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FISCALIZATION REFORM IN ALBANIA: AN ECONOMETRIC APPROACH TO STATE BUDGET REVENUES FROM FISCALIZED ENTERPRISES

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Abstract

The items that include public revenues in the state budget are very important for the economy, public expenditures, sustainability and growth depend on them. The functioning of the fiscal system in Albania has been particularly complicated for an important branch of the economy such as agriculture. It contributes approximately 18.4% to GDP, including 30% of employees. The Albanian government (January 1, 2021) started the implementation of the fiscalization platform, with the aim of collecting taxes in a more transparent way, especially the value–added tax, as one of the most difficult taxes to collect. Fiscalization represents a new digitized system of real–time reporting of the VAT situation for taxpaying subjects. The new innovative practice represents a comprehensive reform, especially in the field of issuing invoices, with an impact on taxpayers' income and the tracking of expenses. Considering the research gap, the study provides a general evaluation of the effects of fiscalization on the revenues collected from VAT, through an econometric approach. The results of the measurement (so far), show that the new fiscalization platform applied has influenced the increase in the number of businesses registered with a Unique Taxpayer Identification Number, formalizing the work of the majority of them. While the reform offers a positive development for public finances and in accordance with EU standards, a new continuous innovative approach in assisting new practices, logistics and the sustainability of management systems (cyber security) is recommended.

***Key words*:** *fiscalized taxpayers, state budget revenues, digital economy*

INTRODUCTION

The Albanian economy, despite its productivity and continuous structuring challenges, has not remained a spectator in the world of innovations and digitalization. Considering the consequences of the Covid–19, pandemic and lockdowns, sectors of the economy and especially financial services, private and public have been increasingly digitized. The digitalization of public services through e–Albania platform and overall economic developments have promoted financial improvement. Complications during the operation of the VAT system in some sectors (especially agriculture) and the tendency for efficiency and modernization have been a particular impetus for the new fiscalization process (January 1, 2021) in all transactions of economic activities. Albania's economy, through a challenging process of transition from a (completely) centralized economy to a free market economy, has been cyclically characterized by problems of efficiency of the fiscal system and transparency. The problem of taxes, natural evasive tendencies of some sectors (e.g. Agriculture), and the efforts to their efficiency and transparency have been the main characteristics of the reforms of the fiscalization system in other European countries as well. So, we can mention the process of fiscalization implemented in Italy (1980s), and new fiscalization in other transition countries or development, such as Poland, the Czech Republic, Slovakia, Sweden [5], etc. A transparent and fair fiscalization system includes the fiscal trend

the influence on income redistribution and the creation of a more righteous society [27] etc.

The problem of the operation of the fiscalization system in Albania has been critical for economic transparency, business environment, and (foreign) investments and specifically for some sectors. So, farmers do not have the obligation to issue an invoice for the sale of goods or services, referring to the VAT law in Albania. Agricultural products are collected near the collection points, and it's the obligation of these points to make a tax invoice to the farmer by self–invoicing and crediting the value–added tax from the purchase of these agricultural products. The policies of formalization of the agricultural economy have been continuous and numerous. An early attempt to avoid the shadow economy and which still continues is the registration of the object of activity in the relevant tax authorities, with the identification number of the taxable person. The process in general has been complicated for the agricultural sector since there were no incentive schemes for these developments. The VAT compensation scheme, initially at the rate of 6%, was an incentive measure, as it helps them cover the VAT paid for the purchase of inputs and services for the production of agricultural products. And in order to benefit from this compensation measure, they were obliged to register with the tax authorities, that is, to be formalized in order to benefit. But the collection points of agricultural products are already facing difficulties as they used to buy the product at 6% and sell it at 20% and had to cover this difference of 14%. Therefore (after 2014), this value–added tax on purchases became 20%, making it easier for agricultural product collectors, because they will only pay the added value of the product. This measure would now stimulate farmers more because they would be paid more for their products. At the rate of 20% of value–added tax, they were more interested in registering as active businesses, leading to an increase in the number of registered farmers. The fact that the collector of agricultural products can self–invoice and credit the VAT makes our products more competitive on the domestic market in relation to imported products. With the fiscal package approved (2019), the VAT refund for small farmers for sales became 6% from the 20% that was applied in 2014. Now for the processors of agricultural products, it was more profitable to introduce the raw material through import companies, since they received the same product at the same price with 20% VAT, meanwhile, they receive the same product in the country, maybe with a cheaper price, but with 6% VAT. This year was approved the VAT exemption of agricultural raw materials. This has created an opportunity for the importing entities to reduce the selling prices to the farmers by the same amount. Farmers on the other hand, managed to reduce the costs of agricultural production, increasing investments in agriculture, as a profitable sector of the country's economy. Earlier (December 2020), the VAT payment limit was 5 million ALL of the turnover per year. Meanwhile, from (January 1) 2021, this threshold has increased for the annual turnover up to 10 million ALL. The increase in the VAT payment limit for the annual turnover from 5 million to 10 million has made it easier for farmers and is expected to eliminate duplicate Unique Taxpayer Identification Numbers within the family. A large number of the farmers have issued 2–3 Unique Taxpayer Identification Numbers within the family to avoid obligations. The change in the VAT payment band has indicated in the number of farmers declined. From (November) 2021, the VAT on agricultural inputs changed again, it was set at 10%, causing the production costs of agricultural products to increase again. As a result of the policy change, there have been fluctuations in the agricultural economy. Furthermore, another policy for the formalization of the agricultural economy, which has been applied (2022), is the fuel compensation scheme for agriculture. For all farmers with a farmer Unique Taxpayer Identification Number or entities with a commercial Unique Taxpayer Identification Number (natural or legal persons) with agricultural production activities, who own or use/rent agricultural land, who have a farm with a size of not less than 0.4 hectares,

composed of from plots with an area of not less than 0.1 hectares each, and who work the land and serve agricultural crops with mechanized means will be able to benefit from an average of 70–100 litters of free oil for each hectare of planted land, depending on the crops agricultural. Taxpayers, subjects of VAT or profit tax, or simplified profit tax for small businesses according to the current relevant legislation, are obliged to issue an invoice as a recipient of products or services provided when purchasing goods from farmers or agricultural producers, who benefit from the compensation scheme. Even after the commencement of the full effect of the fiscalization provisions, in the case of the collection and purchase of agricultural products marketed by farmers, the invoice will be drawn up and fiscalized by the purchasing collector of agricultural products in harmony with the regulatory framework of the field. Thinking about this new approach, the most advisable action could be very close to the strategy of how to create incentives for formalization. This requires reforms in various areas, such as the taxation system, task legislation, product markets and improving the business climate, etc. If economic growth is not accompanied by income redistribution or increased employment levels, it may continue to encourage the growth of the informal economy, considering its specific characterizations. Furthermore, concerns over the informal economy and the areas where informal activities are more prevalent affect employment and productivity, and here we underline the importance of addressing specific policies. The formalization of informal activities is a primary task and is not simply and solely for tax collection or law enforcement purposes. Given the traditional culture of informality, instability and shocks from outside the system (eg pandemic), or currently fiercest (external) competition, tendencies towards the informal–compensatory economy may have become even more desirable, and typical illustrations, again in this case, come from the agricultural production and farm sectors.

The level of credit value-added tax for various periods is shown in Table 1 and the level of value-added tax for agricultural inputs is presented in Table 2.

Table 1. The level of credit value–added tax

The level of credit value–added tax.	
Period	**VAT (%)**
Until 2014	6%
2014–2019	20%
2019 up to date	6%

Source: General Directorate of Taxes [11].

Table 2. Value–added tax for agricultural inputs

Value–added tax for agricultural inputs.	
Period	**VAT (%)**
Until November 2021	0%
November 2021 up to date	10%

Source: General Directorate of Taxes [13].

Finally, in (January) 2021, initiated the new fiscal policy, that of digitizing sales and purchase transactions, reporting every transaction in real–time. This policy requires a new adaptation from what farmers and the rest of the links on the agricultural product were already used to. However, its full implementation has the expectation of further formalization of the agricultural economy, and eventually eliminating the shadow economy. The procedure now goes through the issuance of an electronic invoice. Each Unique Taxpayer Identification Number is obliged to provide internet 24 hours a day, to be equipped with a tablet, mobile or computer, to be equipped with NISA (National Agency for the Information Society) with an electronic certificate, and software to log in to the tax administration portal, the self–care portal. The use of technology helps the information to go

through in real–time for both purchases and sales, VAT tax returns are also issued in real–time. Below is a view of the login of each economic entity in the self–care portal (Figure 1).

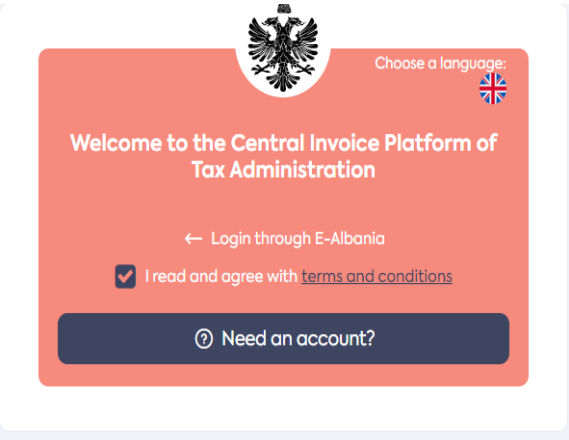

Fig.1. Log in the Self–Care portal
Source: https://efiskalizimi–app.tatime.gov.al/ [30].

Framework of the study

The latest technological developments and the implementation of the fiscal platform have contributed to the progress of the Albanian economy and in particular to its formalization. Individuals are aware, voluntarily or out of fear of intrusive policies, to be certified in one of the legal forms of business registration, increasing the number of active registered businesses. On the other hand, the fiscal platform through the self–care portal is bringing the tax administration closer to the business, making everything measurable in real–time. The focus of the study is an assessment of the relationship between the number of fiscalized businesses and revenues in the state budget. The link we have analyzed is between the number of active enterprises registered with a Unique Taxpayer Identification Number, as an obligation of the fiscalization law, with the revenues in the state budget. More concretely, tax revenues in the state budget consist mainly of revenues from VAT, Social and Health Insurance Contributions, Profit Tax and Personal Income Tax.

In this context, some research questions of interest are, what is the relationship between the increase in the number of registered and fiscalized active enterprises and revenues in the state budget? What are the costs and benefits of the new fiscalization reform? We will try to answer these questions through an econometric analysis of the variables under review.

Objectives and hypotheses

The study objective is an analysis of the impact of the fiscalization reform progress in Albania through an econometric approach, by measuring the impact of the most influential variables such as VAT income, social security and health contribution, profit income tax and personal income tax to the number of registered businesses. The study hypotheses are:

H_1: With the increase in income in the state budget from the Value Added Tax, the number of businesses registered and fiscalized through the new fiscalization platform has increased;

H_2: With the increase in income in the state budget from the Social Security and Health Contributions, the number of businesses registered and fiscalized through the new fiscalization platform has increased;

H_3: With the increase in income in the state budget from the Profit Tax, the number of businesses registered and fiscalized through the new fiscalization platform has increased;

H_4: With the increase in income in the state budget from the Personal Income Tax, the number of businesses registered and fiscalized through the new fiscalization platform has increased;

Literature review

Although research on the implementation of the new fiscal platform in Albania is lacking, studies about this very interesting research field are numerous and multidisciplinary. The problem of efficient control of VAT collections presents an issue addressed in the literature [20]. To argue the complexity of institutional, cultural, technical, and technological issues etc., related to fiscalization, and problems such as the role of government inspections and fair auditing, transparency and new methods to ensure that everyone pays taxes and VAT, etc., authors suggest the implementation of new fiscal technology, as a legally defined way to effectively control the collection of VAT [22].

Analyzing this problem and possible solutions related to collection efficiency, they found the impact of Electronic Tax Registries on the speed with which the taxpayer processed VAT and the cost of VAT processing. Other studies underline that government institutions should create preconditions that prevent, or at least reduce the level of tax fraud, which will improve tax control processes in order to make them fast and efficient and raise the awareness of buyers about people who do not issue invoices and do not pay taxes, by breaking tax laws and in the long run. Is the cause of higher taxes or some other types of public taxes [23]. By analyzing within a short–term analysis [18] (the first three years) was found that the implementation of the fiscalization law [16, 21] has resulted in an increase in tax revenues, encouraging citizens to ask for an invoice for the goods or services they receive and report if this is respected, improving the performance of the tax administration and reducing the shadow economy. According to this study, examining the total income per year (that is, the first nine months), an increase in them was evidenced by improving the practices against tax fraud from the fiscalisation process and especially the supervisory measures of issuing invoices in cash. The system of fiscalisation in Croatia as a model that tries to establish financial discipline on the basis of successful surveillance recording of cash transactions, which results in a balanced financing of public expenditures [24]. Moreover, fiscalisation means stricter supervision of taxpayers' income in order to collect it as effectively as possible [28]. In this study, the authors analyzed the implementation of fiscalisation, the impact on businesses and their response, finding advantages and disadvantages in the fiscalisation process and the general attitude towards it. The efficiency of fiscalisation can be improved by placing fiscal equipment in an automation system, where the collection of information is automated, and that additional efficiency can be achieved by viewing fiscalisation as a comprehensive part of the process of improving compliance, noting that new digital security capabilities must be required to ensure the fiscalisation process. This resulted from studying taxpayer compliance and administrative efficiency [2], observing fiscalisation as an independent process with government controls and examined the effects of this strategy on fiscal devices such as electronic cash registers (ECR), electronic fiscal devices (EFD), electronic fiscal printer (EFP). Through an econometric approach [4], where was analyzed the target of about 12,060 registered traders, identifying and extracting the main factors in specific themes. In a case study from developing countries [6], using a sample of 391 traders and secondary VAT data through an econometric approach applied a multivariate regression to study the relationship between VAT collection, compliance, bias and obligation to pay. The level of compliance showed that, on average, most traders (235) have respected the payment of VAT, underlining that fiscalisation is a solution to reduce fiscal evasion and revenue collection. Studies emphasize that, fiscalisation improves internal accountability, business management and control by recording and maintaining all sales without manipulation [26]. This is evidenced by the accurate description the data and shorter control periods by tax collectors.

However, fiscalisation is characterized by challenges, such as few equipment suppliers (or anti–competitive behavior), unrealistic deadlines and higher penalties, or even the degree of user–friendliness and compatibility with other equipment, etc. This is evidenced by the slow receipt of equipment due to lack of capacity and non–receipt of tax clearances because they were not taxed. Changing the strategy with the implementation of the fiscalisation process can contribute to sustainability and growth, where fiscalisation would become an integral part of the services provided by businesses [3].

Examining the decision–making framework of business and government [17], adapt a model of interaction between them called game theory.

The findings showed interaction results underlining that the optimal strategy for a business that chooses tax evasion is not to issue invoices only to loyal customers, which

reduces the possibility of reporting and reduces the perceived risk of the business being audited. Higher penalties increase the government's payment function in the short run, but may reduce potential future revenue. Fiscalisation is the system that collects more data from citizens and this leads to more efficient and complete tax reporting [14], by helping authorities to improve their service to taxpayers even through pre–filled documents, which means fewer errors and faster tax reporting. Digitization of these processes helps communication and exchange of information between government and businesses. This leads to the reduction of administrative operations. Studies from Albania suggest that the process of fiscalization has a positive impact on the Albanian economy and SMEs, but Albania was found unprepared for the development of fiscalization [19]. Undoubtedly, the difficulties are numerous for both taxpayers and the tax administration, but nevertheless the benefits are such as:

• Saves time by avoiding manually preparing tax invoices and sending them to buyers;
• It is possible in real–time to verify the status of the buyer and receipt of the invoice from the buyer, facilitates the preparation of VAT sales books;
• It is possible to integrate sales into the accounting system, especially for enterprises that have large stocks;
• Information is crossed and reconciled between sellers and buyers;
• Abuses are prevented and identified more easily;
• Formality increases and unfair competition decreases;
• Increases the possibility of controlling and specifying fictitious inventories;
• Increasing the possibilities of tax authorities to control the implementation of the law;
• Expanding the tax base, increasing income and improving the distribution of the tax burden;
• Reducing informality helps to fight corruption and improve public services, etc.

However, the successful implementation of fiscalisation and its modernization in Albania involves wide and complex issues. The modernization of the system is related to fiscalization and the technical principles of implementation [29], but also to the organizational principles, the conception of a simplified tax system and the failure of each of them represent a risk for the activity of entrepreneurship and the economy.

MATERIALS AND METHODS

The study is based on panel data. Panel data is a combination of variance series and dynamic series. Specifically, the data are from the 14 Regional Tax Directorates of Albania, the period is 5 years, the variables are the income provided in the state budget from VAT and the active number of businesses operating in these 14 directorates.

Therefore, we mark with:

T= Number of periods (the years we will study), N=Number of units (Regional Directories by cities).

To specify what type of Panel Data we are dealing with, we analyze the number of data for T and the number of data for N.

If: T=N, we are dealing with Balanced Panel.
T<N, we are dealing with Short Panel.
T>N, we are dealing with Long Panel.

In our case, the data we have are, T=5, and N= 14, so T is smaller than N, so we say that we are studying Short Panel Data.

Since for each directory we have data for the same periods, i.e. moments of time, we say that we are dealing with balanced panel data, Balanced Short Panel Data.

From a methodological point of view, we have used the POOL OLS, Pooled Ordinary Least Square method to study the relationship between the variables.

RESULTS AND DISCCUSIONS

The data used are balanced panel data, because for each Regional Tax Directorate we have data for the same periods, i.e. moments of time. Therefore, based on these data, we can formulate three main types of regression models.

We created the general panel POOL OLS model:

$$Y_{it}=X_{1it}B_1+ X_{2it}B_2+ X_{3it}B_3+ X_{4it}B_4+v_{it} \quad (1)$$

This model evaluates the dependency of the variables: *Y–number of businesses registered with Unique Taxpayer Identification Number, which were fiscalized from January 1, 2021, and X_1–VAT income in the state budget, X_2–Social Security and Health Contributions, X_3–Profit income tax, X_4–Personal Income tax.*
In our case:
i = Berat, Dibra, Durres, Elbasan, Fieri, Gjirokastra, Korça, Kukës, Lezha, Saranda, Shkodra, Tirana, the Directorate of Large Taxpayers, Vlore.
t = 2017, 2018, 2019, 2020, 2021
m = 70

Table 2. Concept and variables.

Concept	Variables	Symbols
Revenue in the state budget	*VAT income*	X_1
	Social Security and Health Contributions	X_2
	Profit income tax	X_3
	Personal Income tax	X_4
Fiscalised enterprises	*Number of businesses registered with Unique Taxpayer Identification Numbers*	Y

Source: Authors' calculations.

In Fig. 2, it was analyzed the weight (in %) occupied by enterprises with active Unique Taxpayer Identification Number according to the Regional Tax Directorates throughout Albania since 2021. We conclude that the Tirana Regional Tax Directorate has the largest percentage of active enterprises, about 31% of the enterprises are concentrated in Tirana, converted in number, are 29,835 enterprises, followed by Fieri with 14% and Korça with 10%. In total, for the whole of Albania, there are 191,185 enterprises registered with active participation for the year 2021.

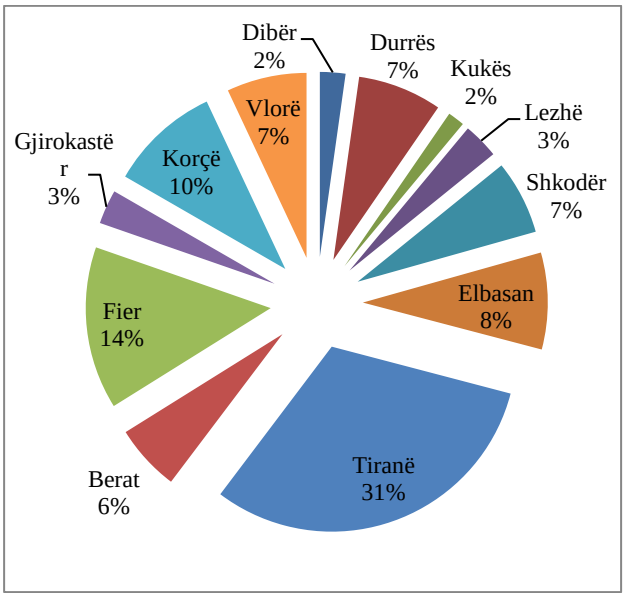

Fig. 2. Active businesses in accordance with the Regional Tax Division (2021) [17].
Source: General Directorate of Taxes.

VAT, one of the tax revenues in the state budget, occupies a significant position in tax revenues. Social and Health Insurance Contributions also play an important role. However, the identification of income from VAT has always been problematic.
That's why the Albanian government took the initiative of massive fiscalization. This was in order to have the most efficient control over the tax revenue.
In Fig. 3, it is shown a distribution of tax revenues, VAT, Social and Health Insurance Contributions, Profit Tax and Personal Income Tax for five consecutive years, 2017, 2018, 2019, 2020, 2021.
From the data, the Tirana Regional Directorate of Taxes and the Directorate of Large Taxpayers, with the largest number of enterprises, are the ones that provide the highest income in the state budget. In 2021, the tax revenues from VAT in the Tirana Regional Tax Directorate have resulted in the level of 13,780,973,000 ALL, followed by the Directorate of Large Taxpayers with 12,117,239,000 ALL. Summing up, Social and Health Insurance contributions have also been at a significantly higher level, and if we compare the year 2021, when the implementation of the fiscalization system began in Albania, with the year 2020, there is a significant increase in the level of income of VAT, Social and Health Insurance, Income or Personal Tax and Income Tax.

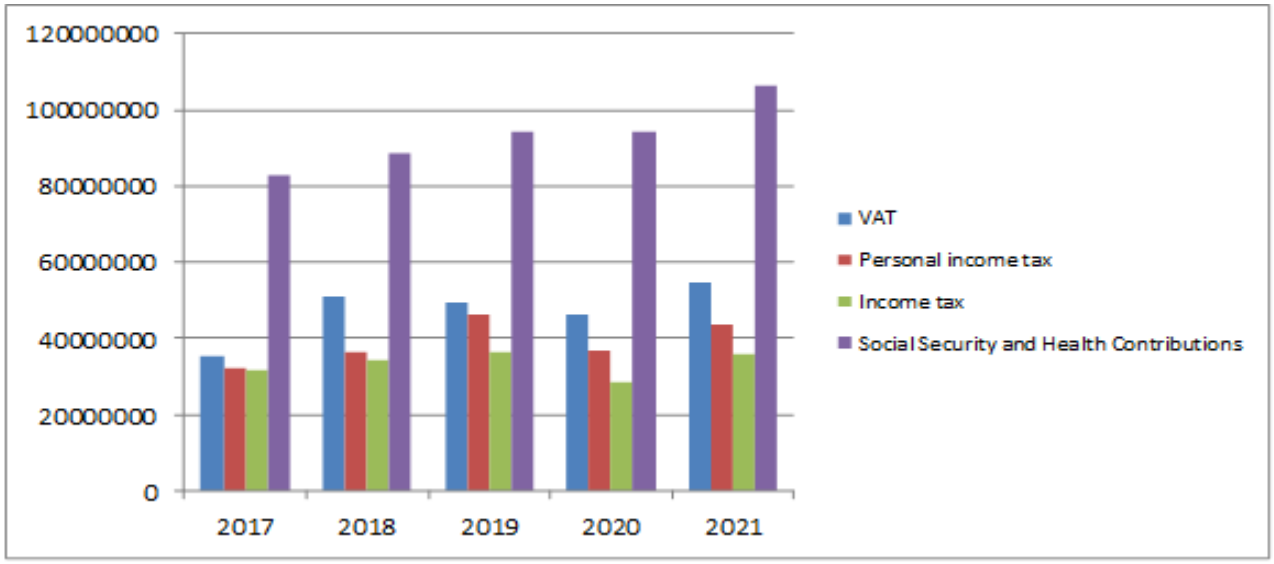

Fig. 3. The level of tax revenue in the state budget for the last five years (2017, 2018, 2019, 2020, 2021) [8, 9, 10, 11, 12, 13, 15, 25].
Source: General Directorate of Taxes.

The impact of the implementation of the fiscalization process in the enterprises is determined by different factors, whether these are at the individual level, at the institutional level, but not only.

Pooled Ordinary Least Square model

The general Least Square model is formulated in Table 3.

The model shows that the number of businesses registered in the last (5) years is statistically significant at the level of income in the state budget. And the significance level (0.00% <5%) indicates that the model is significant at a very good level.

Table 3. Pooled Ordinary Least Square model [8, 9, 10, 11, 12, 13, 15].

Dependent Variable: NO_REG_ENTERPRISES
Method: Panel Least Squares
Date: 02/28/23 Time: 11:26
Sample: 2017 2021
Periods included: 5
Cross-sections included: 14
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7714.227	840.1805	9.181630	0.0000
VAT_INCOME	-0.000122	0.000238	-0.514084	0.6089
CONTRIB_INCOME	0.000639	0.000145	4.415922	0.0000
PROFITTAX_INCOME	0.000405	0.000282	1.436342	0.1557
PERSONAL_INCOMETAX	3.00E-05	0.000261	0.115080	0.9087

R-squared	0.632356	Mean dependent var	12665.11
Adjusted R-squared	0.609732	S.D. dependent var	8952.488
S.E. of regression	5592.751	Akaike info criterion	20.16508
Sum squared resid	2.03E+09	Schwarz criterion	20.32569
Log likelihood	-700.7778	Hannan-Quinn criter.	20.22887
F-statistic	27.95035	Durbin-Watson stat	0.040140
Prob(F-statistic)	0.000000		

Source: Authors' calculations.

No_reg_enterprises = 7714.2 - 0.000122*VAT_income + 0.000639*Contrib_income + 0.000405*Profittax_income + 3.00e-05*Personal_incometax

So, if the revenue provided by VAT will increase by 1 ALL keeping X_2, X_3, X_4 constant, the number of registered and fiscalized businesses will decrease by 0.122, this is because businesses are not subject to VAT payment when they are first registered, they become so when they reach the annual turnover of 10 million ALL. When income from social and health insurance contributions increases by 1 ALL while keeping constant income from VAT, profit tax and personal income tax, the number of registered–taxed businesses increases by 0.639. When income from profit tax increases by 1 ALL, keeping X1, X2, X4 constant the number of registered and taxed businesses increases by 0.405. And when income from personal income tax increases by 1 ALL, keeping X1, X2, X3 constant, the number of registered and taxed businesses increases by 3. The coefficient of determination R^2 in this model is 63%, which means 63% of the variance of the number of registered and fiscalized businesses in the framework of the fiscalization reform is determined by budget revenues such as VAT, social and health insurance contribution, profit tax and personal income tax, the rest is explained by the variance of the remaining factors.

Fixed effects model

We formulated the general model with fixed models:

$$Y_{it}=a_i+BX_{it}+v_{it} \quad (2)$$

Based on the Prob (F–statistic), the model with fixed effects is statistically significant, but what we notice compared to the first model, is that the coefficient of determination is already higher. This improves the model even more, making the relationship between the variables stronger.

Fixed–effects model with dummy variables

In the model we will include n checker variables, as much as number of regional directorates. We will give each variable the value one for the corresponding directory and zero for the other directories. In this case the model with fixed effects with factors x-revenues in the state budget, will have the form:

$$Y_{it}=a_{11}d_{1i}+ a_{12}d_{2i}+ a_{13}d_{3i}+\ldots\ldots+ a_{114}d_{14i}+ X_{it}B +_{vit} \quad (3)$$

No free constant is set in the model to avoid multicollinearity problems, because a dummy variable is used for each regional directory. According to the formulation, the coefficient a_{it} (intercepted) is different for different individuals. The differences between the Regional Directories are significant, but the other parameters do not have major changes from the above model, therefore we also try the model with random effects.

The random–effects model

In principle, the random effect model is different from the common effect and the fixed effect, especially this model does not use the principle of ordinary least squares, but using the principle of maximum likelihood or generalized least squares (but using the principle of maximum likelihood or general least squares).

$$Y_{it}=a+B'X_{it}+u_{i+} e_{it} \quad (4)$$

For i = 1,2, ..., N and t = 1,2, ..., T.
where:
N = number of Regional Tax Directorates or cross section.
T = number of time periods.
E_{it} = is the residual as a whole, where the residual is a combination of cross section and time series.
Ui = represent the individual residual which is the random characteristic of the unit observation.
In the random effects model, residuals may be correlated across time and across regions or cross-sections. Therefore, this model assumes that there is an intercept variable for each regional directory and the intercept is a random variable. So there are two residual components in the random effect model. The first is the residual as a whole where the residual is a combination of cross section and time series. The second residual is an individual residual which is a random characteristic of the unit observation and remains at all times.

Hausman Test

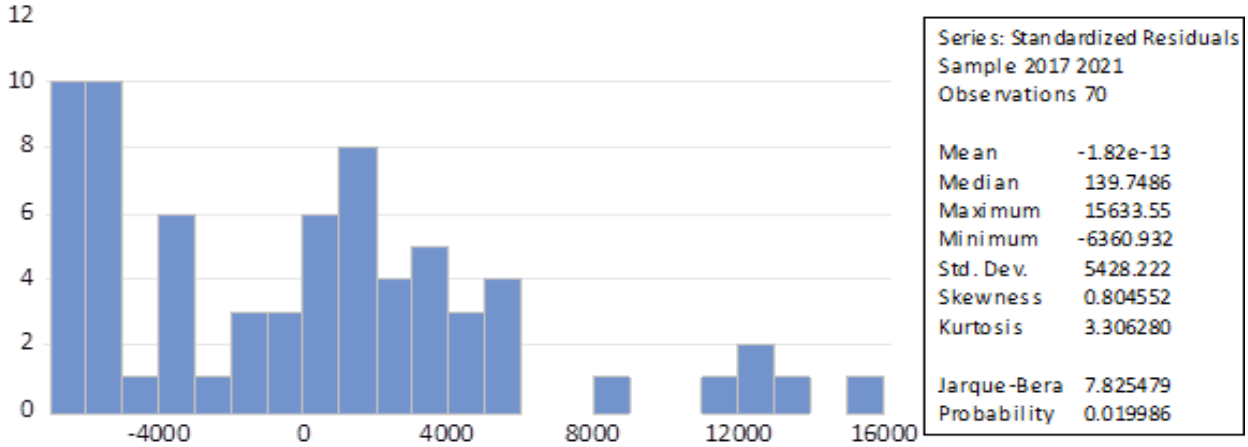

Fig. 4. Histogram, normality test
Source: Authors' calculations.

Table 4. Heteroskedasticity Test

Panel Cross-section Heteroskedasticity LR Test
Equation: EQ01
Specification: NO_REG_ENTERPRISES C VAT_INCOME CONTRIB_INCOME PROFITTAX_INCOME PERSONAL_INCOMETAX
Null hypothesis: Residuals are homoskedastic

	Value	df	Probability
Likelihood ratio	91.76429	14	0.0000

LR test summary:

	Value	df
Restricted LogL	-700.7778	65
Unrestricted LogL	-654.8956	65

Unrestricted Test Equation:
Dependent Variable: NO_REG_ENTERPRISES
Method: Panel EGLS (Cross-section weights)
Date: 02/28/23 Time: 11:31
Sample: 2017 2021
Periods included: 5
Cross-sections included: 14
Total panel (balanced) observations: 70
Iterate weights to convergence
Convergence achieved after 26 weight iterations

Variable	Coefficient	Std. Error	t–Statistic	Prob.
C	10249.08	204.3581	50.15257	0.0000
VAT_INCOME	8.97E-05	4.87E-05	1.840887	0.0702
CONTRIB_INCOME	0.000376	3.81E-05	9.860384	0.0000
PROFITTAX_INCOME	0.000439	5.72E-05	7.674292	0.0000
PERSONAL_INCOMETAX	2.09E-05	5.05E-05	0.413384	0.6807

Weighted Statistics

R-squared	0.963782	Mean dependent var	55385.80
Adjusted R-squared	0.961554	S.D. dependent var	64189.95
S.E. of regression	5990.755	Akaike info criterion	18.85416
Sum squared resid	2.33E+09	Schwarz criterion	19.01477
Log likelihood	-654.8956	Hannan–Quinn criter.	18.91796
F-statistic	432.4258	Durbin–Watson stat	0.597917
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.578141	Mean dependent var	12665.11
Sum squared resid	2.33E+09	Durbin-Watson stat	0.036897

Source: Authors' calculations.

The Hausman test is a test used to determine the best method between fixed effect or random effect. The Hausman test is a statistical test to choose whether the most appropriate Fixed Effect or Random Effects model is used.
If it turns out: Basic hypothesis (H0): Choice RE ($p > 0.05$). Alternative hypothesis (H1): Choice of FE ($p < 0.05$)
In our model $p=0.0351<0.05$, we hold H1: We choose the model with fixed effects.
To analyze this even better, the Normality Test, the Histogram, comes to our aid (Fig.4).

A histogram is a graph that allows us to detect and show the frequency distribution (shape) of a continuous data set. This allows inspection of data for their underlying distribution (e.g. normal distribution), outliers, skewness, etc.
The Jarque–Bera test:

$$JB = n [(\sqrt{b1})2 / 6 + (b2 – 3)2 / 24] \quad (5)$$

helps us to test this best.
According to the above test, it turns out that the error term does not have a normal distribution, since $p=0 <5\%$.

Table 5. Residual Cross-Section Dependence Test.

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: EQ01
Periods included: 5
Cross-sections included: 14
Total panel observations: 70
Note: non-zero cross-section means detected in data
Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch–Pagan LM	192.0859	91	0.0000
Pesaran scaled LM	7.492984		0.0000
Pesaran CD	7.237679		0.0000

Source: Authors calculations.

CONCLUSIONS

The study through an econometric approach provides an analysis of the impact of variables such as VAT income, contribution income, profit tax income, and personal income tax on the number of registered enterprises. The relationship between the number of active registered and fiscalized businesses and the level of revenues in the state budget remains significant. The outcome of this connection as argued in the study, was to the extent of 63%, which means that 63% of the variance of the number of registered and fiscalized businesses is determined by the increase in revenues in the state budget, and the rest explained by the variance of the remaining factors. The model that performed best in these relationships was the Pooled OSL model with fixed effects. Finally, we can underline that the implementation of the fiscal platform will ensure better performance and measurement of revenues in the state budget, while promoting the formalization of enterprises and avoiding the shadow economy and improving the business climate and foreign investments. To have a clearer and more consistent picture of the impact of the number of registered and taxed businesses on the income in the state budget may take more time. Our paper refers to the changes (since January 2021) for the implementation of the new fiscalization platform and for more specific data according to sectors (e.g. agriculture) for registered businesses there was no information. These can also be considered limitations of the study. The increase in the number of registered businesses can be an effective prophylaxis against new current economic concerns such as evasion, unclear policies that affect the empowerment of businesses, business and investment climate, low

competition and competitiveness, transparency and shadow economy [1] or the impact of fiscalization on possible losses [7]. Practically, improved fiscalization performance is a step forward in approaching the integration processes in the EU and exposes broader non–fiscal social issues such as the principle of social justice and social welfare, aspects of security (social and cyber security) and sustainability of the economic system. In the theoretical plan, other future studies can consider this theoretical framework by examining the progress of fiscalization, the dynamics and broad specifics (logistical, technological and administrative), etc. In our analysis, we are based on the number of registered and taxed active enterprises, but depending on the context there may be other variables that need to be analyzed for a longer period, such as policies related to the tax rate in years, or the form of organization of enterprises, etc.

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