. A broad class of computationally simple tests is justified in the research (Robinson, 2008, p. 13). Chen Y. has used in his research Pearson's correlation coefficient based on the global cross-correlation coefficient. As an example, the methodology is applied to the relationships between China's urbanization and economic development to illustrate how to model spatial cross-correlation phenomena (Chen, 2015). Therefore, a cross-sectional data design involves collecting data from a varying characteristic at the same time. Moreover, the correlation analysis has been chosen to determine the impact of various factors on the informal employment rate.

The connection between variables (on the scale of Chaddock) can be very high, high, significant, moderate and weak. Connections determine on the size of coefficient of correlation that can take on values from, -1 to +1 inclusive. We only considered high, significant, and moderate correlations (on the scale of Chaddock) when interpreting the correlations obtained. There were no weak and moderate correlations in the study. We regarded a correlation of 0.65 as significant in our research where there may be a greater contribution from complicating factors.

3. Results

We have formulated the following hypothesis: there is a certain correlation between informal employment rates and The Doing Business Rating due to the fact that this international rating includes a significant number of indicators of both quantitative and qualitative states of the economy, respectively, determine a sufficiently justified comparison of positions of different countries.

Informal employment rates are main to assess the quality of employment and its regulation and are relevant to both developing and developed countries. ILOSTAT has presented information from official national sources on various indicators. The ILO has developed a

harmonized series on the informal sector and informal employment.⁵ This is very important given the lack of international comparability that emerges from the differences of the national concepts.

The data on informal employment in EU countries and EU candidate countries indicates a significant heterogeneity in the informal employment rate in the studied countries. Therefore, it is possible to conclude that the historical and cultural factors of the country's development significantly influence this indicator. These are the countries exhibiting relatively low informal employment rate: Luxembourg (1,2%), Slovenia (5%), Finland (6,3%), Estonia (6,9%), and, accordingly, these are the countries with a sufficiently higher informal employment rate – Albania (66,6%), Turkey (35,3%), Bosnia and Herzegovina (33,7%), Greece (32,8%), Romania (28,9%) and Spain (27,3%) (ILO, 2020; ILOSTAT, 2020) (Figure 1).

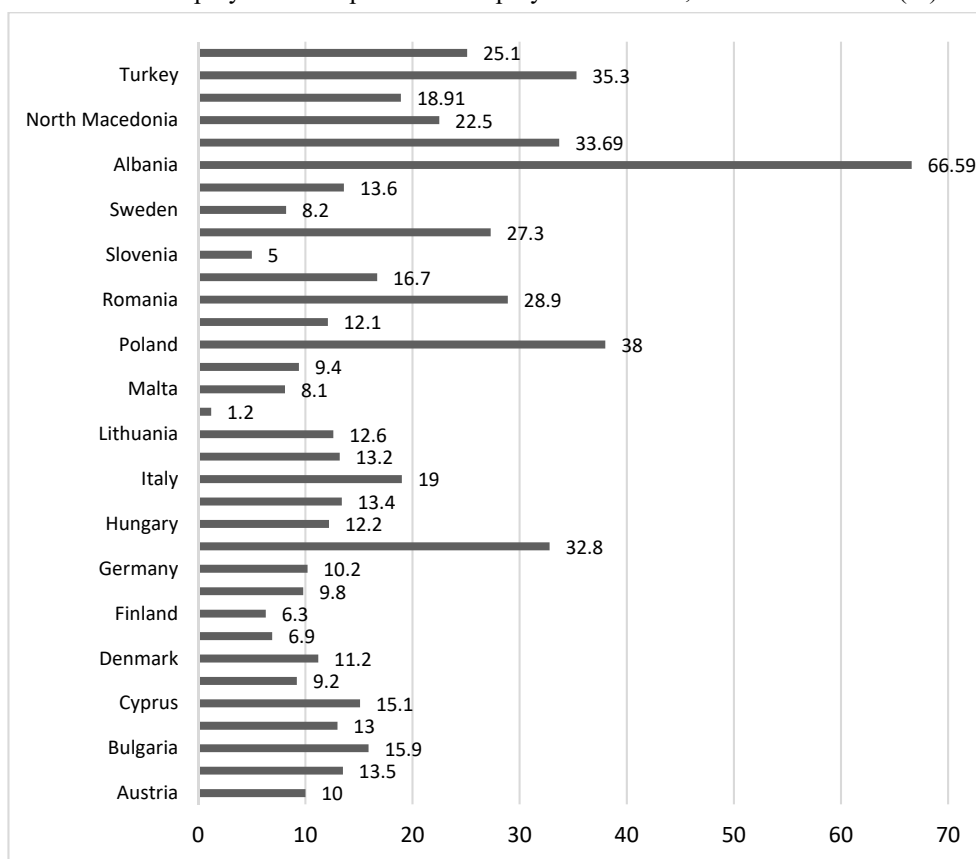
The Doing Business Rating is one of the main indicators of business development in the country and one of the most authoritative international ratings. The informal employment reduction program requires regulatory actions by the state, respectively, The Doing Business rating provides objective measures of business regulations.⁶ Thus, these regulations could foster or press on the informal employment. In addition, the estimation of the factors that affect informal employment is a difficult task, since many factors lie beyond the available and official statistics, so we suppose that using this rating probably partially solves this problem.

According to the methodology, the rate the ease of Doing Business in the country is measured on a scale from 0 to 100, where 0 – this is the worst result, and 100 – the best. The countries (among EU countries and EU candidate countries) exhibiting relatively high rate the Ease of Doing Business in 2012 are: Denmark (84.6), United Kingdom (83.7), Sweden (82.2), Finland (81.7), Germany (79.4), Ireland (79.8), Estonia (78), Austria (75.9) and, accordingly, these are the countries with a sufficiently low rate the Ease of Doing Business – Bosnia and Herzegovina (58.4), Greece (60.1), Albania (60.9), Malta (62.7) and Croatia (64.7). The lowest rate the Ease of Doing Business among countries, which have been studied, was in Ukraine in 2012 (45.5) (WB, 2012).

⁵ ILOSTAT information of informal employment data has featured statistics on the share of informal employment in total employment and the share of employment outside the formal sector, disaggregated by sex and presented separately for the total economy and for non-agricultural activities. The harmonized series on informality has derived by the Department of Statistics from processing national household survey microdata files using a consistent navigational path. The process has involved identifying the production unit (formal sector, informal sector or household) and the nature of the job (formal job or informal job) of each employed person in their main job in order to derive the final indicators (ILOSTAT, 2020).

⁶ By gathering and analyzing comprehensive quantitative data to compare business regulation environments across economies and over time, The Doing Business encourages economies to compete towards more efficient regulation; offers measurable benchmarks for reform; and serves as a resource for academics, journalists, private sector researchers and others interested in the business climate of each economy. The methodology for rating and for its estimation is described on the official website of The Doing Business (WB, 2020a).

Figure 1
Informal employment as a percent of employment in 2012, harmonized series (%)



Source: ILO, 2020; ILOSTAT, 2020.

The next stage of our study was to identify the correlation between informal employment rates in 2012 and the components of The Doing Business Rating in 2012. The description of the used correlation analysis is in the Data and Methodology section. We have looked for the dependence of the informal employment rate at the same time on the components of The Doing Business Rating in ungrouped EU countries and EU candidate countries. The correlation analysis has not given positive results. We attribute the fallacy of this hypothesis to the fact that the performance of EU countries and EU candidate countries is very different. That is why, in the course of further research, we have grouped the indicators by the logic of the EU's historic enlargement:

- Group № 1: EU-15 countries (EU enlargement till 1995) – Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal,

Spain, Sweden, United Kingdom (the latest official informal employment data is from 2012, so the UK's exit from the EU is ignored).

- Group № 2: countries that joined the EU from 1995 to 2012 – Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia.
- Group № 3: EU candidate countries – Croatia (the latest official informal employment data is from 2012, so the country's accession to the EU in 2013 is ignored), Albania, Bosnia and Herzegovina, North Macedonia, Serbia, Turkey. Ukraine is also considered due to the perspective of joining the pan-European employment system and to the necessity of addressing the low-productivity of solving the informal employment problem.

Table 1
Correlation matrix between informal employment rate and components of The Doing Business rating for the Group №1

Reference area	Informal employment as a percent of employment (%)	Ease of doing business score (DB10-14 methodology)	Components of the rating									
			Starting a Business	Dealing with Construction Permits (DB06-15 methodology)	Getting Electricity (DB06-15 methodology)	Registering Property (DB05-15 methodology)	Getting Credit (DB05-14 methodology)	Protecting Minority Investors (DB06-14 methodology)	Paying Taxes (DB06-16 methodology)	Trading across Borders (DB06-15 methodology)	Enforcing Contracts (DB04-15 methodology)	Resolving Insolvency
Austria	10.0	75.9	79.6	70.7	87.7	81.1	68.8	53.3	76.8	87.2	80.7	73.5
Belgium	13.5	71.1	91.2	73.6	56.4	42.2	56.3	70	75.7	85.1	77.7	82.9
Denmark	11.2	84.6	91.2	91.6	91	90.9	81.3	63.3	91.7	92	68.8	84.5
Finland	6.3	81.7	92.3	80.2	85.3	83.5	75	56.7	88.8	88.6	73.5	93.3
France	9.8	71.1	92.5	76.8	81.2	55.4	56.3	53.3	71	89.8	76.2	58.9
Germany	10.2	79.4	81.6	82.8	98.3	66.5	81.3	50	76.8	88.1	76.7	91.5
Greece	32.8	60.1	78.7	62.9	78.3	41.5	50	33.3	78.7	77.3	46.1	53.7
Ireland	13.4	79.8	90.9	60	61.4	68.7	87.5	86.7	95.3	92.7	75.5	79.6
Italy	19.0	66.2	83.8	62.9	78.2	75.1	50	56.7	60.6	82.1	42.2	70.4
Luxembourg	1.2	66.8	88.5	78.4	73.9	56.8	25	43.3	88.4	82.5	85.7	45.3
Netherlands	9.4	73.5	86.9	65.8	75.4	74.5	56.3	43.3	86.4	87.7	75.1	83.3
Portugal	12.1	73.8	90.7	68.9	79.1	83.7	50	60	77.7	84.8	59.9	83.5
Spain	27.3	70	78.2	63.2	58	68.2	68.8	53.3	84.2	84.6	63	78.2
Sweden	8.2	82.3	92.2	80.1	94.9	89.6	81.3	63.3	81.9	92.9	68.2	78.3
United Kingdom	13.6	83.7	89.8	86.9	80.8	71.3	100	80	89.6	88	68.4	82
Correlation		-0.5088	-0.6287	-0.5391	-0.3516	-0.3745	0.0016	-0.1835	-0.2381	-0.5481	-0.7480	-0.1512

Source: own calculations based on (WB, 2012).

This grouping of informal employment rates gave positive results by establishing a correlation between the informal employment rate and the individual components of The Doing Business Rating. The description of the used correlation analysis is in the Data and Methodology section.

A correlation analysis between the informal employment rate and the components of The Doing Business rating for Group № 1 (EU-15 countries) showed a negative correlation with the “Enforcing Contracts” component (-0.7480), indicating that the increase in this component of the rating leads to a decrease in the informal employment rate, which is a targeted result of any policy aimed at reducing the informal employment rate (see Table 1).

The score for Enforcing Contracts is “the simple average of the scores for each of the component indicators: the procedures, time and cost for resolving a commercial dispute through a local first-instance court” (WB, 2020b). Let’s analyze in more detail the impact of this component of the rating on the informal employment rate (see Table 2).

Table 2
Correlation matrix between the informal employment rate and the “Enforcing Contracts” component for the Group №1

Reference area	Informal employment as a percent of employment (%)	Enforcing Contracts (DB04-15 methodology)	Enforcing Contracts – Procedures (number)	Enforcing Contracts – Time (days)	Enforcing Contracts – Filing and service (days)	Enforcing Contracts – Trial and judgment (days)	Enforcing Contracts – Enforcement of judgment (days)	Enforcing Contracts – Cost (% of claim amount)	Enforcing Contracts- Attorney fees (% of claim)	Enforcing Contracts – Court fees (% of claim)	Enforcing Contracts – Enforcement fees (% of claim)
Austria	10.0	80.7	25	397	30	277	90	20.4	13.6	4.1	0.4
Belgium	13.5	77.7	26	505	15	400	90	17.7	9.7	5.5	2.5
Denmark	11.2	68.8	35	410	60	260	90	23.3	5	3.3	15
Finland	6.3	73.5	34	375	14	255	106	16.2	10	3.5	0.2
France	9.8	76.2	29	447	22	270	100	17.4	10.7	2.7	4
Germany	10.2	76.7	31	394	29	310	55	14.4	6.6	5.4	2.4
Greece	32.8	46.1	39	1100	60	920	120	22.4	10	4.6	7.8
Ireland	13.4	75.5	21	650	60	500	90	26.9	18.8	2.3	5.8
Italy	19.0	42.2	37	1210	40	900	270	30.4	21.8	3.9	4.7
Luxembourg	1.2	85.7	26	321	21	240	60	9.7	6.9	1.9	0.9
Netherlands	9.4	75.1	26	514	10	442	62	23.9	13.7	5	5.2
Portugal	12.1	59.9	34	870	30	660	180	16.4	10.6	5.2	0.5
Spain	27.3	63	40	515	50	285	180	17.2	12.7	4.5	0
Sweden	8.2	68.2	31	476	21	365	90	31.2	28	3.1	0.1
United Kingdom	13.6	68.4	29	399	30	313	56	41.7	35	5.5	1.2
Correlation		-0.7480	0.6253	0.6526	0.6438	0.6151	0.4918	0.1983	0.0612	0.3625	0.2171

Source: own calculations based on (WB, 2012).

The data from the table 3 demonstrate that, in order to reduce informal employment, it is advisable to pay particular attention to reducing the number of contract procedures and the time required to execute these contracts, specifically “Filing and service (days)” and “Trial and judgment (days)”, since these particular variables have the highest correlation with the informal employment rate.

Similar studies were conducted in the Group №2 – the countries that joined the EU from 1995 to 2012 (see Table 3).

Table 3

Correlation matrix between the informal employment rate and components of The Doing Business rating for the Group №2

Reference area	Informal employment as a percent of employment (%)	Ease of doing business score (DB10-14 methodology)	Components of the rating									
			Starting a Business	Dealing with Construction Permits (DB06-15 methodology)	Getting Electricity (DB06-15 methodology)	Registering Property (DB05-15 methodology)	Getting Credit (DB05-14 methodology)	Protecting Minority Investors (DB06-14 methodology)	Paying Taxes (DB06-16 methodology)	Trading across Borders (DB06-15 methodology)	Enforcing Contracts (DB04-15 methodology)	Resolving Insolvency
Bulgaria	15.9	69.3	84.7	64.8	65.6	71.1	81.3	63.3	70.5	76	64.3	51.2
Cyprus	15.1	66.2	89.1	60.9	61	53.8	68.8	60	80.4	83.7	54.2	50.6
Czech Republic	9.2	70.2	79.2	57.3	80.2	78.2	68.8	50	70.5	77.6	65.9	73.9
Estonia	6.9	78	90.9	85.4	80.1	90.7	75	56.7	80	92.5	68.8	60.5
Hungary	12.2	67.7	91.4	69	60.6	78	68.8	43.3	70.2	75.4	67.6	52.4
Latvia	13.2	77.7	91.5	64	79.6	81.8	93.8	60	82.3	83.6	78.3	62.5
Lithuania	12.6	74.3	84.7	77.9	70.1	92.2	68.8	56.7	81	86	74.8	51
Malta	8.1	62.7	75.6	64	75.5	69.9	18.8	56.7	85.9	81.3	61.7	38.3
Poland	38.0	68	78.6	66	61.5	61.5	93.8	60	65.7	80.5	56.8	56
Romania	28.9	65	87.8	53.8	36.2	80.6	87.5	56.7	49.3	75.9	66.1	56
Slovakia	16.7	70.7	81.1	61.5	77.4	91.9	75	46.7	63.8	75.9	63.9	69.8
Slovenia	5.0	67	94.4	53.5	85.5	60.9	37.5	66.7	77.3	79.2	51.9	63.4
Correlation		-0.2362	-0.2984	-0.1838	-0.6939	-0.1825	0.6191	0.0514	-0.6695	-0.2843	-0.1397	-0.0650

Source: own calculations based on (WB, 2012).

A correlation analysis between the informal employment rate and the components of The Doing Business rating for the Group №2 (countries that joined the EU from 1995 to 2012) showed a negative correlation with the “Getting Electricity” component (-0.6939), which indicates that the increase in this component of the rating leads to a decrease in the informal employment rate. For this group of countries, it is advisable to, first of all, pay attention to reducing the number of procedures in order to obtain electricity, since it is this variable that has the highest correlation with the performance indicator (see Table 4).

Table 4
Correlation matrix between the informal employment rate and the “Getting Electricity” component for Group №2

Reference area	Informal employment as a percent of employment (%)	Getting Electricity (DB06-15 methodology)	Getting Electricity – Procedures (number)	Getting Electricity – Time (days)	Getting Electricity – Cost (% of income per capita)
Bulgaria	15.9	65.6	6	130	366.6
Cyprus	15.1	61	5	207	125.5
Czech Republic	9.2	80.2	4	115	33.5
Estonia	6.9	80.1	4	111	222.5
Hungary	12.2	60.6	4	252	120.3
Latvia	13.2	79.6	4	108	439.1
Lithuania	12.6	70.1	5	146	63.3
Malta	8.1	75.5	4	135	480.2
Poland	38	61.5	6	163	209.3
Romania	28.9	36.2	10	204	854.1
Slovakia	16.7	77.4	5	89	297.2
Slovenia	5	85.5	5	38	119.1
Correlation		-0.6939	0.6695	0.4101	0.3817

Source: own calculations based on (WB, 2012).

The investigation of the correlation between informal employment rates and the components of The Doing Business rating has also been conducted for the Group №3 – EU candidate countries. As of 2019, Albania, Northern Macedonia, Serbia, Montenegro and Turkey are the official candidates for EU membership. Also, a course on rapprochement with the EU is conducted by Ukraine. Croatia is a member of this group due to the fact that the country was not yet a member of the EU in the studied period (see Table 5).

At first it may seem that the results of the study do not have a certain economic meaning, since increasing of the “Protecting Minority Investors” component leads to an increase in informal employment in the country’s economy. However, it is appropriate to analyze the obtained results considering the level of legal awareness that is manifesting in the compliance with the law. It is logical that the higher is the protection of minority investors’ rights, the better is the investment climate in the country, which in turn attracts investors, increases business activity. However, since the countries from the Group № 3 are candidates for EU membership, the legal culture may not be yet at a high level, so we can assume that the residents of the country working with foreign capital are attracting workers to informal employment or withholding a part of their official wages in order to minimize the tax burden. Let us analyze in more detail the impact of this component of the rating on the informal employment rate in the Group№ 3 (see Table 6).

Table 5
Correlation matrix between the informal employment rate and The Doing Business components for the Group №3

Reference area	Informal employment as a percent of employment (%)	Ease of doing business score (DB10-14 methodology)	Components of the rating									
			Starting a Business	Dealing with Construction Permits (DB06-15)	Getting Electricity (DB06-15 methodology)	Registering Property (DB05-15 methodology)	Getting Credit (DB05-14 methodology)	Protecting Minority Investors (DB06-14)	Paying Taxes (DB06-16 methodology)	Trading across Borders (DB06-15 methodology)	Enforcing Contracts (DB04-15 methodology)	Resolving Insolvency
Croatia	13.0	64.7	82.9	24.4	85.6	66.3	75	46.7	75.2	72	65.7	53.5
Albania	61.0	60.9	87.6	0	57.9	54.4	87.5	70	54.7	72.3	58.9	65.4
Bosnia and Herzegovina	30.5	58.4	54.3	34.4	75.3	66.7	62.5	46.7	51.9	69.4	56.9	65.7
North Macedonia	22.5	70.4	88.5	74.1	73.2	69.6	68.8	56.7	75.8	74.1	56.6	66.4
Serbia	19.8	61.8	86.7	19.3	75.9	74.8	81.3	46.7	52.4	70.5	58.6	52.2
Turkey	35.3	65.7	81.4	52.7	79.8	75	56.3	56.7	80.6	72.2	65	37
Ukraine	25.1	45.5	79.8	12	32.4	47.9	81.3	40	20	48.8	67.2	25.7
Correlation	-0.0608	0.0464	-0.3559	-0.2896	-0.3633	0.2177	0.8012	-0.0845	0.1364	-0.2313	0.2276	

Source: own calculations based on (WB, 2012).

Table 6
Correlation matrix between the informal employment rate and the “Protecting Minority Investors” component for the Group № 3

Reference area	Informal employment as a percent of employment (%)	Protecting Minority Investors (DB06-14 methodology)	Protecting Minority Investors – Extent of disclosure index (0-10)	Protecting Minority Investors – Extent of director liability index (0-10)	Protecting Minority Investors – Ease of shareholder suits index (0-10)
Croatia	13	46.7	3	6	5
Albania	61	70	7	7	7
Bosnia and Herzegovina	30.45	46.7	3	6	5
North Macedonia	22.5	56.7	7	7	3
Serbia	19.81	46.7	4	6	4
Turkey	35.3	56.7	9	4	4
Ukraine	25.1	40	4	2	6
Correlation		0.8012	0.5303	0.1819	0.6080

Source: own calculations based on (WB, 2012).

The highest level of correlation in the “Protecting Minority Investors” component of The Doing Business rating has the “Ease of shareholder suits” index, which confirms our hypothesis about the possible abuse of resident business owners about formal and informal employment of workers. ‘The ease of shareholder suits index measures how likely plaintiffs are to access internal corporate evidence. It has six components: whether shareholders owning 10% of the company’s share capital have the right to inspect the Buyer-Seller transaction documents before filing a suit; whether shareholders owning 10% of the company’s share capital can request that a government inspector investigate the Buyer-Seller transaction without filing a suit; what range of documents is available to the shareholder plaintiff from the defendant and witnesses during trial; whether the plaintiff can obtain categories of relevant documents from the defendant without identifying each document specifically; whether the plaintiff can directly examine the defendant and witnesses during trial (0-2); and whether the standard of proof for civil suits is lower than that for criminal cases’ (WB, 2020d). Accordingly, the processes of managing and hiring employees are not included in the list of components that minority investors may have access to.

Also, a more detailed examination of the individual components of The Doing Business rating in regarding their correlation with the informal employment rate indicates the presence of other variables, which significantly affect the performance indicator (see Table 7).

Table 7

Correlation matrix between the informal employment rate and individual components of The Doing Business rating for the Group № 3

Reference area	Informal employment as a percent of employment (%)	Starting a Business – Cost (% of income per capita)	Registering Property – Cost (% of property value)	Getting Credit – Credit bureau coverage (% of adults)	Paying Taxes – Other taxes (% of profit)	Enforcing Contracts – Court fees (% of claim)
Croatia	13	8.4	5	100	1.9	4
Albania	61	29.3	12	0	4.8	9.9
Bosnia and Herzegovina	30.45	27.9	5.3	39.6	3.9	6
North Macedonia	22.5	1.8	3.2	68.3	2	6.9
Serbia	19.81	7.8	2.7	100	2.3	7.1
Turkey	35.3	18.1	3.3	60.5	2.6	6
Ukraine	25.1	5.2	3.9	17	1.6	7.4
Correlation		0.7649	0.8347	-0.7791	0.8463	0.7899

Source: own calculations based on (WB, 2012).

It is noteworthy that in countries with a lower level of economic development (countries from the Group №3) there is a bigger dependence on various taxes and fees. For example, significant direct impacts on the informal employment rate have such components: cost (%)

of income per capita) of Starting a Business, cost (% of property value) of Registering Property, Paying other taxes (% of the profit), court fees (% of claim) of Enforcing Contracts. Accordingly, an increase in these taxes and fees leads to an increase of the informal employment rate in the economy. Another variable that affects the informal employment rate is – Getting Credit – Credit bureau coverage (% of adults). The credit registry coverage reports the number of individuals and firms listed in a credit registry’s database as of January 1 with information on their borrowing history from the past five years, and the number of individuals and firms that have had no borrowing history in the past five years but for which a lender requested a credit report from the registry in the previous calendar year (WB, 2020c). This variable is inversely related to the informal employment rate, indicating that a decrease in the percentage of adult credit register coverage leads to an increase in informal employment. Obviously, this is due to the fact that one of the conditions to get a credit is the presence of official income. And the concepts of official income and informal employment are incompatible.

Conclusions

Nowadays, the measures to promote the transition to formal employment are more and more often regarded as a major component of national employment programs. The heterogeneity of informal employment makes it impossible to apply the same tool or policy to all countries. It all depends on the analysis of the factors that affect informal employment in a particular country or region. The development of effective measures aimed at reducing informal employment is based on the recognition of the heterogeneity of its structure, as well as of the various factors that stimulate its growth or decrease. World experience has shown that success in reducing informal employment can only be achieved by pursuing a comprehensive policy that covers different regulatory areas and integrates different strands of action. However, in the current context of institutional challenges, “strict” measures to regulate informal employment are less effective than “soft” measures, since only policy-making methods reduce economic activity as a whole.

Therefore, policies that are aimed at reducing informal employment in different countries should be based on the so-called “soft” regulation tools:

- improvement of the institutional and business environment (reduction of administrative barriers, stimulation of entrepreneurial activity, increase of the level of accessibility to public funding programs);
- improvement of procedural transparency (simplification of procedures, shortening of time, reduction of bureaucratic load, development of online systems);
- conducting an information campaign aimed at increasing the trust level in state and municipal authorities, taxation and social protection systems (use of tools that demonstrate current or prospective benefits to employees, consistency and transparency of fiscal policy, implementation of the “voucher for service” address system).

Using the correlation analysis of the impact of the components of The Doing Business rating, we can identify the following priority recommendations to improve the employment to limit its informal component:

- For the Group №1 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom). Priority measures are reducing the bureaucratic contracting procedures, including reducing the number of contract execution procedures (direct procedural steps in the presence of a commercial dispute before a court) and the time required to execute contracts, such as filing and service, trial and judgment time.
- For the Group №2 (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia). Priority measures are reducing the bureaucratic procedures to obtain electricity, particularly reducing the number of procedures to obtain electricity (all interaction of the company's employees with external parties, such as the electricity distribution utility, electricity supply utilities, government agencies, electrical contractors and firms. Also, internal wiring inspections and certifications are counted as procedures).
- For the Group №3 (Croatia, Albania, Bosnia and Herzegovina, North Macedonia, Serbia, Turkey, Ukraine). Priority measures include enhancing legal awareness by reducing the "human" factor at all stages of getting information and resources, which will also reduce the corruption component, increasing the transparency of the judicial and law enforcement systems, developing online systems of access and registration, expanding the access to public information as well as to the information on the activity of enterprises, which is not a trade secret. Also, an important direction is the reduction of taxes and fees when Starting a Business (fees and costs to start a business, including all official fees and fees for legal and professional services), reducing the cost of Registering Property (fees, transfer taxes, stamp duties and any other payment to the property registry to notaries, public agencies or lawyers), reducing court fees when Enforcing Contracts. It is also advisable to consider the possibility of a differentiated approach to tax rates for these types of taxes: property taxes, turnover taxes and other taxes (such as municipal fees and vehicle taxes). In addition, increasing the availability of credit resources for businesses and households should also be a direction of the employment policy.

Therefore, the use of the correlation between the informal employment rate and The Doing Business rating data has great potential for improving national and regional employment policies for as for a specific country as for the ILO strategic policies, as it provides an opportunity to explore the effectiveness of the tools used to affect the influential factors of informal employment in a particular country, and also gives an opportunities to evaluate the effectiveness of the measures produced by the international community, the EU countries to reduce the informal employment rate of population.

References

- Brady, H. E., Johnston, R. (2006). The rolling cross-section and causal attribution. – Capturing campaign effects, University of Michigan Press, pp. 164-195.
- Bruton, G., Duane Ireland, D., Ketchen, D. (2012). Toward a research agenda on the informal economy. – *Academy of Management Perspectives*, 26(3), pp. 1-11.
- Chen, M. A. (2007). Rethinking the Informal Economy: Linkages with the Formal Economy and the Formal Regulatory Environment. – Working Papers, No 46, United Nations, Department of Economics and Social Affairs (retrieved from <https://ideas.repec.org/p/une/wpaper/46.html#author-abstract>).
- Chen, Y. (2015). A New Methodology of Spatial Cross-Correlation Analysis. – *PLoS ONE*, 10(5): e0126158 (retrieved from <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0126158>).
- Dibyendu, M., Chandril, B. (2020). Informality, enforcement and growth, *Economic Modelling*. – Elsevier, Vol. 84(C), pp. 259-274.
- Elbahnasawy N. G., Ellis M. A., Adom, A. A. (2016). Political Instability and the Informal Economy. – *World Development*, Vol. 85, pp. 31-42.
- European Commission. (1998). Communication from the Commission on undeclared work COM 219 final, April 7 1998. Brussels.
- European Commission. (2007). Stepping up the fight against undeclared work. COM(2007) 628 final, October 24 2007 (retrieved from <http://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52007DC0628>).
- European Commission. (2018). Council Decision (EU) 2018/1215 of July 16 2018 on guidelines for the employment policies of the Member States ST/10464/2018/INITOJ L 224, 5.9.2018, p. 4–9 (retrieved from <http://data.europa.eu/eli/dec/2018/1215/oj>).
- European Commission. (2019). Employment and Social Developments in Europe 2019 Sustainable growth for all: choices for the future of Social Europe: manuscript, June 2019, Luxembourg.
- European Commission. (2020a). European employment strategy (retrieved from <https://ec.europa.eu/social/main.jsp?catId=101&langId=en>).
- European Commission. (2020b). Proposal for a COUNCIL DECISION on guidelines for the employment policies of the Member States COM/2020/70 final (retrieved from <https://eurlex.europa.eu/legal-content/EN/TXT/?qid=1584545829001&uri=CELEX%3A52020PC0070>).
- Excel Easy. (2020). Correlation (retrieved from <https://www.excel-easy.com/examples/correlation.html>).
- Excel Tip. (2020). How to Find Correlation Coefficient in Excel (retrieved from <https://www.exceltip.com/statistical-formulas/how-to-find-correlation-coefficient-in-excel.html>).
- Gujarati, D. N., Porter, D. C. (2009). The Nature and Sources of Data for Economic Analysis. *Basic Econometrics* (5th international ed.). New York: McGraw-Hill, pp. 22-28.
- Horvath, J. (2018). Business cycles, informal economy, and interest rates in emerging countries. – *Journal of Macroeconomics*, 55, pp. 96-116.
- Igudia, E., Ackrill, R., Coleman, S., Dobson, C. (2016). Determinants of the informal economy of an emerging economy: a multiple indicator, multiple causes (MIMIC) approach. – *International Journal of Entrepreneurship and Small Business*, Vol. 28(2/3), pp. 154-177.
- ILOSTAT. (2020). Informal employment (retrieved from <https://ilostat.ilo.org/topics/informality/>).
- International Labour Organization. (2003). Report of the Conference. 17th ICLS, November 24 – December 3, Geneva.
- International Labour Organization. (2015). Transition from the Informal to the Formal Economy Recommendation, 104th ILC session, N 204, June 12, Geneva

- International Labour Organization. (2018). Total employment Women and men in the informal economy: a statistical picture (3rd edition). Geneva.
- International Labour Organization. (2020). Share of informal employment in total employment (retrieved from https://www.ilo.org/re-Search/informality/map1_en.html).
- Levenson, A. R., Maloney, W. F., Levenson, A. R., Maloney, W. F. (1998). The informal sector, firm dynamics, and institutional participation. – Research working paper, N WPS 1988, Washington.
- Maloney, W. F. (2004). Informality revisited. – *World Development*, Vol. 32, pp. 1159-1178.
- Mathias, B. D., Lux, S., Russell Crook, T., Autry and C., Zaretski, R. (2015). Competing Against the Unknown: The Impact of Enabling and Constraining Institutions on the Informal Economy. – *J Bus Ethics*, 127, pp. 251-264.
- Perry, G. E., Maloney, W. F., Arias, O. S., Fajnzylber, P., Mason, A. D., Saavedra-Chanduvi, J. (2007). *Informality: Exit and exclusion*. Washington, DC: The World Bank.
- Robinson, P. M. (2008). Correlation testing in time series, spatial and cross-sectional data. – *Journal of Econometrics*, Elsevier, Vol. 147(1), pp. 5-16.
- Rosser, J. B., Rosser, M. V., Ahmed, E. (2000). Income inequality and the informal economy in transition economies. – *Journal of Comparative Economics*, Vol. 28, pp. 156-171.
- Siqueira, A. C. O., Webb, J. W., Bruton, G. D. (2016). Informal Entrepreneurship and Industry Conditions. – *Entrepreneurship Theory and Practice*, Vol. 40(1), pp. 177-200.
- Spreadsheeto. (2020). How to Calculate the Correlation Coefficient in Excel (retrieved from <https://spreadsheeto.com/correlation/>).
- Thai, M. T. T., Turkina, E. (2014). Macro-level determinants of formal entrepreneurship versus informal entrepreneurship. – *Journal of Business Venturing*, 29(4), pp. 490-510.
- The World Bank. (2012). *Reports Doing Business 2012* (retrieved from <https://www.doingbusiness.org/en/reports/global-reports/doing-business-2012>).
- The World Bank. (2020a). *Doing Business* (retrieved from <https://www.doingbusiness.org/en/about-us>).
- The World Bank. (2020b). *Enforcing Contracts methodology* (retrieved from <https://www.doingbusiness.org/en/methodology/enforcing-contracts>).
- The World Bank. (2020c). *Getting Credit methodology* (retrieved from <https://www.doingbusiness.org/en/methodology/getting-credit>).
- The World Bank. (2020d). *Protecting Minority Investors methodology* (retrieved from <https://www.doingbusiness.org/en/methodology/protecting-minority-investors>).