Radiography of the Tax Inspection Activity in the Context of Contemporary Challenges

Andreea-Florentina Crăciun
West University of Timisoara, Faculty of Economics and Business Administration, Romania
andreea.craciun97@e-uvt.ro
Raluca-Ioana Răcătăian
National Agency for Fiscal Administration, General Directorate of Fiscal Anti-Fraud, Romania
racataianraluca@yahoo.com
Nicoleta-Claudia Moldovan
West University of Timisoara, Faculty of Economics and Business Administration, Romania
nicoleta.moldovan@e-uvt.ro

Abstract

This paper maps the influences exerted by the changes related to the period 2016-2021 on the tax inspection activity in Romania, characterized by permanent regulation adaptation, the slow adoption of information technology in public administration, and inefficient crisis management. The data relating to the activity of the National Agency for Fiscal Administration (NAFA) considered in the paper were extracted from the Statistical Bulletins and the Biannual Activity Reports of NAFA. The analysis of contemporary challenges and their effects on the fiscal inspection activity can be found in this study. A detailed trend estimation and correlation analysis between the variables that define the tax activity was made through a model of simultaneous equations using EViews. Our results reveal that the tightening of regulations in specific sectors, the implementation of IT systems in economic activity, and the measures taken in the context of the pandemic are directly reflected in the number of tax inspections and the number of active taxpayers.

Key words: tax inspection activity, contemporary challenges, taxpayers, simultaneous equations, pandemic
J.E.L. classification: H26, H29

1. Introduction

The present face the most intense challenges to date. In less than 15 years, Europe is experiencing a second economic crisis, a pandemic crisis, and social security are threatened by the ongoing war. The effects of these phenomena have been reflected in the economy through a general increase in prices, economic instability, and a decrease in the predictability of legislation. The government must manage all changes that affect the economy, and one of the most critical levers with which the government can ensure the sustainability of the economy is taxation. By amending the tax legislation, measures have been taken to cap prices for necessities, provide subsidies to sectors severely affected by the pandemic crisis and adopt economic recovery programs. All these changes have put additional pressure on the tax inspection departments.

The tax inspection activity aims to promote the application of tax legislation and combat tax evasion. In Romania, the elaboration of the fiscal inspection methodology falls under the responsibility of the General Directorate for Coordination of Fiscal Inspection, and the activity of fiscal inspection falls under the responsibility of the specialized departments of the Regional General Directorates and the County Administrations of Public Finances. Recently, several programs have

been developed to digitise public administration, and the pandemic crisis has accelerated their implementation.

This paper aims to analyse the evolution of the tax inspection activity and how it is affected by contemporary challenges. The statistical data treated in the research were provided by the National Authority for Fiscal Administration, and their processing was performed through the EViews software. The analysis of the relations between the studied variables was conducted through a model of simultaneous equations that included indicators of efficiency and volume of the fiscal inspection activity. The variables considered in the analysis were: the number of fines applied (DNF), the total number of active taxpayers (DTAT), number of legislative changes (DCHANGES), collection expenses incurred at one million RON budget revenue (DSOR), number of controls performed (DNCP), the number of controls performed by an inspector to legal persons (DNILE), the number of controls performed by an inspector to individuals (DNII), and the degree of voluntary compliance (DVC). Data collection was performed quarterly for the period 2016-2021.

The literature has focused more on studying fiscal policy and the measures taken to mitigate the negative effects of the pandemic and less on how the state collects the revenue it needs. The novelty of this study is that it addresses the efficiency of tax revenue collection from the perspective of tax control. This approach is motivated by the fact that the tax administration is in a position to recover the decrease in the number of tax inspections not carried out due to the pandemic and by the fact that it is necessary to collect all budget revenues to cover the additional expenses generated by the crisis.

The paper includes the general economic context presented in the introduction, the review of the literature found in the dedicated section, the empirical analysis developed in methodology, data and results, the conclusions of the study, and references.

2. Literature review

The specialised literature offers a small number of articles with a research topic in fiscal inspection activity. Most studies are based on analysing fiscal policies and measures adopted in specific economic contexts, but very few mention about tax inspection activity. In addition, articles on tax inspection are carried out on the specifics of a particular country or region. However, several papers have been identified that propose new ways of approaching the inspection activity, some of which are based on artificial intelligence.

At the time of querying the Web of Science article database, it contained a number of 274 articles on tax inspection, divided into several fields of study. The search was performed according to the keywords "tax inspection" found in the topic of the documents. The ten most important research fields according to the number of written articles can be observed in Figure 1. It should be mentioned that, in addition to the classic research fields of this subject, there are fields such as social sciences and applied informatics.

Figure 1. TreeMap chart on the first ten areas of research on the tax inspection activity

Source: Web of Science

Løyland et al. (2019) approached the activity of tax inspection about the behaviour of taxpayers. They demonstrated that taxpayers subject to tax inspection are more likely to voluntarily comply in the future than other taxpayers. Also, the degree of compliance depends on the risk profile of each taxpayer. They have observed that other effects of tax inspections are reducing the number of intentionally filed incorrect statements (evasion) and improving knowledge of taxation.

Qu and Yu (2016) believe that the technology has not yet been applied to its full potential, and mainly, it has not been adopted in tax inspection activity. The authors identified three major problems of classical tax inspection methods: under-sizing the tax control structure, compromising the efficiency and quality of tax inspection by manually processing data, and the limited purpose of tax inspection. Consequently, they proposed an ongoing tax inspection model based on information technology and artificial intelligence. Based on the idea that all companies work with accounting reporting software, the program's data can be exported to the tax database and processed using artificial intelligence. The benefits of continuous tax inspection include instantly obtaining inspection-relevant data, continuity of data analysis, process automation, and reduction of processing errors.

Given the need to strengthen the legal framework in the fight against evasion and to take into account the importance of the existence of a unitary control mechanism that removes parallels and thus eliminates the different or even contrary tax assessment of the same economic operation, Aivaz et al. (2022) considered it suitable to carry out a dynamic analysis of the activity of the General Directorate of Fiscal Antifraud through the indicators reported by it. The obtained results showed that the functional or regulatory improvement in combating tax evasion could be supported by statistical studies that combine the indicators reported by the authorities with events (Chiriac et al., 2021) or empirical data (Chiriac et al., 2022).

In the same research area, Miseviciene and Nikonov (2011) developed software that automatically calculates the results obtained from tax inspections. The model presented by the two authors is based on the existence of a tax administration that collects all data on contributions, payments, and tax control activities in a predefined electronic format. This software can calculate the contributions due according to the parameters established by law and based on the payments made. It can also determine the differences between the income obtained, the declared income, and the tax base resulting from the tax inspection.

To apply the new methods of technology-based tax inspection, it is necessary for the tax administration to have adopted the essential technologies and to ensure the predictability framework of tax legislation. This conclusion was also reached by Lobonț et al. (2022) when they researched the relationship between public policies and the activity of the entrepreneurial environment. The authors demonstrated that economic growth and moderate regulation of entrepreneurial activity ensure an economic climate favourable to business development. However, in Romania, legislative changes are frequent. An analysis of the normative acts with an impact on taxation can be found in the following table:

Table 1. Legislative changes in fiscal matters from 2016-2021 by quarters

	2016	2017	2018	2019	2020	2021
Q 1	13	12	12	13	12	9
Q 2	13	13	13	9	11	11
Q 3	12	13	12	13	11	12
Q 4	12	13	11	7	11	10
Total	50	51	48	42	45	42

Source: own processing of data provided by NAFA

The main changes in the Romanian tax legislation from 2016-2021 were the following:
- providing fiscal facilities to develop some sectors of activity (tourism, construction, IT, research);
- transfer of social contributions to the employee;

- introduction of other types of taxable income (cryptocurrency transactions);
- granting fiscal facilities to taxpayers affected by the pandemic crisis;
- implementation of electronic reporting through the virtual private space (VPS);
- implementation of the SAF-T system;
- electronic invoicing through the national RO e-invoicing system.

Considering contemporary challenges, economic operators and taxpayers need to update their accounting records, tax records, and reports as legislation updates. For all the regulations regarding electronic reporting, many companies have had to invest in software systems that meet the requirements of the law. To ensure the proper implementation of fiscal measures and update the way of working with the current legislation, NAFA carries out national fiscal inspection programs. An evolution of the control activity in Romania can be found in the next section.

3. Data and methodology

In this paper, the data were analyzed by performing two research methodologies: the first methodology is the statistical analysis of the data, and the second is their econometric analysis. The statistical analysis aimed to follow the evolution of the analyzed variables, and the econometric analysis aimed to establish the links and influences between the variables using a model of simultaneous equations.

In the statistical analysis, the data were analyzed in raw form. This analysis follows the evolution of variables, growth rate, minimum or maximum points, and differences between analysis periods. The econometric analysis considered a model of simultaneous equations presented in its general form below. This model allows the analysis of variables both as dependent variables and as independent variables.

$$X = \alpha_1 + \alpha_2 Y + \varepsilon$$
$$Y = \beta_1 + \beta_2 X + \beta_3 Z + \varepsilon$$

The data were collected from the quarterly Fiscal Statistical Bulletins from 2016-2021. The selection of the data from the sample was made by block selection, respectively all the data from 2016-2021 were considered in the analysis. The variables for which the data were collected and analyzed are:

- total active taxpayers, which represents the total number of active taxpayers registered at the Trade Register Office and is expressed in the number of persons;
- RON spent at one million RON net budget revenues which represents the value of expenditures made by the tax administration for the collection of budget revenues and is expressed in absolute value;
- staff expenses at one million RON net budget revenues which represents the value of personnel expenses from the total value of expenditures made by the tax administration for the collection of budget revenues and is expressed in absolute value;
- number of checks performed represents the number of tax inspections performed during a semester for all categories of taxpayers and is expressed in absolute values;
- the degree of voluntary compliance with the payment of tax obligations is expressed as a percentage and represents the percentage of taxpayers who have paid in full or in part the contributions due from the total of registered taxpayers;
- changes of a fiscal nature that are expressed in absolute values and represent the number of newsletters issued by NAFA announcing the amended legislative aspects;
- number of inspections performed by an inspector (legal entities) is expressed in absolute values and represents the number of tax inspections performed by an inspector during a quarter to taxpayers legal entities;
- number of fines is the number of sanctions applied by the tax authorities as a result of irregularities found in tax inspections and is expressed in absolute values;
- the number of inspections performed by an inspector (individuals) is expressed in absolute values and represents the number of tax inspections performed by an inspector during a quarter to individual taxpayers.

4. Empirical analysis

The analysis period started with an inflation rate of -2.98% and ended with a rate of 8.19%, the difference being over 10%. In the six years of analysis, the economic conditions changed suddenly; a pandemic crisis occurred, followed by a post-pandemic financial crisis. 2020 was a critical year, marked by reduced economic activity due to the restrictions in force at that time. However, the number of unemployed, in absolute terms, decreased from 419.5 thousand people to 234.8 thousand people. The decrease in the number of unemployed is due to the increase in labour demand and the increase in the number of new companies in the economy.

During the analysis period, the total number of registered taxpayers experienced a constant evolution. The absolute values of the number of tax-active and inactive taxpayers are increasing. In order to follow the dynamics of the growth rate, we considered the number of taxpayers registered in the first quarter of 2016 as a basis for calculating the rate, thus being able to make a comparison between the two sets of reported values (Figure 2). It should be noted that the growth rate of fiscally inactive taxpayers has exceeded the growth rate of active taxpayers.

Figure 2. The growth rate of active and inactive taxpayers in the period 2016-2021
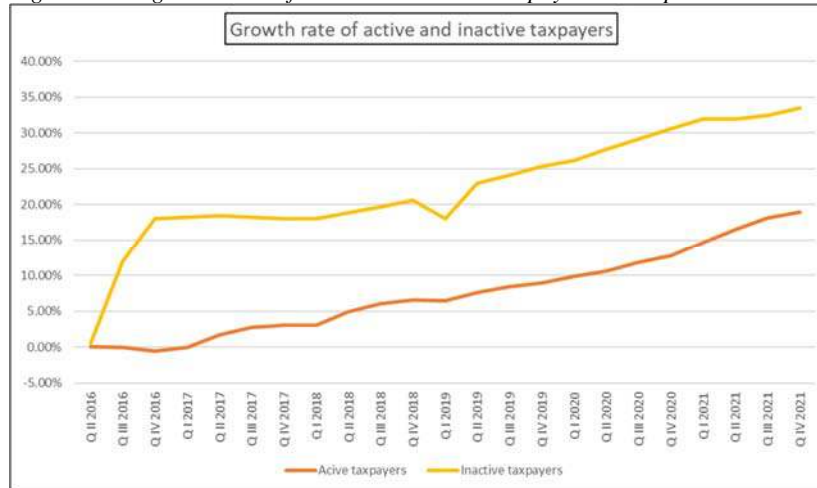
Source: own processing of data provided by NAFA

The graph in Figure 3 indicates the number of tax inspections performed during the analysis period. There is a tendency to carry out more checks in the year's first half. This period coincides with the deadline for submitting tax returns. The highest number of tax inspections was recorded in 2019, but with the onset of the pandemic, the number of inspections decreased considerably.

Figure 3. Number of tax inspections performed during 2016-2021
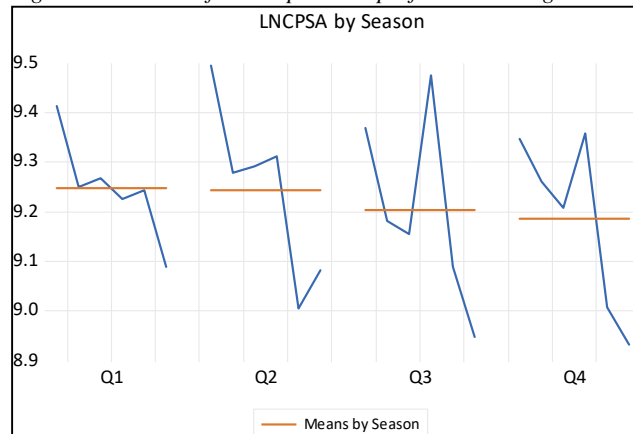
Source: own processing of data provided by NAFA

The degree of voluntary compliance is an indicator that underlies the elaboration of programs developed by the National Agency for Fiscal Administration. At the same time, this indicator can be considered as a result of the information campaigns carried out within NAFA. In the case of Romania, the degree of voluntary compliance depends on the number of tax inspections performed. Citizens consider tax control a punishment they try to avoid, not a response to non-compliance. The pandemic crisis has affected the collection of budget revenues by generating a lower degree of compliance because NAFA cannot carry out its activity properly and by reducing the number of fiscal controls performed (Figure 4). If NAFA had implemented an IT system for tax administration, the pandemic would not have had such a strong impact on the two indicators.

Figure 4. The evolution of the degree of fiscal compliance versus the number of fiscal inspections performed
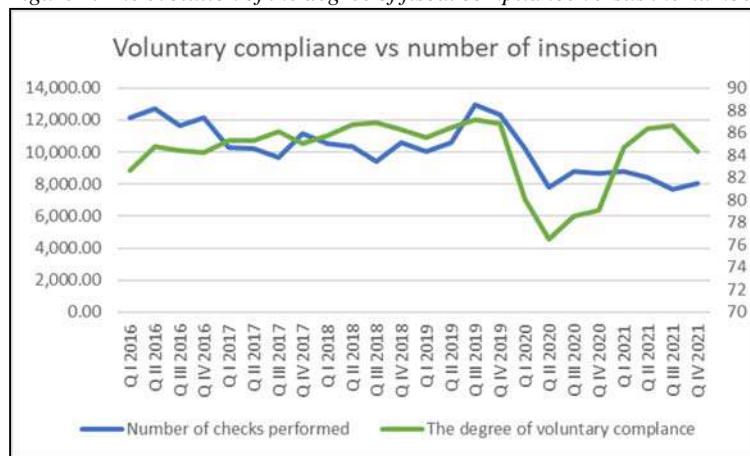
Source: own processing of data provided by NAFA

Another aspect that we considered when analyzing the activity of the tax administration was represented by the expenditures made in order to collect the budget revenues. A low level of collection costs indicates a more efficient process by the tax administration. The structure of expenditures is also essential. An analysis of them from 2016-2021 can be found in the following chart. Over 90% of Romania's budget revenue collection expenses represent personnel expenses. It should be noted that the reduction of taxes through the fiscal facilities granted during the pandemic resulted in the collection of lower budget revenues, but the collection expenditures remained at the same level. And in this case, adopting an IT system for tax administration and automating all repetitive processes could considerably increase the efficiency of collection.

Figure 5. Structure of expenditures generated by the collection of budget revenues (RON per RON 1 million net budget revenues)
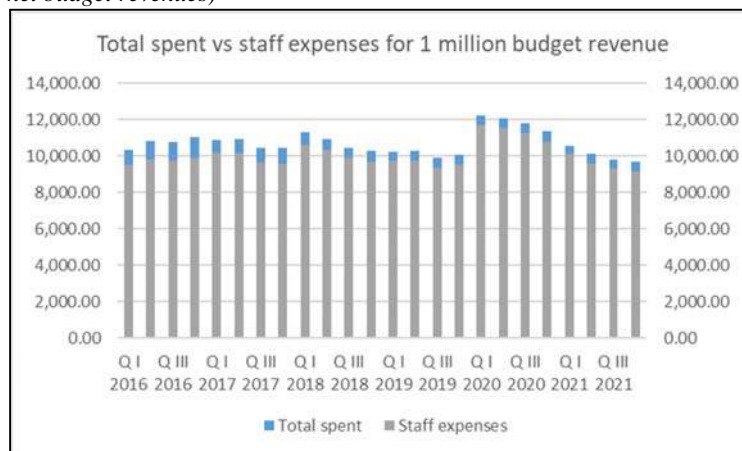
Source: own processing of data provided by NAFA

The statistical analysis of the data highlights the fact that both the fiscal activity and the economic activity of the taxpayers were affected by the pandemic. Moreover, some negative effects could be mitigated or eliminated if the tax administration was properly digitized.

The raw data were processed statistically to ensure the robustness of the simultaneous equation model. The data series were logarithmic to narrow the records range and eliminate the unit of measure. After this stage, the seasonal component was eliminated, the "Augmented Dickey-Fuller" test was performed, and, where appropriate, the series were stationary by the first or second difference. The stationary characteristic of a series ensures the average and the constant variance over time. After all the data were treated from an econometric point of view according to the literature, we built the system of simultaneous equations. The component variables in the system were: the number of fines applied (DNF), the total number of active taxpayers (DTAT), number of legislative changes (DCHANGES), collection expenses incurred at one million RON budget revenue (DSOR), number of controls performed (DNCP), the number of controls performed by an inspector to legal persons (DNILE), the number of controls performed by an inspector to individuals (DNII) and the degree of voluntary compliance (DVC).

The model of simultaneous equations analyzed how the number of taxpayers and the number of tax inspections influence the degree of compliance (1), how the number of inspections carried out by an inspector is affected by the number of taxpayers from the previous year (2), how the number of fines is influenced by the tax inspections carried out (3), and the influence that voluntary compliance has on the number of tax inspections (4).

$$DVC = c(1) + c(2)*DTAT + c(3)*DNCP \quad \textbf{(1)}$$
$$DNII = c(4) + c(5)*DTAT(-1) \quad \textbf{(2)}$$
$$DNF = c(7) + c(8)*DNCP \quad \textbf{(3)}$$
$$DNCP = c(9) + c(10)*DVC \quad \textbf{(4)}$$

Some results obtained using this model were in line with our expectations and previous studies, while others were contrary. The results can be found in the next section.

5. Results

The econometric analysis of the variables tries to highlight the links between the indicators of the fiscal inspection activity and the way in which they influence each other. The tax administration can consider the results of the analysis to improve the fiscal control activity and develop control programs.

Using the model of simultaneous equations in the econometric analysis allows the creation of a system of equations based on the available data. In the model, we tested several equations, but because the coefficients of the variables were incorrectly estimated, some of them were eliminated. Subsequently, we tested the distribution of residual variables to see the quality of the model. According to System Residual Normality Tests, we can state with a 99% probability that the residual variables are normally distributed, and the quality of the model is satisfactory.

Table 2. Estimation results using the least squares method

	Coefficient	Std. error	t-Statistic	Prob.	R-squared	Durbin-Watson stat
C (1)	-1.462518	1.340649	-1.090903	0.2786		
C (2)	238.986200	137.9754	1.732092	0.0871	0.275926	1.071414
C (3)	12.333820	7.241001	1.703330	0.0924		
C (4)	0.156218	0.129775	1.203761	0.2322	0.137319	1.771032
C (5)	-25.222860	14.13639	-1.784251	0.0782		
C (7)	-0.048340	0.041484	-1.165272	0.2474	0.206029	2.285855
C (8)	0.973341	0.416959	2.334379	0.0221		
C (9)	-0.027016	0.019847	-1.361222	0.1773	0.161593	2.325536
C (10)	0.011028	0.005617	1.963353	0.0231		

Source: own processing of data provided by NAFA

Table 3. System Residual Normality Tests

System Residual Normality Tests	
Null Hypothesis: residuals are multivariate normal	
Sample: 2016Q2 2021Q4	
Test	**Probability**
Skewness	0.9897
Kurtois	0.9962
Jarque-Berra	0.9999

Source: own processing of data provided by NAFA

In the end of analysis, we got the following model:

$$DVC = -1.46251771989 + 238.986187546*DTAT + 12.3338172509*DNCP$$
$$DNII = 0.156218297798 - 25.2228558268*DTAT(-1)$$
$$DNF = -0.0483400764392 + 0.973341350095*DNCP$$
$$DNCP = -0.0270156481554 + 0.0110276805399*DVC$$

The results of the analysis indicate that the degree of tax compliance depends on the total number of active taxpayers and the number of inspections performed. Our results related to voluntary compliance confirm the results obtained by Løyland et al. (2019) in their research. Thus, taxpayers who have been subject to fiscal control tend to comply voluntarily.

The number of inspections carried out by a tax inspector on individuals depends on the total number of active taxpayers in the previous period. If the number of taxpayers increases, then the number of inspectors must also increase proportionally to ensure the degree of revenue collection is as close as 100%. This result motivates the transition of the tax inspection activity from a predominantly manual to a predominantly automatic activity. A higher number of inspectors would generate higher collection costs.

The number of fines imposed depends on the number of tax inspections carried out. This does not confirm the results obtained by Løyland et al. (2019), according to which the number of tax inspections reduces over time the number of errors in tax returns completed by taxpayers. As the tax inspection activity is mainly a manual activity, it must be considered that tax inspectors may make errors. The number of tax inspections depends on the degree of voluntary compliance of taxpayers, but not as we expected. A higher degree of voluntary compliance leads to an increase in the number of fiscal controls.

6. Conclusions

This paper aims to study the impact of contemporary challenges on the activity of fiscal control. Studying the evolution of the fiscal control activity is very important because it is the second source of collecting budget revenues after voluntary compliance. In addition, one of the effects of the control activity is to increase the degree of voluntary compliance.

This paper contributes to the enrichment of the knowledge stage of the field of fiscal activity because the previous research offers few studies on this topic. The results obtained in this study can be considered as reference points for both researchers in subsequent studies and tax authorities for the adoption of measures regarding the activity of fiscal control.

From the beginning of the research, we expected that the fiscal control activity would be affected by the pandemic crisis. The low number of tax inspections carried out, the decrease in the degree of voluntary compliance, and the high collection costs related to lower budget revenues (due to the fiscal facilities granted) revealed to us that the impact was more significant than we expected. The results confirmed that the fiscal control activity could increase the degree of compliance, but it does not reduce the number of errors in declaring the tax base in time. It was also expected that the number of tax inspections would decrease as the degree of voluntary compliance increased, which in reality does not happen. One of the reasons why the degree of voluntary compliance does not lead to a

reduction in tax inspections may be that the tax authority determines the control actions by considering other criteria.

The contemporary challenges posed by the pandemic and the lack of IT systems retrieved in tax administration have left their mark on the number of inspections carried out in the last two years. However, after implementing the SAF-T reporting system, it is expected that NAFA will implement a new method for calculating the risk of fraud and determining the taxpayers who will be subject to the tax inspection activity.

Also, with the implementation of information technology, the quality of the control activity is expected to increase. In 2021, the courts admitted 23% of the amounts contested following the tax inspection activity. About a quarter of all control actions performed were erroneous. In addition, significant sums of money were spent on those controls.

Future research should highlight the efficiency of technology in tax inspection. Analysis may also be carried out to include the activity of tax inspection in the efficiency of public sector governance.

7. References

- Aivaz, K. A., Munteanu, I. and Chiriac (Matei), A., 2022. An exploratory analysis of the dynamics of the activity of the Fiscal Anti-fraud Directorate General in the 2014-2020 period at the level of Romania, *Technium Social Sciences Journal*, vol.30, decembrie, ISSN: 2668-7798, pp. 337-347 https://doi.org/10.47577/tssj.v30i1.6359
- Ahn, J., Akamah, H., and Shu, S.Q., 2021. The effect of disclosing audit quality control deficiencies on non-audit tax services: Evidence from Deloitte's 2007 PCAOB Part II inspection report. *J. Account. Public Policy,* pp.106820-106842. Available at: < https://doi.org/10.1016/j.jaccpubpol.2021.106820 >
- Chiriac (Matei), A., Nișulescu, I., Aivaz, K. A., 2021. Fraud - A multidisciplinary element. Famous case studies in such different fields, *Technium Social Sciences Journal*, vol.26, december, ISSN: 2668-7798, pp. 930-943, DOI: https://doi.org/10.47577/tssj.v26i1.5336
- Chiriac, A., Munteanu, I. and Aivaz, K. A., 2022. *The Financial Implications of Non-Compliance in the Transportation Business.* In: R. Pamfilie, V. Dinu, C. Vasiliu, D. Pleșea, L. Tăchiciu eds. 2022. 8th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Graz, Austria, 25-27 May 2022. Bucharest: ASE, pp.298-305. DOI: 10.24818/BASIQ/2022/08/039
- Dima, B., Lobonț, O.R., and Moldovan, N., 2016. Does the Quality of Public Policies and Institutions Matter for Entrepreneurial Activity? Evidences from the European Union's Member States. *Panoeconomicus*, 63(4), pp.425-439. Available at: <https://doi.org/10.2298/PAN1604425D>.
- Lobonț, O.R., Nicolescu, A.C., Costea, F., Li, Z.Z., Țăran, A.M., and Davidescu, A., 2022. A Panel Threshold Model to Capture the Nonlinear Nexus between Public Policy and Entrepreneurial Activities in EU Countries. *Mathematics*, 10(8):1265. Available at: < https://doi.org/10.3390/math10081265>.
- Løyland, K., Raaum, O., Torsvik, G., and Øvrum, A., 2019. Compliance Effects of Risk-Based Tax Audits. *CESifo Working Paper No. 7616.* Available at: < http://dx.doi.org/10.2139/ssrn.3384307 >.
- Miseviciene, R., and Nikonov, J., 2011. Validation of tax inspection model. *Information Technologies Conference Proceedings*, pp.61-68.
- National Agency of Fiscal Administration, Statistical Bulletins. Available at: < https://www.anaf.ro/anaf/internet/ANAF/despre_anaf/strategii_anaf/rapoarte_studii/ >.
- Qiru, L., 2022. The influence of accounting computerization on tax inspection under cognitive impairment and its countermeasures. *Psychiatria Danubina*, Volume 34, pp. 774-775.
- Qu, Z., and Yu, W., 2016. Research on continuous tax inspection. *2nd International Symposium on Social Science*, pp.193-199. Available at: < https://doi.org/10.2991/isss-16.2016.54 >.
- Qu, Y., Han, X., Ji, W., 2019. Research on tax inspection case selection model based on Bayesian network. *Proceedings of the 2019 2nd International Conference on Information Management and Management Science*, August 2019, pp.198-202. Available at: < https://doi.org/10.1145/3357292.3357329 >.
- Vatavu, S., Lobont, O.R., Stefea, P., Brindescu-Olariu, D., 2019. How Taxes Relate to Potential Welfare Gain and Appreciable Economic Growth. *Sustainability*, 11(15):4094. Available at: < https://doi.org/10.3390/su11154094 >.