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STATISTICAL INVESTIGATION OF FINANCIAL-ACCOUNTING AND TAX RISK EXPOSURE IN THE TERTIARY ECONOMIC SECTOR. A ROMANIAN CASE STUDY

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Abstract:
The tertiary sector of the economy is one that has a very high risk exposure in what involves creative and fraudulent accounting techniques and fiscal optimization and fraud. In this context, the main purpose of this research is to quantify the risk exposure in terms of accounting and taxation for economic entities operating in the constructions works business sector, hotels, healthcare, accounting and financial auditing, employment agencies, vehicle repair and cleaning activities. The analysed statistical sample was composed of observations, representing economic-financial indicators reported in the annual financial statements of the economic entities included in the study, for the 2018 - 2022 time interval. The main results of the research showed that the most vulnerable business sector to accounting and tax risk is Construction works of residential and non-residential buildings, as the main sources for financing their current activity were from borrowed capital. As an overall conclusion it can be noted that the economic and financial indicators are useful in assessing and monitoring risks associated with economic activities, and can be used to construct general and temporal risk profiles. Also, the risk vulnerability of economic entities in the services sector is structurally non-uniform in relation to the economic activity analysed.

Key words: Financial Ratios, Risk Markers, Risk Profiling, Tertiary Sector.

JEL classification: M41, F32.

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1. INTRODUCTION

The current socio-economic context, characterized by overlapping crises, namely the health crisis triggered in 2019, the energy crisis and the one triggered by the Russian-Ukrainian armed conflict that began in 2022, had the effect of increasing the risk exposure of economic entities, both in terms of insolvency risk, as well as financial-accounting and tax risk. Thus, at the level of the national economy, there was a deceleration of economic growth and the appearance of macroeconomic and financial blockages, against the background of the reduced level of collection of budget revenues, which translated into the existence of an increased budget deficit. Subsumed by these aspects, there is a dire need to develop some useful tools in the evaluation, control and combating of the phenomena of financial-accounting and fiscal fraud.

Detecting accounting, financial and fraud risks through the use of analytical accounting procedures and statistical research is a research topic addressed by many researchers. Most studies confirm the significant role of financial ratios in analysing and measuring the performance, business efficiency and investment attractiveness of companies, regardless of their size. The quality and transparency of accounting information is an essential condition for the veracity of research results.

Therefore, this research paper investigates by use of statistical tools and methods and analytical accounting procedures the exposure to fiscal-accounting and financial risks, through analysis of sectorial and temporal risk profiles for 2018 – 2022 for economic entities from different fields of economic activity in the service sector of the Romanian economy.

2. LITERATURE REVIEW

The identification of accounting, financial, tax and economic-financial risk areas has an impact on decision-making at both micro and macroeconomic levels and an instrument for mapping risk profiles from the perspective of structural and temporal distribution, is extremely useful from

the perspective of the need to channel the efforts of competent institutions in order to prevent, monitor, detect, control and combat risk phenomena and for a macroeconomic management of risks more effectively.

In emerging markets, innovation and economic growth is directly influenced by the quality of accounting information. The high quality of accounting information stimulates monitoring of resource allocation, with a positive association with the position of firms (Zhang et al., 2024).

The accounting information, materialized in financial indicators reported through the financial statements, reflects objectively and realistically the financial position of the entity, the quality and value relevance of the financial reporting. Significant improvement in the quality of accounting has been reported as a result of the transition from rules-based to principles-based accounting standards, ensuring high quality financial reporting and providing more relevant information to investors (Cabán, 2024).

Big Data analytics methods with data mining techniques that contribute to decision making are increasingly used in forensic accounting, playing an essential role in the internal control system for fraud detection. Fraud detection involves understanding Financial Indicators and their vulnerable risks (Mardjono et al., 2024). There is a positive correlation between fraud detection and forensic accounting (Kaur et al., 2022). Similar studies confirm that qualitative approaches using forensic accounting techniques and tools contribute to fraud prevention in financial reporting (Clavería Navarrete & Carrasco Gallego, 2023).

The influences of forensic accounting on corporate productivity through fraud detection was also analysed by Pitchchayatheeranart & Phornlaphatrachakorn (2023). Based on a multiple regression analysis on a sample of 460 listed companies in Thailand, the significant positive influence of forensic accounting in fraud detection with impact on risk reduction was shown. Risk mitigation mediated the relationship between forensic accounting and corporate productivity. Forensic accounting has become an essential business tool for implementing sustainable business strategies in turbulent economic environments.

In the European Union, 90% of entities are small and micro-enterprises. By using financial ratios, Besuspariene & Niskanen (2023) developed a new model based on fuzzy logic, which allowed to estimate the level of fraud in each individual accounting item in simplified financial statements filed by micro and small enterprises, and was useful for identifying areas where the firm committed fraud and reducing the risks.

Creative accounting techniques are used by companies mainly for tax avoidance purposes (Sabău et al., 2021). The accounting errors and fraud risks generated by accounting adjustments in the context of creative accounting were also analysed by applying the CFEBT risk triangle method on accounting items and reported financial indicators (Drabkova & Pech, 2022). The research results confirmed large differences between the analysed industries, creative accounting methods mainly aiming at tax optimization, being applied predominantly in the trade and construction sectors.

There is a three-dimensional relationship between accounting data, firms' financial statements and analytical ratios for assessing the financial condition and impact of risks. Fomina et al. (2023) reveal the effectiveness of risk-oriented management accounting in establishing and detecting risks and their consequences on financial ratios and in modeling indicators used in statistical analysis with impact on the effectiveness of management decisions.

The use of financial ratios in statistical analysis also contributes to increased transparency of information. With respect to construction companies in G7 countries, using multiple regression analysis, a significant dependence was found between the level of transparency of accounting information and the volume of investments. Transparency of accounting information and financial ratios significantly influence the image and credibility of the firm, investor confidence and attractiveness (Abbasova et al., 2022).

On the other hand, there are studies showing that economic policy uncertainty directly relates to corporate fraud, especially in the case of listed companies (Hou et al., 2021).

Currently, there is a noticeable trend of adoption of artificial intelligence in the economic environment. There are authors who have studied the effects of artificial intelligence on accounting systems of entities. Thus, Hamza et al. (2024), on an analysis of Saudi Arabian companies shows that traditional accounting methods are affected by AI-based data analytics and decision making processes. The fast and accurate processing of a large volume of data, has improved financial analysis, risk assessment and forecasting.

3. METHODOLOGY FOR ADVANCED STATISTICAL RESEARCH OF VARIABLES IN RISK ASSESSMENT MODELS

The database initially set up on a multi-criteria basis, according to the administrative county of the economic entity and the year of reporting of the indicators in the annual financial statements, was split after applying some exclusion criteria, which essentially concerned: the existence of reported values for the indicators used to construct the risk variables on the basis of analytical accounting procedures, the existence of positive values for a number of indicators (for example: for the turnover indicator, for the fixed assets indicator), the construction of aggregated indicators for some variables and the elimination of absurd values, which were clearly disproportionate in relation to the entire statistical population included in the study.

The final statistical sample analysed is composed of 36,140 observations, representing economic-financial indicators reported in the annual financial statements of the economic entities included in the study, from the 41 counties of the country and Bucharest municipality, from the 2018 - 2022 time interval.

The largest statistical sub-sample is the economic and financial indicators reported in the annual financial statements for the time period 2018 - 2022, calculated for economic entities operating in the domain 4120 - Construction work on residential buildings, which includes 9,763 observations. This is followed by the economic domain 4520 - Maintenance and repair of motor vehicles, which includes 8,636 observations, representing approximately 24% of the analysed statistical population, then the domain 5510 - Hotels and similar accommodation with 5,330 observations, the domain 6831 - Real estate agencies with 3. 713 observations, by domain 8621 - General medical practice activities, with 3,110 observations, by domain 6920 - Accounting and financial auditing activities, with 2,887 observations, by domain 7810 - Employment agency activities, with 1,742 observations and finally by domain 8129 - Other cleaning activities, with a total of 959 observations.

Most observations are territorially circumscribed to the municipality of Bucharest (16.67% of the total statistical population analysed), followed by the counties of Constanta (with 6.20% of the total statistical sample analysed), Cluj (6.18% of the total observations) and Ilfov (5.27% of the total observations included in the study), which shows an agglomeration of specific activities of the tertiary sector of the economy in these regions, and from the point of view of the structure of the analysed activities, it can be seen that most observations are related to the CAEN code 4120 Construction of residential buildings (27%), followed by the CAEN code 4520 Maintenance and repair of motor vehicles (24%), the CAEN code 5510 Hotels and similar accommodation (15%) and the CAEN code 6831 Real estate agencies (10%).

The reasoning behind the selection of these areas of activity is that the service sector is one in which the tax risk of non-compliance in declaring and paying tax obligations is quite high. The phenomenon of undeclared work is also very pronounced in this sector, and there is also a significant perception of exposure to corruption. Subsidiary, it was taken into account that the tertiary sector of the economy has been considerably impacted by the multiple crises, an impact that we intend to map and assess in this research paper.

The following have been advanced as working hypotheses in the statistical research:

H1: Economic and financial indicators are useful in assessing and monitoring risks associated with economic activities;

H2: Economic-financial indicators can be used to build general and temporal risk profiles;

H3: The risk vulnerability of economic entities in the services sector is structurally non-uniform, in relation to the areas of economic activity analysed.

The selection of economic-financial indicators potentially significant and useful in performing the economic-financial, accounting, activity and tax risk analysis was made based on our own professional reasoning, by referring to relevant national and international research on this topic, these being: total debt ratio, personal expenses indicator, solvency indicator, financial solvency ratio, equity solvency ratio, return on assets, return on equity, commercial profitability and debt turnover rate.

4. ASSESSING RISK EXPOSURES OF SERVICE SECTOR ENTITIES AGAINST STRUCTURAL AND TEMPORAL PROFILES

This section will map the risk exposure of economic entities in the service sector against the structural profiles of the economic activities analysed, namely 4120 - Construction work on residential and non-residential buildings, 4520 - Maintenance and repair of motor vehicles, 5510 - Hotels and similar accommodation facilities, 6831 - Real estate agency activities, 6920 - General health activities, 7810 - Accounting and financial auditing activities, 8129 - Employment agency activities and 8621 - Other cleaning activities, as well as from a time perspective to capture the chronological dynamics of risks.

We believe that such a scientific approach is timely in view of the need to channel the efforts of the competent institutions to prevent, monitor, detect, control and combat risk phenomena and for more effective macroeconomic risk management.

The final statistical sample analysed consists of 36,140 observations, representing economic-financial indicators reported in the annual financial statements of the economic entities included in the study, from the 41 counties of the country and Bucharest municipality, for the period 2018 - 2022.

4.1. TOTAL DEBT RATIO

For the population included in the general statistical sample, the indicator Total debt ratio registers an average of 1,197.18%, which means that for one unit of equity capital, on average 11.97 units of borrowed capital are used, and a very high standard deviation of the average of 46,496.53 is calculated.

The median value for the overall statistical sample is 93.2332 units and is well below the average calculated for the variable Total debt ratio, so that at least half of the analysed entities draw 0.93 units of borrowed capital for one unit of equity capital.

In relation to the minimum threshold of 551,799.61 and the maximum threshold of 5,291,748.33 for the variable Total debt ratio in the general sample, the range of variation of the variable is very wide.

The area of economic activity most vulnerable to risk with regard to the variable Total debt ratio is 4120 - Construction of residential and non-residential buildings, as the main sources of financing of activities are borrowed capital, directly influencing the ability of economic operators to bear operating costs and fulfil their commercial, financial and fiscal commitments. Due to the specific characteristics of the business, characterized by the need for a high level of capital required to finance the operating cycle and the specific high time lag between the period of carrying out and commissioning of construction works and the time of collection of receivables from commercial delivery operations.

In terms of exposure to risk from a time perspective, for the variable Total debt ratio, the years most prone to risk are 2018, when the indicator registers the maximum value of the annual average of 1,858.05, and 2020, when the value of the annual average of the indicator reaches 1,848.30, values well above the general average. A possible explanation for the manifestation of the risk in 2020 could be the occurrence of the health crisis in 2019, with strong effects on the tertiary

sector of the economy, especially on the indicators of volume of activity, profitability and solvency. Compared to 2018, this year was characterized by a deceleration in economic growth and a climate of instability in the main macroeconomic balances, which also put significant strains on the tertiary sector of the economy.

4.2. PERSONAL EXPENSE INDICATOR

For the population included in the general statistical sample, the indicator Personal Expense registers an average of 21.89, which means that an employee uses on average 218,900 monetary units, and a standard deviation of the average of 709.14 is calculated.

The value of the median on the general statistical sample is 3.6984 units and is well below the average calculated for the variable Personal Expense Indicator, therefore it can be noted that at least half of the analysed entities use on average 36.984 monetary units per employee per year.

In relation to the minimum threshold of -5,510.36 and the maximum threshold of 116,808.33 for the variable Personal Expense Indicator in the general sample, the range of variation of the variable is very wide.

The areas of economic activity most vulnerable to the manifestation of risk in relation to the variable Personnel Expense Indicator are found to be 7810 - Accounting and financial auditing activities and 8129 - Activities of employment placement agencies, due to the fact that they either have a very high fluctuation of human resources or they employ personnel costs well above the average recorded at the level of the economic sector analysed.

In terms of exposure to risk from a time perspective, it can be observed that for the variable Personnel Expense Indicator, the years most prone to the manifestation of risk are 2021, when the indicator registers the maximum value of the annual average of 29.1372 units, and 2019, when the indicator registers the value of 26.8439 units, much above the general average for the sector analysed. A possible explanation for the manifestation of the risk in 2019 could be the occurrence of the health crisis in 2019, with strong effects on the tertiary sector of the economy, especially on the indicators of volume of activity, profitability and solvency.

4.3. INSOLVENCY INDICATOR

For the population included in the general statistical sample, the indicator Insolvency Indicator registers an average of 37.74, which means that the amounts owed to the associates represent on average 38% of the total debts of the analysed entities, and a standard deviation of the average of 34.8983282 is calculated.

The median value for the overall statistical sample is 30.0437 units and is quite close to the average calculated for the Solvency Indicator variable, so that at least half of the analysed entities finance their activity through loans from associates, on average 30%.

In relation to the minimum threshold of -312.6844 and the maximum threshold of 1,126.8109 for the Solvency Indicator variable in the overall sample, the range of variation of the variable is quite wide.

The area of economic activity most vulnerable to the manifestation of risk in relation to the Solvency Indicator variable is found to be 6831 - Real estate agencies, where the financing of economic activity is carried out significantly through loans from associates, the ratio of the amount of amounts owed to associates in total debts being greater than 50% and signalling the maximum exposure to fiscal, insolvency and activity risk.

In terms of risk exposure from a time perspective, it is found that for the Solvency Indicator variable, the years most prone to risk manifestation are 2018 and 2019. A possible explanation for the risk manifestation in 2019 could be the emergence of the health crisis in 2019, with strong effects on the tertiary sector of the economy, in particular on the indicators of volume of activity, profitability and solvency. Compared to 2018, this year was characterized by a deceleration in

economic growth and a climate of instability on the main macroeconomic balances, which also put significant strains on the tertiary sector of the economy.

4.4. FINANCIAL SOLVENCY RATIO

For the population included in the general statistical sample, the Financial Solvency Ratio indicator registers an average of 4.38, which means that the balance sheet assets cover the debts of the economic entities in a satisfactory percentage, and a standard deviation of the average of 62.9587021 is calculated.

The value of the median for the overall statistical sample is 1.7466 units and is below the average calculated for the Financial Solvency Ratio variable, thus showing that at least half of the analysed entities are close to the vulnerability zone in terms of debt coverage by total assets.

In relation to the minimum threshold of -171.9038 and the maximum threshold of 11,693.4201 for the Financial Solvency Ratio variable in the overall sample, the range of variation of the variable is very wide.

The areas of economic activity most vulnerable to risk with regard to the Financial Solvency Ratio variable are 4120 - Construction of residential and non-residential buildings and 4520 - Maintenance and repair of motor vehicles, where the average of the indicator falls below 2.85. The least at risk are 5110 - Hotels and similar accommodation and 8621 - Other cleaning activities, where the average of the indicator is above 7.

In terms of exposure to risk from a time perspective, it can be seen that for the Financial Solvency Ratio variable, the years most prone to risk are 2019, when the indicator has a minimum annual average value of 3.9545, and 2020, when the annual average value of the indicator reaches 4.0638, values below the general average. A possible explanation for the manifestation of risk in 2019 and 2020 could be the emergence of the health crisis in 2019, with strong effects on the tertiary sector of the economy, especially on the indicators of volume of activity, profitability and solvency.

4.5. CAPITAL SOLVENCY RATIO

For the population included in the general statistical sample, the indicator Capital Solvency Ratio registers an average of -7.7041, which means that equity capital does not cover the long-term debts of economic entities, the financial equilibrium not being ensured. However, a standard deviation of the mean of 2326.1934954 was calculated for the overall sample.

The value of the median on the general statistical sample is 40.9745 units and is well above the average calculated for the variable Capital Solvency Ratio, thus showing that at least half of the analysed entities cover their long-term debts with equity capital.

In relation to the minimum threshold of -425,845.4545 and the maximum of 14,009.0144 for the variable Capital Solvency Ratio in the overall sample, the range of variation of the variable is very wide.

The economic activity sector most vulnerable to risk with regard to the variable Capital Solvency Ratio is 8129 - Activities of employment placement agencies, where the average of the indicator falls to -476.1645. The least exposed to risk are 6920 - General health care activities and 4120 - Construction activities of residential and non-residential buildings, where the average of the indicator registers values above 40.

In terms of exposure to risk from a time perspective, it can be seen that for the variable Capital Solvency Ratio, the year most prone to risk is 2019, in which the indicator registers the minimum value of the annual average of -57.9175, a value well below the general average. A possible explanation for the risk in 2019 could be the emergence of the health crisis, with strong effects on the tertiary sector of the economy, in particular on the indicators of volume of activity, profitability and solvency.

4.6. RETURN ON ASSETS VARIABLE

For the population included in the general statistical sample, the Return on Assets indicator registers an average of 0.0492%, which means that for one unit of balance sheet asset, on average 0.0004 unit of profit is generated. However, on the overall sample a standard deviation of the mean of 8.600777722 was calculated.

The value of the median on the general statistical sample is 0.1081 units and is above the average calculated for the variable Return on Assets, thus showing that at least half of the analysed entities ensure that 0.001 units of profit are generated on their balance sheet assets.

In relation to the minimum threshold of -1,415.0556 and the maximum threshold of 26.0751 for the variable Return on Assets in the overall sample, the range of variation of the variable is quite wide.

The economic activity area most vulnerable to risk with regard to the Return on Assets variable is 7810 - Accounting and financial auditing activities, where the average of the indicator falls to -1.1193. The least exposed to risk are 8621 - Other cleaning activities and 6920 - General health activities, where the average of the indicator registers values above 0.3.

In terms of exposure to risk from a time perspective, for the variable Return on Assets, the years most prone to risk are the years with negative peaks, namely 2021, when the indicator registers the minimum value of the annual average of -0.0387 units, and 2019, when the indicator registers -0.0120 units, well below the general average for the sector analysed. A possible explanation for the risk in 2019 could be the emergence of the health crisis, with strong effects on the tertiary sector of the economy, in particular on the indicators of volume of activity, profitability and solvency.

4.7. RETURN ON EQUITY VARIABLE

For the population included in the general statistical sample, the Return on Equity indicator records an average of 2.6685%, which means that approximately 0.026 units of profit are generated per unit of equity. However, a standard deviation of the mean of 142.7495013 was calculated on the overall sample.

The value of the median on the overall statistical sample is 0.3465 units and is well below the average calculated for the variable Return on Equity, so that at least half of the analysed entities ensure that they generate 0.003 units of profit on equity.

In relation to the minimum threshold of -4,329.5517 and the maximum threshold of 21,157.5250 for the variable Return on Equity in the overall sample, the range of variation of the variable is quite wide.

The area of economic activity most vulnerable to risk with regard to the variable Return on Equity is 6831 - Real Estate Agencies, where the average of the indicator is -1.1018, which means a decrease in the return on equity.

In terms of risk exposure from a time perspective, it is observed that for the variable Return on Equity, the years most prone to risk are 2022, when the indicator registers the minimum value of the annual average of 0.9024% and 2021, when the indicator registers the value of 1.4810%, well below the general average for the sector analyzed. A possible explanation for the manifestation of the risk in the years 2021 - 2022 could be the emergence of multiple crises (health, energy, generated by the armed conflict in Ukraine), with strong effects on the tertiary sector of the economy, especially on the indicators of volume of activity, profitability and solvency.

4.8. COMMERCIAL RETURN VARIABLE

For the population included in the general statistical sample, the indicator Commercial return registers an average of -0.1369%, which means that no units of profit are generated per unit

of turnover, but 0.0013 units of loss per unit of turnover. However, a standard deviation of the mean of 16.4213406 was calculated on the overall sample.

The value of the median on the general statistical sample is 0.1132 units and is above the average calculated for the variable Commercial return, thus at least half of the analysed entities ensure that they generate 0.001 units of profit on turnover.

In relation to the minimum threshold of -1,104.9649 and the maximum threshold of 2,055.9718 for the variable Commercial return in the overall sample, the range of variation of the variable is quite wide.

The most vulnerable economic activity to the manifestation of risk by reference to the variable Commercial profitability is found to be 6831 – Real estate agencies, where the average indicator is --1,2117, followed by domain 8129 – Activities of employment placement agencies, where the average indicator is - 1,1592.

As regards the exposure to risk from a temporal perspective, it is found that for the variable Commercial profitability, the years most prone to the manifestation of risk are the years 2021, in which the indicator records the minimum value of the annual average of -0.2413% and 2019, when the indicator records the value of -0.2071% well below the general average for the sector analysed. A possible explanation for the manifestation of the risk at 2019 level could be represented by the emergence of the health crisis, with strong effects on the tertiary sector of the economy, in particular on the activity volume indicators, profitability and solvency.

4.9. DEBT TURNOVER RATE

For the population included in the general statistical sample, the indicator Debt turnover rate records an average of 4.4040, which shows us that the debts, respectively, the financing sources from attracted and borrowed capital were renewed on account of the turnover of 4,404 times. However, a standard deviation of the mean of 11.5151119 was calculated per overall sample.

The median value per overall statistical sample is 1.9815 units and is below the average calculated for the variable Debt turnover rate, respectively, therefore, it can be found that at least half of the entities analysed ensure the renewal of their financing sources on account of the turnover of 1.9815 times during the operating period.

By reference to the minimum threshold of - 167,7709 and the maximum recorded of 901,7329 of the variable Debt turnover rate in the general sample, it is found that the range of variation of the variable is significant.

The most vulnerable area of economic activity to the manifestation of risk by reference to the variable Debt turnover rate is found to be 4120 – Construction works of residential and non-residential buildings, and, where the average indicator is 3.2461, followed by the domain 5510 – Hotels and similar accommodation facilities, where the average indicator is 3.2694. The least vulnerable domain is 8621 – Other cleaning activities, where the average indicator records the value of 9.4348.

As regards the exposure to risk from a temporal perspective, it is found that for the variable Debt turnover rate, the most prone years to manifestation of risk are the years 2018, where the indicator records the minimum annual average of 4,0555 and 2020, when the annual average of the indicator reaches 4,1302, values well above the overall average. A possible explanation for the manifestation of the risk at 2020 level could be represented by the emergence of the health crisis in 2019, with strong effects on the tertiary sector of the economy, in particular on activity volume, profitability and solvency indicators. In relation to 2018, it was characterized by a deceleration of economic growth and a climate of instability on the main macroeconomic balances, which also significantly strained the tertiary sector of the economy.

5. CONCLUSIONS

The main purpose of the research has been achieved, an advanced statistical research was performed, of the financial rates that will be included as dependent variables, respectively independent in econometric risk modelling, in order to assess the exposure on risk scales, from a multi-sequential perspective, at micro and macro-economic level.

In this regard, the economic and financial indicators useful in assessing the risks of activity, insolvency, financial, accounting and tax at entity level were identified, namely:

• The total debt ratio, which shows how many units of borrowed capital are used for a unit of own capital and which is a critical financial risk indicator, in particular in correlation with profitability and solvency indicators;

• The personal expense indicator, which is a very useful indicator in determining the risk exposure of economic entities, particularly those in the services sector, where an indicator of the very low number of employees can reveal a major risk in terms of activity, but also tax and insolvency risks;

• The insolvency indicator, which is an indicator by which one can verify the financing of the activity significantly through loans from associates. Mainly, a value of the ratio between the amounts owed to the associates in total debts that exceeds 50%, signals the classification in a maximum area of exposure to tax, insolvency and activity risks;

• The financial solvency ratio, which is an indicator whose lower level signals risk, in that the balance sheet assets do not ensure the coverage of the liabilities of economic entities;

• The capital solvency ratio, which is an indicator whose lower level signals risk, in that equity does not provide for the long-term liabilities of economic entities;

• Return on assets, which shows us how many units of profit are generated per unit of asset and is an indicator of the efficiency of the use of the assets of the economic entities included in the study. The indicator is inversely proportional to the manifestation of risk, with a lower level indicating a higher exposure to the financial and tax risks;

• Return on equity, which indicates how many units of profit are generated per unit of capital and is an important indicator of the economic profitability of the business. The indicator is inversely proportional to the manifestation of risk, with a lower level indicating a higher exposure to the financial and fiscal risk area;

• Commercial return, which indicates how many units of profit are generated by a unit of turnover and is an important indicator of the economic profitability of the business. The indicator is inversely related to risk, with a lower level indicating a higher exposure to financial and tax risks;

• Debt turnover rate, indicating the degree of renewal of borrowed financing resources at the expense of turnover. The indicator is inversely related to risk, with a lower level indicating a higher exposure to financial and tax risks.

From the perspective of the overall risk exposure profile of the analyzed entities included in the criteria segmented database of 36,140 observations, it can be seen that in the period 2018 - 2022, the economic entities have a very high debt ratio, on average 1. 197.18%, which means that on average 11.97 units of borrowed capital are used per unit of equity capital, which, in conjunction with the Debt Turnover Rate indicator, which has an average value of 4.4040, configures the main risk panel, given the high use of excessive indebtedness, with economic entities renewing their debts every 4 days out of 100.

The return on assets rate shows on the general statistical sample an average value of 0.0492%, which is well below the overall average value of the variable Return on equity of 2.6685%, and therefore, from the structural analysis of the liabilities resulting that debt, namely loans, are used as a source for financing the economic activity.

The most vulnerable business sector from this perspective is Construction works of residential and non-residential buildings, as the main sources of financing come from borrowed capital, directly influencing the ability of economic operators to bear operating costs and fulfil their commercial, financial and fiscal commitments.

In terms of risk exposure from a temporal perspective, it was found that for the variables examined essentially, the years most prone to risk are 2018, 2019 and 2020, when the annual average value of the indicators reaches values well above or below the general average. A possible explanation for the manifestation of risk at the level of 2019 - 2020 could be the emergence of the health crisis in 2019, with strong effects on the tertiary sector of the economy, in particular on the indicators of volume of activity, profitability and solvency. Compared to 2018, the year was characterized by a deceleration in economic growth and a climate of instability on the main macroeconomic balances, which also significantly strained the economy's tertiary sector.

As a result, the working hypotheses advanced in the statistical research were confirmed, concluding that the economic and financial indicators are useful in assessing and monitoring risks associated with economic activities, and they can be used to construct general and temporal risk profiles. Also, the risk vulnerability of economic entities in the services sector is structurally non-uniform in relation to the economic activity analysed.

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