“Shadow tax evasion and its impact on the competitiveness of the country’s tax system”

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Abstract

Tax competitiveness of the country characterizes the ability of the tax system to obtain permanent competitive advantages in attracting external and mobilizing internal financial resources due to the establishment of the optimal level of tax burden and differentiation of fiscal instruments. The complexity of this indicator determines the presence of a number of drivers of its formation. Shadow tax evasion is one of them.

The purpose of the study is to assess the impact of the shadow tax evasion of taxpayers on the level of competitiveness of the tax system on the example of 11 European countries from 2011 to 2021. The methodological tools are regression analysis methods, Shapiro-Wilk tests, and Spearman's rank correlation. It was determined that informal employment, informal production, and unregistered or informal entrepreneurship are the most common methods of tax evasion. Based on the results of the calculations, regression equations of the influence of shadow tax evasion on the level of competitiveness of the country's tax system were constructed. It has been proven that shadow tax evasion exerts the greatest influence on the level of tax competitiveness of Slovenia (0.32), Romania (0.34), and Croatia (0.26). The least sensitive to shadow tax evasion is the competitiveness of the Czech Republic's tax system (0.096). For most analyzed countries, this influence is carried out with a time lag of 2 years. Only in Croatia, this influence is the most substantial with a one-year lag.

Keywords
tax evasion, tax competitiveness, macro-financial stability, budget revenues, shadow economy

JEL Classification
E26, O17, H26, H87

INTRODUCTION

A significant number of income concealment schemes and tools lead to the fact that their negative consequences are manifested in various spheres and sectors of the economy. The tax system is one of the most sensitive to the manifestations of the shadow economy. The implementation of shadow schemes for concealing income leads to the deformation of the tax system, which consists in the appearance of disproportions in the distribution of the tax burden on individual economic subjects by increasing it for participants in official activities. According to Murphy (2019), in 2015 EU countries lost more than 824 billion euros due to tax evasion. This affects the country’s economic development indicators and significantly threatens its sustainable development and international competitiveness.

According to the results of the experts of the Institute of Socio-Economic Transformation and the Center of Socio-Economic Research CASE Ukraine (2023), the amount of fiscal losses of the budget due to tax evasion was estimated at over 1,000 billion UAH. The results of a comparative analysis of the volume of fiscal losses of the budget testify
to their significant growth during the last 5 years. If, in 2015, fiscal losses from the use of tax evasion schemes ranged from UAH 110.5 to 168.5 billion, then according to the results of 2020, their volume amounted to UAH 291 – 465.8 billion.

In addition, the excessive share of the shadow sector of the economy contributes to the formation of a gap between the needs of society in providing them with the minimum necessary set of public goods and services and the ability of the country to satisfy them at the expense of tax revenues. This, in turn, leads to an increase in social tension in society, an increase in income inequality, and a deterioration in the level of material well-being of the population.

1. LITERATURE REVIEW AND ANALYSIS

The shadow economy is a complex phenomenon affecting several indicators of the country’s development. According to Caurkubule and Rubanovskis (2014), the shadow economy inhibits the country’s sustainable economic development. Slowing down the pace of economic growth, the shadow economy negatively impacts the country’s sustainable development and the population’s standard of living.

The shadow sector of the economy negatively affects the country’s ability to finance social programs (Bhandari, 2023; Kuzior et al., 2020), health care measures (Reshetniak & Grifo, 2022; Vasilyeva et al., 2022), effectiveness of public administration tools (Dźwigol & Wolniak, 2018), the country’s investment attractiveness (Khayati & Terzi, 2023), its innovation potential (Kuzior et al., 2022), business performance indicators (Bilan et al., 2018) and the stability of the financial sector as a whole (Kozmenko & Belova, 2015; Orlov et al., 2021; Melnyk et al., 2021a; Melnyk et al., 2021b).

The characteristic features of shadow tax evasion shown in Table 1 prove that this phenomenon is inherent in any economic system, and the toolkit for combating it should take into account the entire spectrum of its influence on the country’s development indicator.

Many scientists consider the shadow economy to be an inhibitor of tax competitiveness growth. Business entities are pretty sensitive to fluctuations in official and shadow exchange rates, and shadow activities lead to excessive risks for domestic and foreign investors (Mohamadi & Glants, 2018; Mujtaba et al., 2018; Yoshimori, 2023).

Mukherjee (2018) considered the reduction of the share of shadow tax evasion as a prerequisite for increasing the level of tax competitiveness of the country due to the formation of additional advantages in the context of the application of international tax differences and the transfer of profits by transnation-

<table>
<thead>
<tr>
<th>Table 1. Features of shadow tax evasion</th>
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<tr>
<td><strong>Feature</strong></td>
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<td>Deviance</td>
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</table>
al corporations to more attractive places of taxation. The study shows the desire to optimize financial flows to increase competition between countries for the profits of transnational corporations as the main prerequisite for improving the country’s tax policy and the policy of de-shadowing its economy.

Cremer and Gahvari (2000) examined the implications of tax evasion for tax competition and fiscal policy coordination. The authors prove that tax evasion leads to fiscal competition regarding tax rates and the probability of an audit. At the same time, integration can turn an honest country into an evader: tax harmonization can worsen the situation of both countries and force the other honest countries to evade.

An effective tax strategy for businesses and transactions with a cash economy requires a holistic approach to compliance management, in which traditional monitoring and control tools play a key role, such as giving tax administrations access to taxpayer data and matching information from various public and private sources (Awasthi & Engelschalk, 2018; Kobiyh & El Amri, 2023; Kwilinski, 2019).

In general, the results of the conducted analysis prove the lack of sufficient studies on the connection between the shadow economy and the level of the country’s tax competitiveness and highlight the need for a more detailed analysis of these issues.

One of the indicators reflecting the effectiveness of the country’s tax system is the level of its tax competitiveness, which is often one of the decisive criteria when investors and business representatives make decisions regarding the feasibility of carrying out activities in a given country. In this way, identifying external and internal factors that influence the quality of the internal and external components of its tax policy plays an important role.

Thus, the purpose of the study is to assess the impact of shadow tax evasion on the competitiveness of the tax system. The hypothesis of the study is:

**H1:** Shadow tax evasion affects not only the indicators of the functioning of the country’s tax system but also the level of its international competitiveness.

### 2. METHODOLOGY

Verification of the validity of the proposed hypothesis is carried out based on regression analysis methods. The level of informal production (InfProd), the level of informal employment (InfEmpl), and the percentage of firms that compete with unregistered or informal firms (FAIF) are used as a factor indicator. The level of tax competitiveness of the country is used as a result indicator.

The information base of the research is data from the World Bank and the Organization for Economic Cooperation and Development. 11 European countries (Poland, the Czech Republic, Slovakia, Slovenia, Romania, Hungary, Croatia, Lithuania, Latvia, Estonia, and Ukraine) were chosen as the object of the study, the period of the study is 2001–2021.

The country’s tax competitiveness level is determined in the first stage of the study. An integral indicator combines 17 components of the development of the tax system: VAT rate, corporate income tax, personal income tax, social contributions, the Fiscal Health Index, the Tax Freedom Index, time for preparation of tax reporting and payment of taxes, time for border and customs control during export/import, time for processing documents during export/import, cost of processing documents during export/import, cost of passing control during export/import, number of payments, necessary for settlement with the tax authorities, the Financial Literacy Index, the level of tax morale of the population, the Economic Freedom Index, the volume of GDP, and the level of tax potential.

Bringing these indicators to a comparable form is carried out using the method of normalization based on the minimax approach. Normalization of indicators of stimulators/destimulators is carried out using the formula:

\[
\text{ITCI}_I = \begin{cases} \frac{\text{ITCI}_I / \text{ITCI}_{I_{max}} - \text{ITCI}_{I_{min}} / \text{ITCI}_{I_{max}}}{\text{ITCI}_{I_{max}} - \text{ITCI}_{I_{min}}} & \text{if } \text{ITCI}_I \geq \text{ITCI}_{I_{max}} \\ 0 & \text{if } \text{ITCI}_I \leq \text{ITCI}_{I_{min}} \end{cases}, \quad (1)
\]
where $ITCI_{t}^{\mu}$ is the normalized value of the $i$-th indicator in the $t$-th year; $ITCI_{t}^{\mu}$ the actual value of the $i$-th indicator in the $t$-th year; $ITCI_{t,max}$ is the maximum normative value of the $i$-th indicator; $ITCI_{t,min}$ is the minimum regulatory value of the $i$-th indicator during the analyzed period; $ITCI_{t_{-}}$ is the maximum value of the $i$-th indicator during the analyzed period.

The determination of the integral indicator of the competitiveness of the tax system is carried out according to the formula:

$$ITCI = \sum_{i=1}^{n} a_i ITCI_{i}^A, ITCI_{M} = \sum_{i=1}^{n} (ITCI_{i}^M)^{a_i}$$  \hspace{1cm} (2)

where $ITCI_{i}$ and $ITCI_{\mu}$ are partial indicators (for the additive and multiplicative form) of the $i$-th component of tax competitiveness; $n$ are the number of indicators; $a_i$ are the weighting coefficients of indicators for which the condition is fulfilled.

Weighting coefficients are determined using the method of expert evaluations. The prerequisite for building a model of the dependence of the country’s tax competitiveness on the indicators of shadowing of the economy is to check the data for compliance with the law of normal distribution, which is carried out using the Shapiro-Wilk test:

$$W = \left( \frac{\sum_{i=1}^{n} a_i X_{(i)}}{\sum_{i=1}^{n} \left( X_{(i)} - \bar{X} \right)^2} \right)^2$$ \hspace{1cm} (3)

Determining the duration of the time lag due to which the effect of shadowing the economy on the level of tax competitiveness of the country is the greatest (based on the Spearman correlation coefficient):

$$\rho = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}.$$ \hspace{1cm} (4)

The construction of a model of the dependence of the tax competitiveness of the country on the indicators of shadowing of the economy is carried out on the basis of the construction of a regression equation of the following type:

$$ITCI(t) = m_0 \cdot \prod_{i=1}^{n} SEI_{n_i}^{m_i} (t - l_i),$$ \hspace{1cm} (5)

where $ITCI(t)$ is the level of tax competitiveness of the country in period $t$; $m_0, m_i$ are individual parameters of the econometric model, which determine the nature of the dependence between indicators; $i$ is the $i$-th indicator of the functioning of the shadow sector of the economy; $l_i$ is the time lag.

### 3. RESULTS AND DISCUSSION

Calculations of the level of competitiveness of the tax system carried out with the help of formulas 1 and 2 show a slight increase in the levels of tax competitiveness of all analyzed countries during the last 10 years. Ukraine has one of the lowest values of tax competitiveness. This is due to the significant labor-intensiveness of the processes of calculation and payment of tax payments, a significantly lower level of economic freedom, fiscal health and economic development of the country as a whole.

To model the influence of shadow tax evasion on the level of tax competitiveness of the country, in

### Table 2. Assessing the country’s tax competitiveness level

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<td>The Czech Republic</td>
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<td>0.78</td>
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<td>Slovakia</td>
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<td>Slovenia</td>
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<td>0.72</td>
<td>0.72</td>
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<td>0.74</td>
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<tr>
<td>Romania</td>
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<td>0.66</td>
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<td>0.69</td>
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<tr>
<td>Hungary</td>
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<td>0.75</td>
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<tr>
<td>Croatia</td>
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<td>0.75</td>
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<td>0.76</td>
<td>0.78</td>
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<td>0.79</td>
<td>0.82</td>
<td>0.82</td>
<td>0.83</td>
</tr>
<tr>
<td>Latvia</td>
<td>0.76</td>
<td>0.76</td>
<td>0.79</td>
<td>0.79</td>
<td>0.78</td>
<td>0.80</td>
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<td>0.80</td>
<td>0.83</td>
<td>0.83</td>
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</tr>
<tr>
<td>Estonia</td>
<td>0.78</td>
<td>0.78</td>
<td>0.81</td>
<td>0.81</td>
<td>0.80</td>
<td>0.83</td>
<td>0.83</td>
<td>0.83</td>
<td>0.85</td>
<td>0.85</td>
<td>0.86</td>
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</table>
the next stage, a comparative analysis of the average values of these indicators for 2011–2021 was carried out for 11 countries of the world (Ukraine, Poland, the Czech Republic, Slovakia, Slovenia, Romania, Hungary, Croatia, Lithuania, Latvia, and Estonia).

The results of the comparative analysis shown in Figure 1 show that higher values of the level of tax competitiveness correspond to lower values of shadowing of the economy. Thus, it is possible to draw a conclusion about the inverse relationship between the analyzed indicators.

The prerequisite for modeling the relationship between the analyzed indicators should be verifying data series for compliance with the law of normal distribution. For this purpose, the study analyzes data series for 2011–2021 using the Shapiro-Wilk test and builds histograms of the data array distribution. This can improve the quality and reliability of modeling results by excluding from the analysis those data that are not subject to the law of normal distribution.

The histograms of the distribution of the array of data for indicators of the shadow sector of the economy and the level of tax competitiveness shown in Figure 2 allow the paper to conclude that the points of relative accumulated frequencies do not correspond to the law of normal distribution.

In addition, Figure 3 indicates that individual values of the relative accumulated frequencies in percentages are significantly far from a straight line, which confirms the validity of the previous results regarding the inconsistency of all data series analyzed with the law of normal distribution.

At the next stage, using the Shapiro-Wilk test, the study tests the data series for normality of distribution. Table 2 shows that only a small number of indicators conform to the normal distribution law. For most indicators, the calculated values are lower than the critical (0.05), which accepts the alternative hypothesis of non-compliance with the law of normal distribution at the level of statistical significance \( p < 0.05 \).

Taking into account the heterogeneity of the data set (the presence of old ones that correspond and do not correspond to the law of normal distribution), the paper evaluates the relationship between the indicators of the development of the shadow sector of the economy and the level of tax competitiveness of the country using the Spearman correlation coefficient (Table 3).

The values of the correlation coefficients given in Table 3 draw the following conclusions:

- the increase in the level of informal production leads to a decrease in the level of tax com-
Note: 
a) the level of informal production; b) the level of shadowing of the economy; c) level of tax competitiveness; d) shares of firms that compete with unregistered or informal firms; e) the level of informal employment in Ukraine in 2011–2021.

Figure 2. Histogram of the distribution of the array of data regarding indicators of the shadow sector of the economy and tax competitiveness in Ukraine
Figure 3. Scatter diagrams of indicators of the shadow sector of the economy and tax competitiveness in Ukraine

Note: a) level of informal production; b) the level of shadowing of the economy; c) level of tax competitiveness; d) shares of firms that compete with unregistered or informal firms; e) the level of informal employment in Ukraine in 2011–2021.
petitiveness of all analyzed countries with a time lag of 2 years;

• when the level of informal employment of the population increases, the level of tax competitiveness of Ukraine, Poland, Slovenia, Croatia, Lithuania, Latvia, and Estonia decreases with a time lag of 1 year; Slovakia, the Czech Republic, and Hungary – with a lag of 2 years;

• the change in the share of firms competing with unregistered or informal firms affects the level of tax competitiveness in Croatia with a time lag of 1 year, for the rest of the countries – with a time lag of 2 years;

• informal employment of the population exerts the greatest influence on the level of tax competitiveness of the analyzed countries.

The obtained results form prerequisites for evaluating the parameters of the regression model, which formalizes the dependence of the level of tax competitiveness on the indicators of the functioning of the shadow sector of the economy.

Based on econometric modeling, the individual parameters of the econometric model were determined, which determine the nature of the dependencies between indicators (Tables 4 and 5). Shadow employment of the population has the greatest impact on the level of tax competitiveness
Unofficial employment, payment of wages in envelopes, and underestimation of the official wage level negatively affect the country’s tax system’s competitiveness and attractiveness for international investors.

The parameters listed in Table 6 formalize the influence of indicators of the functioning of the shadow sector on the level of tax competitiveness of the analyzed countries of the world as follows:

### Table 4. Correlation coefficients between the level of the country's tax competitiveness and indicators of the functioning of the shadow sector of the economy for 2011–2021

<table>
<thead>
<tr>
<th>Country</th>
<th>Indicator</th>
<th>Time lag</th>
<th>0</th>
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<th>2</th>
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<td>−0.59720</td>
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<td></td>
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<td>The Czech Republic</td>
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<td></td>
<td>−0.46154</td>
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<td>−0.70257</td>
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</tr>
<tr>
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<td>−0.38330</td>
</tr>
<tr>
<td>Lithuania</td>
<td>InfProd</td>
<td></td>
<td>−0.46570</td>
<td>−0.49509</td>
<td>−0.56874</td>
<td>−0.35934</td>
</tr>
<tr>
<td></td>
<td>InfEmpl</td>
<td></td>
<td>−0.87490</td>
<td>−0.87560</td>
<td>0.86164</td>
<td>−0.64954</td>
</tr>
<tr>
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<td>FAIF</td>
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<td>−0.51107</td>
<td>−0.60689</td>
<td>−0.46315</td>
</tr>
<tr>
<td>Latvia</td>
<td>InfProd</td>
<td></td>
<td>−0.51107</td>
<td>−0.53502</td>
<td>−0.65480</td>
<td>−0.49509</td>
</tr>
<tr>
<td></td>
<td>InfEmpl</td>
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<td>−0.76777</td>
<td>−0.51107</td>
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<tr>
<td></td>
<td>FAIF</td>
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<td>−0.67606</td>
<td>−0.74234</td>
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<td>−0.59652</td>
</tr>
<tr>
<td>Estonia</td>
<td>InfProd</td>
<td></td>
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<td>−0.78540</td>
<td>−0.86164</td>
<td>−0.50373</td>
</tr>
<tr>
<td></td>
<td>InfEmpl</td>
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<td>−0.63796</td>
<td>−0.54301</td>
<td>−0.39128</td>
</tr>
<tr>
<td></td>
<td>FAIF</td>
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<td>−0.51163</td>
<td>−0.65117</td>
<td>−0.77563</td>
<td>−0.37210</td>
</tr>
</tbody>
</table>

### Table 5. Regression model of the dependence of tax competitiveness of Ukraine on the indicators of the shadow sector of the economy

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>t-statistic</th>
<th>Lower 95%</th>
<th>Upper 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y-intersection</td>
<td>4.37379</td>
<td>0.007552</td>
<td>721.22</td>
<td>4.358986</td>
<td>4.388929</td>
</tr>
<tr>
<td>InfProd</td>
<td>0.467035</td>
<td>0.000346</td>
<td>22.58</td>
<td>0.006952</td>
<td>0.005596</td>
</tr>
<tr>
<td>InfEmpl</td>
<td>0.270197</td>
<td>0.000422</td>
<td>25.62</td>
<td>0.007856</td>
<td>0.009511</td>
</tr>
<tr>
<td>FAIF</td>
<td>0.220671</td>
<td>0.000336</td>
<td>33.26</td>
<td>0.008312</td>
<td>0.009628</td>
</tr>
</tbody>
</table>
Table 6. Econometric model of the formalization of the influence the shadow sector of the economy on the country’s tax competitiveness

<table>
<thead>
<tr>
<th>Country</th>
<th>InfProd</th>
<th>InfEmpl</th>
<th>FAIF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(d_a)</td>
<td>(l_a)</td>
<td>(d_b)</td>
</tr>
<tr>
<td>Ukraine</td>
<td>0.2702</td>
<td>2</td>
<td>0.467</td>
</tr>
<tr>
<td>Poland</td>
<td>0.2117</td>
<td>2</td>
<td>0.2615</td>
</tr>
<tr>
<td>The Czech Republic</td>
<td>0.0996</td>
<td>2</td>
<td>0.2698</td>
</tr>
<tr>
<td>Slovakia</td>
<td>0.2898</td>
<td>2</td>
<td>0.2864</td>
</tr>
<tr>
<td>Slovenia</td>
<td>0.3168</td>
<td>2</td>
<td>0.3238</td>
</tr>
<tr>
<td>Romania</td>
<td>0.3362</td>
<td>2</td>
<td>0.386</td>
</tr>
<tr>
<td>Hungary</td>
<td>0.2258</td>
<td>2</td>
<td>0.3547</td>
</tr>
<tr>
<td>Croatia</td>
<td>0.2509</td>
<td>2</td>
<td>0.3611</td>
</tr>
<tr>
<td>Lithuania</td>
<td>0.2989</td>
<td>2</td>
<td>0.2109</td>
</tr>
<tr>
<td>Latvia</td>
<td>0.2178</td>
<td>2</td>
<td>0.3175</td>
</tr>
<tr>
<td>Estonia</td>
<td>0.1868</td>
<td>2</td>
<td>0.3365</td>
</tr>
</tbody>
</table>

- for Ukraine:
  \[
  ITCI(t)_{UKR} = e^{1.47 \cdot \text{InfProd}^{0.2702}(t-2) \cdot \text{InfEmpl}^{0.467}(t-1) \cdot FAIF^{0.2207}(t-2)},
  \]

- for Poland:
  \[
  ITCI(t)_{POL} = e^{2.34 \cdot \text{InfProd}^{0.2117}(t-2) \cdot \text{InfEmpl}^{0.2615}(t-1) \cdot FAIF^{0.2366}(t-2)},
  \]

- for the Czech Republic:
  \[
  ITCI(t)_{CZE} = e^{0.98 \cdot \text{InfProd}^{0.0996}(t-2) \cdot \text{InfEmpl}^{0.2698}(t-2) \cdot FAIF^{0.137}(t-2)},
  \]

- for Slovakia:
  \[
  ITCI(t)_{SVK} = e^{3.19 \cdot \text{InfProd}^{0.2989}(t-2) \cdot \text{InfEmpl}^{0.2864}(t-2) \cdot FAIF^{0.2406}(t-2)},
  \]

- for Slovenia:
  \[
  ITCI(t)_{SVN} = e^{3.16 \cdot \text{InfProd}^{0.3168}(t-2) \cdot \text{InfEmpl}^{0.3238}(t-1) \cdot FAIF^{0.3265}(t-2)},
  \]

- for Romania:
  \[
  ITCI(t)_{ROU} = e^{1.87 \cdot \text{InfProd}^{0.3362}(t-2) \cdot \text{InfEmpl}^{0.386}(t-1) \cdot FAIF^{0.2106}(t-2)},
  \]

- for Hungary:
  \[
  ITCI(t)_{HUN} = e^{1.51 \cdot \text{InfProd}^{0.2358}(t-2) \cdot \text{InfEmpl}^{0.3547}(t-2) \cdot FAIF^{0.235}(t-2)},
  \]

- for Croatia:
  \[
  ITCI(t)_{HRV} = e^{4.12 \cdot \text{InfProd}^{0.2509}(t-2) \cdot \text{InfEmpl}^{0.3611}(t-1) \cdot FAIF^{0.2398}(t-1)},
  \]

- for Lithuania:
  \[
  ITCI(t)_{LTU} = e^{2.38 \cdot \text{InfProd}^{0.2989}(t-2) \cdot \text{InfEmpl}^{0.2109}(t-1) \cdot FAIF^{0.2284}(t-2)},
  \]
Thus, the results of the conducted analysis confirm the hypothesis about the significant impact of tax evasion on the level of competitiveness of the country’s tax system. This leads to a constant underpayment of tax revenues by the budget, a decrease in the country’s investment and financial potential, and a shift in the tax burden to responsible taxpayers. In general, this leads to a decrease in the international competitiveness of the tax system and leads to labor migration, withdrawal of investments from the country, and closure of businesses. Establishing dependence forms the basis for determining the most priority tools for increasing the country’s tax competitiveness.

The results of the study confirmed the hypothesis that shadow tax evasion affects the competitiveness of the country’s tax system. The obtained results correlate with the results of previous studies (Mohamadi & Glants, 2018; Mujtaba et al., 2018; Cremer & Gahvari, 2000) in which the level of the shadow economy is defined as one of the influential determinants of the formation of the country’s international competitiveness.

At the same time, this study does not support that the geographical location of the country (tax competition mainly exists between geographically adjacent counties; Tao et al. (2023)), the share of intangible capital, and the growth of financial globalization (Quadrini & Ríos-Rull, 2024), and capital tax rate (Tamai, 2022) are factors of the country’s tax competitiveness.

At the same time, this paper has several limitations that can be considered in further research. This is due to the impossibility of assessing the full amount of tax evasion due to all schemes, the difficulty of considering the indirect impact of shadowing the economy on the competitiveness of the country’s tax system, and the latent relationships between them.

CONCLUSION

This study is devoted to assessing the impact of shadow tax evasion on the level of competitiveness of the tax system of the 11 European countries from 2011 to 2021. Regression equations of dependence between indicators were constructed using regression analysis, Shapiro-Wilk tests, and Spearman’s rank correlation.

It has been proven that informal employment has the greatest impact on tax competitiveness. With the help of the Spearman correlation coefficient, it was concluded that the increase in informal production leads to a decrease in tax competitiveness in all countries with a time lag of 2 years. Moreover, changes in the share of firms that compete with unregistered or informal firms and the population’s informal employment level affect the level of tax competitiveness in individual countries with a lag of 1 year.

Minimizing these impacts is possible by reforming the country’s tax policy to increase its attractiveness both at the international level and among representatives of the domestic business environment by counteracting the shadowing of the economy. The most priority measures to increase the competitiveness of the country’s tax system include: combating the manipulation of the amount of the tax burden on the incomes of individuals through unofficial employment, payment of wages “in envelopes”, etc.; application of tax tools for the regulation of shadow activities (incentive tax benefits); formation of a
coherent and stable legal framework; introduction of tools for assessing and forecasting the amount of tax debt that comes to the budget due to the implementation of shadow tax evasion schemes.

AUTHOR CONTRIBUTIONS

Conceptualization: Oleksiy Mazurenko.
Data curation: Oleksiy Mazurenko, Inna Tiutiunyk, Vita Cherba.
Formal analysis: Oleksiy Mazurenko, Inna Tiutiunyk, Artem Artyukhov, Yuliia Yehorova.
Funding acquisition: Oleksiy Mazurenko, Inna Tiutiunyk.
Investigation: Oleksiy Mazurenko, Inna Tiutiunyk.
Methodology: Oleksiy Mazurenko.
Project administration: Oleksiy Mazurenko, Inna Tiutiunyk.
Resources: Oleksiy Mazurenko, Inna Tiutiunyk, Artem Artyukhov.
Software: Oleksiy Mazurenko, Inna Tiutiunyk, Vita Cherba, Yuliia Yehorova.
Supervision: Oleksiy Mazurenko, Inna Tiutiunyk, Vita Cherba.
Validation: Oleksiy Mazurenko, Inna Tiutiunyk, Vita Cherba, Yuliia Yehorova.
Visualization: Oleksiy Mazurenko, Inna Tiutiunyk, Vita Cherba, Artem Artyukhov.
Writing – original draft: Oleksiy Mazurenko, Inna Tiutiunyk, Vita Cherba.
Writing – review & editing: Oleksiy Mazurenko, Inna Tiutiunyk, Vita Cherba, Artem Artyukhov, Yuliia Yehorova.

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REFERENCES


