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Multivariate statistical analysis of the Regional Anti-Fraud Directorate 2 Constanta from 2014 to 2021

Alina Chiriac

The Bucharest Univeristy of Economic Studies, Bucharest, Romania

alina88chiriac@yahoo.com

Roxana Adriana Mititelu

The Bucharest Univeristy of Economic Studies, Bucharest, Romania

roxanamititelu@gmail.com

Ileana Nișulescu

The Bucharest Univeristy of Economic Studies, Bucharest, Romania

ileana.nisulescu@cig.ase.ro

Abstract. The Regional Anti-Fraud Directorate 2 Constanta (DRAF 2 CT) is a regional structure of the public authority in Romania that has as a priority objective the fight against tax evasion and tax and customs fraud, being one of the most important regions of the General Directorate for Fiscal Fraud due to its strategic position, having many categories of resources or areas of activity. The regional activity is of even more interest now during the conflict in Ukraine, given the fact that Tulcea County is on the border of the conflict zone. The activity of investigating frauds and dismantling transactional chains that lead to damage to the state budget is important both financially and socially. The study focuses on dynamic analysis of the activity of DRAF 2 CT through the indicators reported by it. The paper allows the identification of correlations or interdependencies between the indicators specific to the fraud investigation activity, as well as the foreshadowing of some directions of normative improvement regarding the reporting of the results of the anti-fraud activity.

Keywords. Regional Anti-Fraud Directorate 2 Constanta (DRAF 2 CT), tax evasion, sanctions reporting, tax fraud, analysis of the main components (ATP).

1. Introduction

With the acceleration of the technological rhythm, the Romanian society is confronted with a series of negative aspects, which are materialized in deeds of tax evasion and fraud.

At European Union level, tax evasion and fraud have serious consequences for member states' budgets and their own resource systems, which leads to the violation of fair and transparent tax principles and can distort competition, thereby affecting the functioning of the

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internal market. Although, to a large extent, it falls within the competence of the Member States, combating economic fraud is not a challenge that can be solved exclusively at the level of each state.

The objective of a coherent strategy to combat economic and financial crime at EU level must be to minimize the losses caused by the different types of tax fraud by identifying sectors of the economy in which changes can be made both to Community legislation and to criminal and administrative cooperation between states (Chandola et al., 2009).

The main institutional actors involved in the fight against economic crime are tax administrations, customs administrations, anti-money laundering authorities, the Financial Intelligence Unit ("FIU"), the police and specialised law enforcement agencies such as prosecutor's offices and financial regulators (Ngai et al., 2011).

Regarding the structuring of each of the tax administrations, we mention that the countries apply different organizational models (Hilal et al.,2022).

In the area of tax crimes, there are four different models that countries have adopted to investigate these cases. According to model 1, the tax administration has the responsibility for directing and conducting investigations. According to model 2, the tax administration has the responsibility for conducting investigations, under the direction of the prosecutor. According to model 3, a specialized tax agency under the supervision of the Ministry of Finance, but outside the tax administration has the responsibility to carry out investigations. According to Model 4, the prosecutor has the responsibility to conduct investigations. In countries such as Austria, Estonia, Germany, Hungary, Latvia, the Netherlands, Portugal, Serbia and Sweden, the investigation of tax fraud is carried out by the tax administration but coordinated by a prosecutor. In countries such as Belgium, the Czech Republic, Denmark, Finland, France, Greece, Iceland, Lithuania, Norway, the Slovak Republic, Slovenia, Spain and Sweden, investigations into tax fraud are carried out by the police under the direction of a prosecutor.

The evolution in recent years of the underground economy in Romania must be a reason, if not for concern, at least for concern in the field of prevention and for decision makers, taking into account the existence of the dualist economic system in Romania (an underground one, on the rise, and the official one, weak and inefficient, with pale signs of recovery).

Thus, in Romania it was established within the National Agency for Fiscal Administration on June 26, 2013, the General Directorate for Fiscal Fraud, by Government Emergency Ordinance no. 74/2013, approved by Law no. 144/2014. The actual operationalization and the first control actions took place in December 2013. The priority objective of the Directorate-General for Fiscal Fraud is to firmly combat tax evasion and tax and customs fraud. The activity of investigating frauds and of dismantling the transactional chains set up to damage the state budget is important both from a financial and social point of view, strengthening confidence in the safety and integrity of the tax system.

The Directorate-General for Fiscal Fraud is divided into 8 regional directorates, namely: Regional Anti-Fraud Tax Directorate 1 Suceava, Regional Anti-Fraud Tax Directorate 2 Constanta, Regional Anti-Fraud Tax Directorate 3 Alexandria, Regional Anti-Fraud Tax Directorate 4 Târgu Jiu, Regional Anti-Fraud Tax Directorate 5 Deva, Regional Anti-Fraud Tax Directorate 6 Oradea, Regional Anti-Fraud Tax Directorate 7 Sibiu, Regional Anti-Fraud Tax Directorate 8 Bucharest and the central structure DGAF.

The Regional Anti-Fraud Directorate 2 Constanta had until 2021, the last year analyzed, three persons in the management position of General Anti-Fraud Inspector (IGA), a position that subsequently, with the change of the statute, was replaced by the Deputy General Director, according to the institution's website.

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The specific public functions of general anti-fraud inspector, deputy anti-fraud inspector general, chief anti-fraud inspector and anti-fraud inspector are abolished, and starting with 01.06.2020 the anti-fraud inspectors become public officials, this reorganization allows the transfer of personnel, the initial motivation of the project is as follows: This normative act establishes the classification of DGAF staff in the general framework applicable to civil servants, enabling the National Agency for Fiscal Administration to attract civil servants suitable for the anti-fraud activity of tax and who have proved throughout their career, through the results obtained and the observance of the integrity principles, that they can help to better collect revenues to the general consolidated budget. It is therefore proposed to urgently transform the specific civil service positions within DGFA into general civil service positions that would ensure the redeployment of specialized staff fluently and without the barriers inherently imposed by the "specific function". By HG nr. 174 of 10 March 2020, the specific function of anti-fraud inspector is abolished, and the staff is reassigned to the general position of inspector. Starting with this date, the appointments are made by Order of the ANAF President, and the orders are only public.

The Regional Directorate for Fiscal Fraud 2 Constanta currently has 7 control services, Services 1-7, The Programming, Analysis and Reporting Service and the Intra-Community Acquisitions Monitoring Service, each of the 9 services being led by a Head of Service, who is subordinated to the Deputy General Director. It is assigned to the following counties: Brăila, Buzău, Constanța, Galați, Tulcea and Vrancea.

Taking into account the importance of having a uniform control mechanism in place to remove parallelisms and thus eliminate the different or even contrary fiscal assessment of the same economic transaction, we considered it opportune to carry out a dynamic analysis of the activity of the Regional Directorate for Fiscal Fraud 2 Constanta through the indicators reported by it, given that it is one of the most important regional directorates of the General Directorate for Fiscal Fraud due to the fact that it is located in a strategic area of the country, having many categories of resources or areas of activity such as the Romanian seaside (Vintilă et al., 2017), the Danube Delta, ports, the wine-growing area of Vrancea, agriculture, constructions, transports, industry that contributes to the evolution of the country's economy, but also the regional position (Stan et al., 2021), which in the area of Tulcea County borders the conflict zone in Ukraine.

The paper is divided into 4 chapters, namely: Research methodology and data, Results and discussions, Limitations and Conclusions.

2. Research methodology and data

For the statistical analysis oriented towards the achievement of the study objectives, several variables communicated by ANAF, the Communication, Public Relations and Mass Media Service regarding the activity of the Regional Anti-Fraud Directorate for Fiscal 2 Constanta were taken into account, through the address no. 544021/16.03.2022.

The indicators used in the analysis and which represent the variables entered in the model are:

- number of taxpayers checked fines (NCV) -number.
- number of contraventions and warnings (NAA)-number
- value of taxpayers checked fines + warnings (VAA) -value lei.
- confiscations total value (VC)-value lei.
- criminal complaints (NSP)- number.

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- criminal complaints (VSP) -value lei.
- number of suspensions of taxpayers' activity (NSA)- number.

The research was developed in two phases. In the first stage, we carried out a dynamic analysis of all these indicators, and in the second stage we analyzed the statistical links between variables using the method of analyzing the main components. The data processing, the testing of the significance of the indicators and the graphic representations were carried out with the help of the SPSS statistical software.

The analysis of the main components is a descriptive method of multidimensional analysis of the data with the help of which the links are analyzed, the associations between the numerical variables that, for the purpose of analysis, are standardized (centered and reduced).

The objectives pursued by the implementation of the ACP are as follows:

- highlighting the statistical links between the variables considered.
- highlighting the similarities/differences between the analyzed variables, the statistical units being analyzed according to the totality of the recorded variables.

The analysis of the main components can be applied only to quantitative variables, expressed in the same unit of measurement. If the variables are expressed in different units of measurement, then their standardization is carried out.

3. Results and discussion

The statistical description of the variables introduced in the study, presented in Table 1, was achieved through the indicators the average level and the standard deviation of the variation.

Table 1. Descriptive Statistics

	Mean	Std. Deviation	Analysis N
NVC	5121.75	964.815	8
NAA	4731.75	1439.124	8
VAA	22674524.38	6692741.084	8
VC	11725460.38	17330415.099	8
NSP	34.50	22.045	8
VSP	202156044.88	187375633.211	8
NSA	117.38	113.049	8

For the study of the intensity and direction of the links between variables, presented in Table 2, we resorted to the Pearson correlation coefficients presented in Table 2.

Table 2. Correlation Matrix[a,b]

	NVC	NAA	VAA	VC	NSP	VSP	NSA
NVC	1.000	.866	.293	.364	.447	.379	.110
NAA	-	1.000	.414	.719	.553	.439	.344
VAA	-	-	1.000	.544	-.079	.020	.033
VC	-	-	-	1.000	.405	.243	.150
NSP	-	-	-	-	1.000	.886	-.058
VSP	-	-	-	-	-	1.000	.103
NSA	-	-	-	-	-	-	1.000

a. Determinant = .000

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Analysis of the correlation matrix demonstrates some strong links between the analyzed indicators (Table 2). Thus, the number of verified taxpayers has a strong direct correlation with the number of contraventions and warnings (0.866) but not with the number of fines (0.293), the correlation link being a weak one. This is due to the fact that many taxpayers have been checked who have had their control report concluded without a penalty or with a very small penalty. Our study notes that before the start of anti-fraud controls, a risk analysis is carried out, either individually for each company or on certain fields of activity (e.g., HoReCA, tutor teachers, beauty salons, undeclared or underdeclared work in the field of constructions, energy products, etc.). What is notable is that although there is a strong correlation between the number of verified taxpayers with the number of sanctions applied (0.866), there is a very weak correlation with the number of sanctions applied (0.293). However, there is a strong correlation between the number of sanctions applied with the value of confiscations (0.719), which can be explained by the fact that either the sanction provided for by law is small and the value of confiscations is high, or the sanction of warning was applied, and the complementary measure of confiscation of amounts / assets had a high value. In the second case, the measure of warning is not justified in relation to the high value of confiscation, taking into account the degree of social danger provided by OG no. 2/2001 on the legal regime of contraventions.

Regarding the analysis of the number of complaints, there are strong links of this indicator with the value of criminal complaints (0.886). The analysis of the number of complaints indicates the totality of the cases when, following the control action and the analysis of the ANAF-DGAF database, the control body finds that there are sufficient indications of initiating the criminal investigation regarding the commission of some crimes, thus issuing notifications to the criminal investigation authorities based on the provisions of art.6 paragraph (2) letter e) second sentence of OG no. 74/2013 on certain measures to improve the activity of the National Agency for Fiscal Administration, as well as to amend and supplement some normative acts on the organization and functioning of the National Agency for Fiscal Administration and of art. 291 of the Criminal Procedure Code.

The variances of the variables are shown in the Communalities output which is presented as follows:

Table 3. Communalities

	Initial	Extraction
NVC	1.000	.628
NAA	1.000	.929
VAA	1.000	.674
VC	1.000	.681
NSP	1.000	.946
VSP	1.000	.838
NSA	1.000	.125

Extraction Method: Principal Component Analysis.

If the variance of a variable is small, then the variable can be removed from the analysis itself because it is not correlated with the factorial axes. Because the Extraction column variable, Number of Job Suspensions has a very small value (0.125), it can be removed from the analysis because it does not help to explain the activity of DRAF 2 Constance. The number of activity suspensions is very small in the period 2016-2020, compared to 2013, 2014, this explains the fact that the contravention sanctions applied did not have the complementary measure of

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suspending the activity of the economic agent. If in the years December 2013 – 2014 there were 388 suspensions of the activity of the economic agent, in 2015 they decrease to one third (128), and in the period 2016-2020 the average is 62. This can be justified by the voluntary compliance of the economic operator, in order to avoid the complementary measure of suspension of activity. The most important sanction applied at DGAF level, which contains the complementary measure of suspension of activity, is that of not issuing tax receipts, thus of non-disqualification of income.

Table 4. Number of suspensions of company activity

Indicator	**Total dec. 2013 - year 2021**	Period							
		dec. 2013-dec. 2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Number of suspensions of company activity	939	388	128	59	57	58	82	52	115

The correlation matrix eigenvalues are shown in the Total Variance Explained output, the Initial Eigenvalues column in Table 4.

Table 5. Correlation matrix eigenvalues

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.317	47.381	47.381	3.317	47.381	47.381
2	1.504	21.486	68.867	1.504	21.486	68.867
3	1.015	14.493	83.360			
4	.681	9.735	93.096			
5	.443	6.335	99.430			
6	.038	.540	99.970			
7	.002	.030	100.000			

Extraction Method: Principal Component Analysis.

The first two factorial axes together explain 68.867% of the total variance. Although according to the Benzecri criterion, which involves choosing that number of axes that explains over 70% of the total variance of the point cloud, taking into account the close value obtained by us, to explain the biggest differences we will still use 2 factorial axes.

The graphical representation of eigenvalues in Figure 1 (Scree Plot) shows the existence of significant differences in size between the first two eigenvalues and the next five, which indicates that the number of factorial axes that can be used in the analysis of the main components is two axes.

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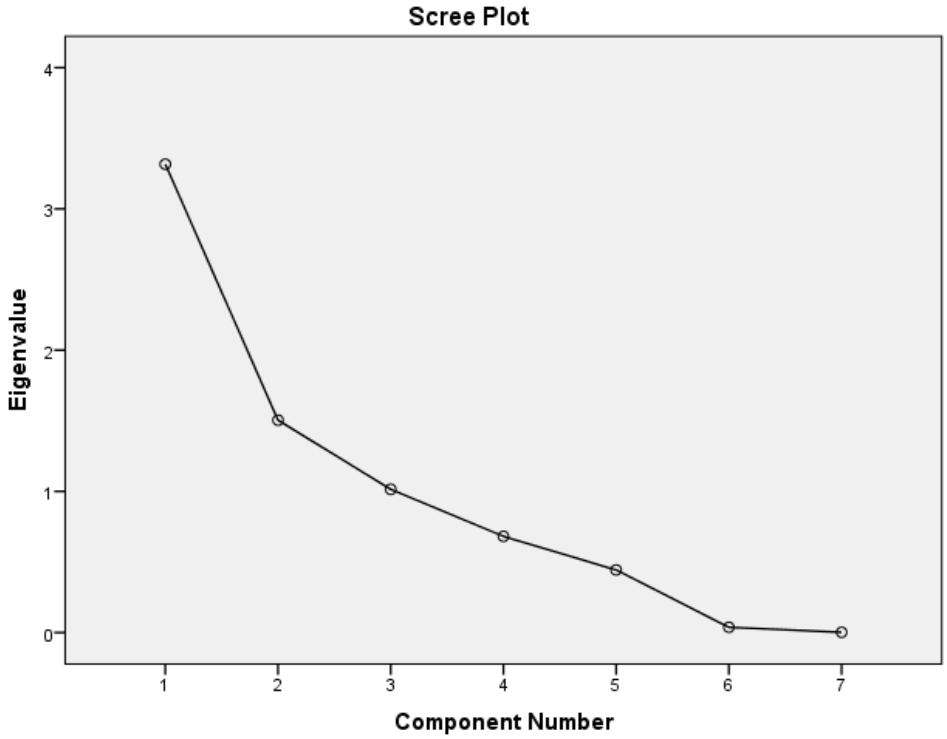

Figure 1. Graphical representation of the eigenvalues of the correlation matrix (Source: author's work)

The values shown in Table 5 Component matrix show the position of the variables on the factorial axes. For example, the number of verified taxpayers has a positive coordinate on both factorial axes, the value being very high on the first factorial axis (0.789).

Table 6. Component Matrix[a]

	Component	
	1	2
NVC	.789	.071
NAA	.943	.200
VAA	.425	.702
VC	.734	.377
NSP	.747	-.623
VSP	.685	-.608
NSA	.242	.257

Extraction Method: Principal Component Analysis.
a. 2 components extracted.

High values of the coordinates of variables on factorial axes show that those variables are strongly correlated with that axis. These variables significantly explain the differences between statistical units. More specifically, there are significant differences between statistical units in terms of the values recorded for these variables.

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The graphic representation in Figure 2 allows the visualization of the position of the variables in the system of factorial axes, allowing the identification of the meaning and intensity of the connection between the variables.

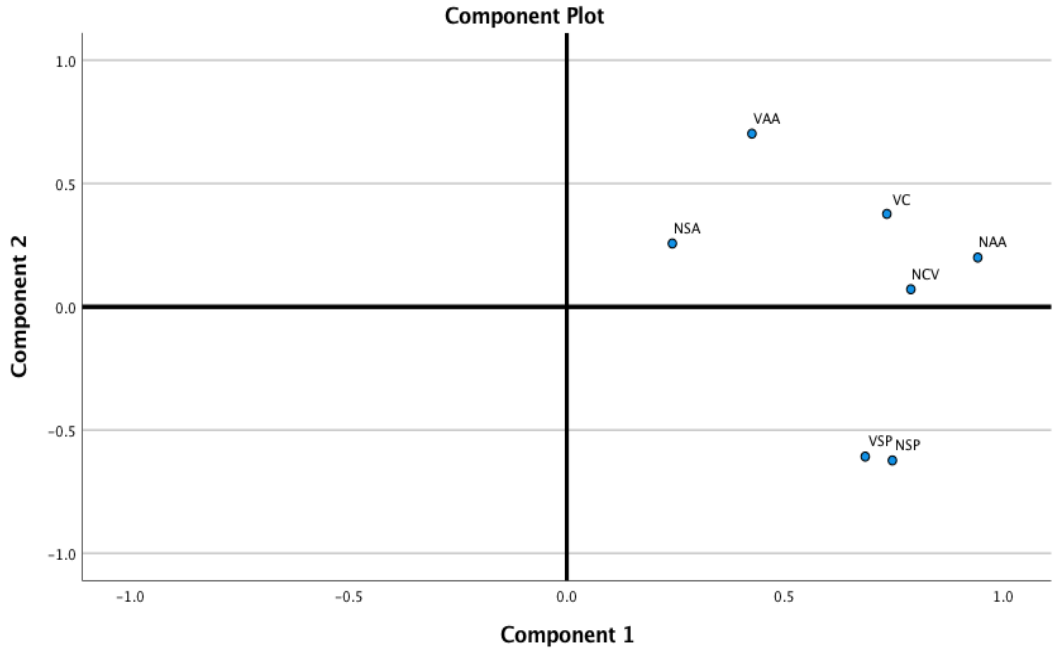

Figure 2. Graphical representation of the eigenvalues of the correlation matrix (Source: author's work)

Figure 2 provides a graphical representation of the correlations outlined based on the Correlation Matrix. The association of the point cloud on the right side of the factor axis related to Component 1 shows the links of the indicators and supports the conclusions of the study. Thus, the preliminary phase of the control actions carried out by the Regional Anti-Fraud Directorate 2 Constanta, which is materialized in determining the number of taxpayers who will be subject to verification, statistically indicates a high probability of factual confirmation, through the control carried out at the taxpayer, of the finding of contraventions and the application of sanctions. To a different extent, a part of the findings of the control bodies during the verification operations are materialized in the finding of sufficient indications of committing crimes, with consequences for the notification of the criminal investigation bodies.

4. Limitations

Our study has some limitations, in the sense that it is based on the data provided by DGAF for the Regional Anti-Fraud Directorate 2 Constanta. No data were provided on the solutions of the competent courts for the checks contested in court and remaining final, the closures of the criminal investigation bodies or the solutions of the Financial Administrations for the checks sent to them.

5. Conclusions

The exploratory analysis carried out on the basis of these indicators registers specific dynamics between the numerically and value-oriented result indicators due to aspects related in particular to the way of carrying out the activity (Aivaz, Munteanu and Chiriac, 2022).

Regional Anti-Fraud 2 Constanta is located in an area of countries of great interest for the country's economy, having many categories of resources or areas of activity such as the Romanian seaside, the Danube Delta, ports, the wine-growing area of Vrancea, agriculture, construction, transport, industry that contribute to the evolution of the country's economy. The identification of tax evasion and tax and customs fraud and their prevention and the increase of the collected budget revenues should be the main objective of the institution, the delimitation from the Financial Administration dealing with the issuance of tax decisions and the calculation of accessories, is an idea to be reconsidered at legislative level (Chiriac (Matei), Nișulescu, and Aivaz, 2021). Loading the DGAF with documentary checks that resemble the tax control specific to the tax inspection only serves to load the activity of preventing and combating tax evasion, tax and customs fraud, the main objective of the institution when it was founded. Thus, at present, the DGAF carries out documentary checks on the basis of Chapter V of the Fiscal Procedure Code, following the verifications it issues, as the case may be, a tax decision, issued subject to subsequent verification, the calculation of the accessories being also made by the DGRFP.

An important measure to be taken into account is to rethink vocational training courses for DGAF staff, just as the ways of defrauding the state take new and new forms, moving much to the online area, as well as the staff with duties in detecting and preventing frauds should be permanently trained in areas of interest, rethinking the training courses that should be shared with the staff of the institutions with which they collaborate, in order to no longer have situations of closure of criminal complaints from the criminal investigation bodies, or of non-issuance of tax decisions by the DGRFP. Uniformity of practices and cooperation between the institutions is essential for a case of fraud to be properly dealt with from the start of anti-fraud control (Aivaz et al., 2022).

There are currently no indicators reported for each DGAF regional, accessible to the public, and those reported at central level are highly summarised. The publication at least in parallel of the amounts maintained or annulled by the competent bodies (prosecutor's office, tribunal, etc.) would increase the transparency and trust of the public in the work of the DGAF.

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