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STUDY ON TAX COMPLIANCE AND DETECTION OF POSSIBLE TAX EVASION BEHAVIOR

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Abstract
The topicality of the chosen research topic results from the negative impact that tax evasion has on the collection of tax revenues to the state budget. Combating the evasion phenomenon is an urgency to ensure economic growth, equity in distribution and social stability. The purpose of this study is to present an overview of the situation and a perspective on tax evasion. The objectives proposed to achieve this goal are: analysis of the specialized literature to identify research trends on tax evasion; tax risk analysis based on economic and financial indicators; creation of an econometric model to authenticate the link between various operating expenses and turnover, trying to detect possible evasive behaviours. The results of the study lead to the conclusion that tax evasion could be prevented by early identification of cases of tax non-compliance.

Key words: *tax evasion; operating expenses; turnover; tax non-compliance*

JEL Classification: H21, H87, O2

INTRODUCTION

Tax evasion is a problem with serious economic consequences, not only for emerging economies, but also for developed countries. The phenomenon increases the volume of resources accumulated by entrepreneurs, but at the same time reduces the volume of public services provided by the government, which leads to negative consequences for economic growth.

Tax evasion generally refers to illegal practices to evade the payment of taxes. For this purpose, taxable income, taxable profits or other taxable activities are concealed, the amount and/or source of income is misrepresented, or tax-reducing factors, such as deductions or exemptions, are deliberately overstated. Tax evasion can occur as an isolated incident within activities that are legal. Tax evasion usually involves specific activities with the sole purpose of reducing tax liabilities; it takes on complex and extensive forms and is difficult to prove.

The purpose of this study is to present an overview of the situation and a perspective on tax evasion. The proposed objectives to achieve this goal are:

O1: conducting a meta-analysis of the specialized literature to identify research trends on tax evasion;

O2: tax risk analysis based on financial and accounting information tax risk analysis based on financial and accounting information;

O3: creating an econometric model that authenticates the link between various operating expenses and turnover, trying to detect possible tax evasion behaviours.

To achieve the proposed purpose and implicitly the three established objectives, works from the specialized literature and statistical data will be used, which will be interpreted and subjected to an econometric analysis.

I. LITERATURE REVIEW

In order to prevent and combat the phenomenon of tax evasion, the causes and conditions that favor its occurrence must be known. The specialized literature (Dinga, 2008) describes a multitude of factors that lead to the occurrence of tax evasion. Among them, we list: fiscal pressure; fiscal facilities; weakness of the tax administration; imitation. In order to prevent and combat the phenomenon of tax evasion, the causes and conditions that favour its occurrence must be known.

If the tax pressure is increased, the taxpayer will be tempted to engage in tax evasion; if the system is tolerant, either due to corruption or the absence of laws that severely sanction tax evasion, then the taxpayer will seek to resort to evasion; if tax incentives are granted easily and frequently, then tax evasion will intensify; if taxable persons influence each other in the sense of adopting tax evasion, then contagion increases and tax evasion spreads. Another important factor influencing tax evasion is corruption (Brașoveanu, 2010).

Trust in the government, trust in the legal system, the time that the management of entities is willing to allocate to various legal requirements, the sector of activity of the organizations, the number of their employees, the origin of the main investor, the legal status of the organization are other factors of influence for tax evasion (Abdixhikua & al., 2017). Some studies present a self-defined definition of tax evasion, including by reporting and

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delimiting it against neighboring concepts, namely abuse of law, avoidance of taxation, informal economy and tax fraud (Socoliuc et al., 2018).

The level of education is another determining factor of tax evasion. On the one hand, higher education brings better knowledge of tax legislation and rules, the possibility of making mistakes is lower for people with higher education. On the other hand, since higher education is also associated with better access to information on tax avoidance schemes, the tendencies to practice evasion are higher (Hofmann al., 2017). The issue of ethics in tax evasion is discussed in the specialized literature. There are three basic points of view on this issue, that tax evasion is never ethical, always ethical or sometimes ethical, depending on the facts and circumstances (McGee, 2023).

Government policies on property rights, monetary freedom, fiscal freedom and investment freedom have a negative influence on taxpayers' choices regarding tax evasion, while financial freedom has a positive effect on tax evasion (Islam et al., 2020). Social, economic and environmental factors contribute to the sustainable development of organizations (Macovei & Andrioaia, 2022). The evasion phenomenon can be accentuated by inflation (Bittencourt & al., 2014). The level of tax evasion is also determined by the absence of well-organized control by state institutions and well-trained personnel within them. Given the different causes behind this phenomenon, the importance and consequences of tax evasion change throughout the business cycle and require different policy measures (Dell'Anno & Davidescu, 2019). Tax evasion is a transnational phenomenon, harmful for all economies, its counteracting being an important purpose for policymakers all around the world (Timofte et al., 2019).

To better understand the phenomenon of tax evasion, a meta-analysis of the specialized literature was used, the results being presented in Table 1.

Table 1. Meta-analysis of the specialized literature

Year	Autor(s) and title	Objectives	Results	Impact
2022	Kounadeas et al., *Analysis of the Factors Affecting Tax Evasion in Greece*	The objective of the study is to analyze the evolution of the efficiency of the tax administration, to identify specific trends in the evolution of confirmed revenues resulting from controls carried out by tax authorities, as well as their correlation with the number of inspections carried out in the same period.	The authors conclude that the number of checks carried out considerably increases the fight against tax evasion.	According to all estimates regarding the level of tax evasion, reducing it, even by a small percentage, can generate billions of euros in revenue that each country's economy needs immediately.
2022	Herranza, & Turino, *Tax Evasion, Fiscal Policy and Public Debt: Evidence from Spain*	The purpose of the paper is to assess the extent to which public debt dynamics are shaped by tax avoidance by taxpayers.	The study concludes that an increase in government spending that, in the long run, is fully financed by lower tax rates can be substantially beneficial, as it would result in an increase in the welfare of economic activity, accompanied by a decrease in the debt/GDP ratio and a concomitant decrease in tax evasion.	The study contributes to understanding how transactions in the underground economy affect the effectiveness of fiscal policy in stimulating economic activity and reducing the public debt burden.
2021	Kowal & Przekota, *VAT Efficiency—A Discussion on the VAT System in the European Union*	The purpose of the article is to analyze the impact of the standard VAT rate and the efficiency of collecting this tax.	The conclusions of the research are as follows: a tax system in which tax rates are reduced is the system least susceptible to tax fraud.	The study demonstrates that there is a positive correlation between the VAT tax rate and the size of the fiscal deficit.
2021	Dobrovič, et al., *Tax evasion in the EU countries following a predictive analysis and a forecast model for Slovakia*	The main objective of the article is to identify the extent of tax evasion in EU countries, with a focus on econometric predictive models and a forecast of their future development.	The study presents a theoretical model for predicting the tax gap to help decision-makers effectively combat tax evasion at the level of each member country of the European Union.	The paper demonstrates the importance of econometric studies in detecting and predicting tax evasion.
2021	Gambarelli et al., *A Stackelberg game*	The authors propose a model that aims to segment potential evaders based on	The analysis shows that tax authorities should allocate a larger share of the budget to	The article highlights the importance of efficiently allocating

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	for the Italian tax evasion problem	the size of their business. This will allow tax authorities to more efficiently allocate the expenses necessary to carry out inspections.	control the large business class and invest fewer resources in controlling small businesses, as they do now.	the expenses necessary to carry out tax audits.
2021	Irawan, F., & Utama, A. S., *The impact of tax audit and corruption perception on tax evasion*	The objective pursued in the paper is to explain the association between low compliance with obligations as a result of tax evasion, the intensity of tax control and the perception of corruption at the national level.	Corruption significantly increases tax evasion and undermines the benefits of fiscal control, is the conclusion of the current paper.	Fiscal control has proven to be insignificant in terms of tax evasion when authorities are corrupt.
2020	Vanhoeyveld et al., *Value-added tax fraud detection with scalable anomaly detection techniques*	The main goal of this study is to develop fraud detection models that take into account the characteristics of the VAT domain.	The multitude of information existing in databases can be processed with the help of anomaly detection algorithms. Tax inspectors can benefit from the speed of analysis and the information they provide.	The proposed model can be a starting point for a possible tax inspection.

Source: Author compilation

The negative effects generated by tax evasion determine public authorities to take a series of measures, in the legislative and administrative fields, to reduce the evasion phenomenon.

II. MATERIAL AND METHOD

In order to exploit the potential advantages of presumptive taxation, we propose an integrated approach to the analysis of tax evasion. The integrated approach consists of combining efficiency analysis with the flat-rate fiscal framework. The proposed methodology was developed based on presumptive taxation methods that estimate the value of income generated. This leads to objectives 2 and 3 of the paper: tax risk analysis and the creation of an econometric model that authenticates the link between various operating expenses and turnover, trying to detect possible evasive behaviors. In order to achieve the stated objectives, a number of 95 companies in the bakery sector (CAEN 1071) were selected, from statistical data resulting in this sector having a high level of evasion. The turnover indicator was used in the processing because it represents the basic financial indicator of the enterprise's activity resulting from the summation of revenues from the sale of goods, the execution of works, the provision of services, locations, rents, studies, research and other operating revenues. The revenues that form the turnover are related to the main profile of the economic agents' activity and represent the largest part of the enterprise's revenues. The research methodology went through three stages presented below:

Stage 1: The selection of entities was made from the website www.topfirme.com randomly. The organizations are either payers of profit tax or microenterprise income tax. The indicators chosen for the analysis were: turnover, expenses for raw materials and consumables, energy and water expenses and personnel expenses. The values of these indicators were collected from the financial statements for 2020. For production activity, operating expenses are considered the indicators that directly influence turnover

Stage 2: We proceeded to the calculation of efficiency indicators: the ratio between energy and water expenses and personnel expenses (ChelEA/ChelPers), the ratio between energy and water expenses and raw material and material expenses (ChelEA/ChelMatPrim) and the ratio between energy and water expenses and turnover (ChelEA/CifrAfac).

Since energy and water expenses are generated by metered consumption and recorded in invoices issued by strategic suppliers, they have an almost zero degree of manipulation by the economic agent, unlike other types of expenses. Therefore, it was chosen that the possible evasion profile of the analyzed entities be determined according to the ratio index between energy and water expenses and turnover (ChelEA/CifrAfac).

Stage 3: After calculating the efficiency indices for each company, we proceeded to calculate the average index of the ratio between energy and water expenses and turnover ($ChelEA/CifrAfac_{mediu}$).

$$I_{medium} = \frac{\sum_{i=1}^{95} I_i}{95} \quad (1)$$

Next, Table 2 shows the minimum, average and maximum values of the calculated indicator for three key financial ratios.

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Table 2. Minimum, average and maximum value of the calculated indicator

	ChelEA/ ChelPers	**ChelEA/ ChelMatPrim**	**ChelEA/ CifrAfac**
Minimum values	0,022	0,015	0,005
Average values	0,176	0,166	0,049
Maximum values	1,100	1,306	0,307

The efficiency scores calculated for each firm (ChelEA/CifrAfac) were compared with the average index of the ratio between energy and water expenses and turnover. It was thus possible to classify the different groups of taxpayers with regard to their tax compliance and exposure to tax evasion behavior (see Figure 1). This resulted from combining the efficiency results with the presumptive result.

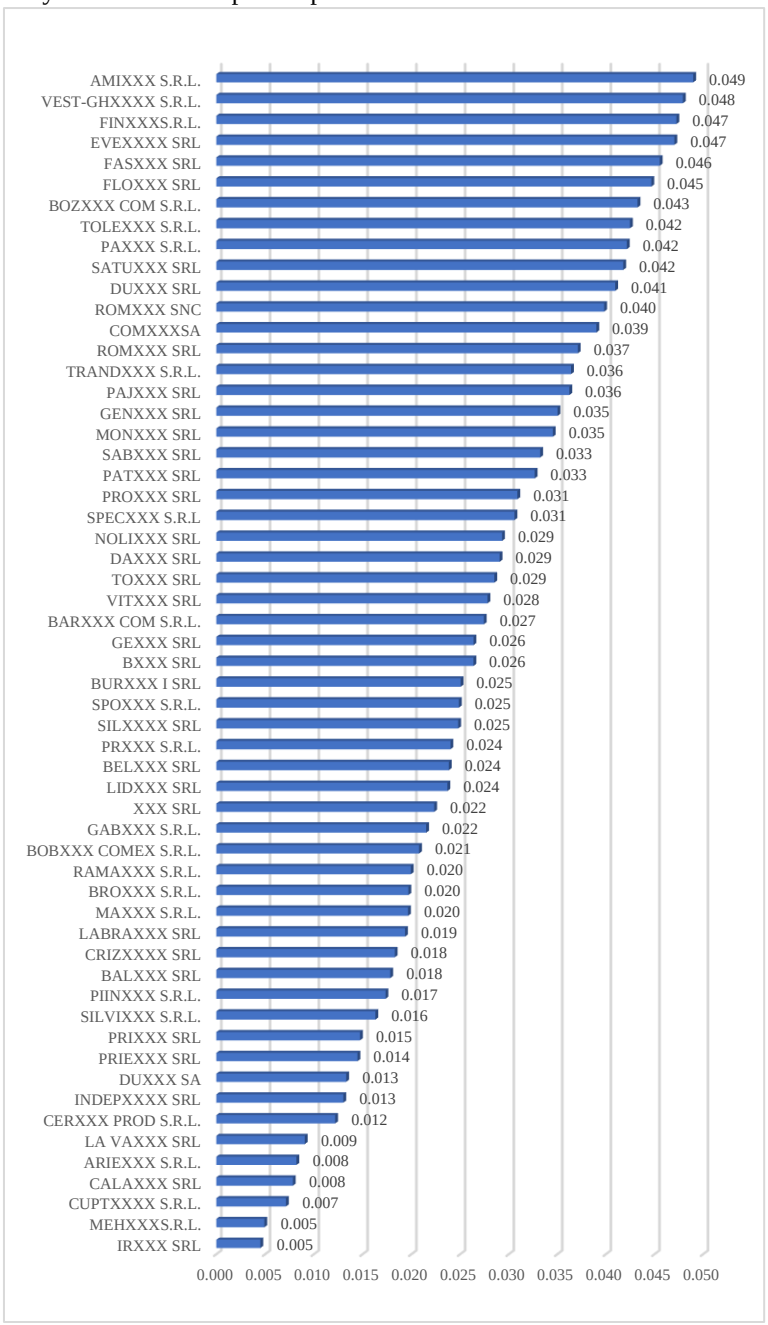

Figure 1. Share of energy and water expenses in turnover for companies with appropriate fiscal behaviour

Stage 4: Interpretation of the cumulative data leads to the finding that, of the 95 companies analyzed, 57 (60%) register a coefficient below the average value (0.049), meaning that the share of energy and water expenses

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in turnover is below 4.9%. For the remaining 38 companies (40%), this share exceeds the value of 0.049, reaching up to 0.307. Furthermore, we note that there are also cases in which some companies register record levels of the share in question, the figures being between 0.101 and 0.307, results much higher than the value of 0.049.

Companies that have an indicator lower than the average value are unlikely to adopt evasive behavior, presenting a high tax risk. For entities whose coefficients belong to the range (0.050; 0.098) we can consider, first of all, an inefficiency of the management, but we can also take into account their evasive behavior. Entities whose efficiency indicator is above the value of 0.101 may require additional investigations by the tax authority. They are prone to a high tax risk.

III. RESULTS AND DISCUSSION

The validity of the proposed methodology will be verified next. The aim is to demonstrate that the ratio of energy and water expenses to turnover (ChelEA/CifrAfac) is influenced by the other two calculated indices, respectively, the ratio of energy and water expenses to personnel expenses (ChelEA/ChelPers) and the ratio of energy and water expenses to raw material and materials expenses (ChelEA/ChelMatPrim).

The estimated equation of the linear regression model is of the form:

$$ChelEA/CifrAfac = \alpha + \beta * ChelEA/ChelPers + \gamma * ChelEA/ChelMatPrim + \varepsilon \quad (2)$$

The model variables and their means are presented in Table 3:

Table 3. Descriptive Statistics

	Variabiles	Mean	Std. Deviation	N
ChelEA/CifrAfac	Dependent Variable	0,049	0,04038	95
ChelEA/ChelPers	Independent variable	0,18	0,16866	95
ChelEA/ChelMatPrim	Independent variable	0,17	0,19883	95

Source: SPSS Statistics

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Table No. 4 presents the intensity of the correlation between the variables of the linear model:

Tabelul 4 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,742[a]	0,551	0,541	0,02736	1,240

[a] Predictors: (Constant), *ChelEA/ChelPers*, *ChelEA/ChelMatPrim*
[b] Dependent Variable: *ChelEA/CifrAfac*

Source: SPSS Statistics

The correlation coefficient R has a value of 0.742, which shows that there is an average correlation between the variables of the model. The coefficient of determination is 0.551, so 55.10% of the change in the ratio between energy and water expenses and turnover (ChelEA/CifrAfac) is explained by the change in the indices of the ratio between energy and water expenses and personnel expenses (ChelEA/ChelPers) and the ratio between energy and water expenses and raw material and materials expenses (ChelEA/ChelMatPrim).

The validation of the linear regression model is presented in the ANOVA table:

Table 1. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0,084	2	0,042	56,340	1,0588E-16
	Residual	0,069	92	0,001		
	Total	0,153	94			

[a] Dependent Variable: *ChelEA/CifrAfac*
[b] Predictors: (Constant), *ChelEA/ChelPers*, *ChelEA/ChelMatPrim*

Source: SPSS Statistics

In the ANOVA table, the Fisher coefficient value is 56.34. The linear regression model explains the significant dependence of the ratio between energy and water expenses and turnover (ChelEA/CifrAfac) depending on the ratio between energy and water expenses and personnel expenses (ChelEA/ChelPers) and the ratio between energy and water expenses and raw material and material expenses (ChelEA/ChelMatPrim), because we have in the ANOVA table a sig. value = 1.0588E-16 (< 0.05).

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The correlation coefficients of the model are calculated in table no. 6:

Table 2. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	0,015	0,004		3,489	0,001	0,007	0,024
	ChelEA/ChelPers	0,083	0,018	0,349	4,747	0,000008	0,049	0,118
	ChelEA/ChelMatPrim	0,113	0,015	0,557	7,583	$2,6293E^{-11}$	0,083	0,143

[a] Dependent Variable: ChelEA/CifrAfac

Source: SPSS Statistics

According to table no. 6, the ratio index between energy and water expenses and turnover (ChelEA/CifrAfac) is influenced primarily by the ratio index between energy and water expenses and raw material and equipment expenses (ChelEA/ChelMatPrim) (sig= 2.6293E-11) and secondly by the ratio index between energy and water expenses and personnel expenses (ChelEA/ChelPers) (sig=0.000008).

According to the results, the linear model equation is:

ChelEA/CifrAfac = 0,015+0,083 ChelEA/ChelPers+0,113* ChelEA/ChelMatPrim*

Table 3. Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	0,0199	0,1808	0,0487	0,02996	95
Std. Predicted Value	-0,960	4,408	0,000	1,000	95
Residual	-0,10975	0,14256	0,00000	0,02707	95
Std. Residual	-4,011	5,210	0,000	0,989	95

[a] Dependent Variable: ChelEA/CifrAfac

Source: SPSS Statistics

If we analyse the maximum residue obtained (0.14256) we notice that it belongs to the entity PANMX S.R.L., a company that has the highest share of energy and water expenses in turnover (0.307). We consider that following the analysis carried out, the inclusion of the targeted entity in the control plan is strictly required.

The decision to evade taxes is influenced by the variation of taxpayers' income, especially if it is increasing. Financial statements can provide the necessary indicators to detect evasive behavior. Their simple combination proves to be valuable from a predictive point of view. They also provide indications that can constitute the starting point of a tax audit. The content of the databases at the level of the National Agency for Fiscal Administration includes significant amounts of information. The development of fast algorithms is necessary to efficiently detect entities that may be subject to a tax audit. We thus take into account the human resource capacity constraints that tax authorities face and which are sometimes not taken into account.

Although the combination of indicators allows the authorities to detect possible cases of evasion, this faces several limitations. In particular, it cannot be accurately assessed whether there is evasive behavior or a lack of managerial competence and inefficiency. This can only be established after performing specialized tax audits on the financial and tax records of the entities concerned. Another limitation is the very small number of taxpayers analyzed. Therefore, it would be very interesting to test the robustness of this methodology, using a much larger sample to investigate in more detail the compliant or non-compliant behaviors of taxpayers.

IV.CONCLUSION

The decision to evade taxes is influenced by the variation of taxpayers' income, especially if it is increasing. Financial statements can provide the necessary indicators to detect evasive behavior. Their simple combination proves to be valuable from a predictive point of view. They also provide indications that can constitute the starting point of a tax audit. The content of the databases at the level of the National Agency for Fiscal Administration includes significant amounts of information. The development of fast algorithms is necessary to efficiently detect entities that may be subject to a tax audit. We thus take into account the human resource capacity constraints that tax authorities face and which are sometimes not taken into account.

Tax evasion is a complex process that involves multiple factors: institutions, entities, individuals, individual behaviour. The causes of the phenomenon vary from one country to another or from one period to

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another. To combat tax evasion, measures are needed at both national and European and global levels. The magnitude of tax evasion mainly results in the diminution of a state's economic development, its inability to collect revenues and its inability to implement its economic strategies.

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