

## MANIPULATION OF FINANCIAL STATEMENTS THROUGH THE USE OF CREATIVE ACCOUNTING. CASE OF ROMANIAN COMPANIES

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**Abstract.** The manipulation of the information presented through financial statements could represent a significant red flag for suspected fraud. In our paper, we investigated the extent to which the Romanian companies resort to manipulation of information data presented through the reported annual financial statements. For this purpose, we used a group consisting of 62 non-financial companies listed on the Bucharest Stock Exchange for the analyzed period 2017- 2018. The results of our study show that a majority percentage of the Romanian companies (approx. 84%) resort to manipulation of information provided through financial statements. Following the analysis carried out by activity fields, the results show that the companies activating in the fields of tourism, constructions, trade and transport resort to the manipulation of financial statements in the percent of 100%, followed by the companies activating in the field of production (86%) and services (50%). Our results are extremely useful to the users of financial information who must acknowledge the risks that they are exposed to in their decision-making process.

**Keywords:** creative accounting, manipulation, non-manipulation, financial statements, users of accounting information

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## 1. Introduction

The freedom given by various accounting alternatives, legal and accounting rules, may be used in order to create a certain image of the financial situation of the company. Thanks to the freedom that is provided to the accounting professional, the information included in the financial statements may be manipulated in order to create a certain image of the financial situation of the enterprise, within the so-called "*creative accounting*". Thus, observing the letter, but not the spirit, of the law, creative accounting techniques may be used to distort the values of the various categories of assets, liabilities, equity, income, expenses, with the purpose to present favorable indicators of financial performance. Technically, one may manipulate income, expenses, assets, liabilities, equity, with the purpose to present a favorable image of the entity for various users (Achim & Borlea, 2019). However, each user of the accounting information pursues certain interests, and the flexibility afforded by accounting regulations is often used to satisfy private interests to the detriment of the public interest (Groșanu, 2013). In this regard, the study carried out by Bhasin (2010) in India, identifies that the practice of creative accounting provides the deliberate attempt to gain an undue advantage for accountants, managers and companies.

Creative accounting appeared in the Anglo-Saxon literature in the 1970s, and it could be most frequently found in works related to company bankruptcy and in the works written by Watts & Zimmerman (1978, 1986, 1990), that describe the foundation of positive accounting theory. Creative accounting methods are not at all recent, but they have only begun to be more intensely debated since the 2000s, mainly because of the financial scandals that have arisen globally, directly or indirectly linked to manipulation and creative accounting. Similarly, the former global crisis of the financial system was associated with creative accounting (Enron, WorldCom etc.) (Balaciu, Bogdan, Vladu, 2009). We may also identify famous cases in our country, such as, in 1990, the rifling of Bancorex, (2000), the collapse of the National Investment Fund (FNI), the latter causing the collapse of approximately 318,000 investors. Based on all this evidence, the accounting profession continues to compete with the issue of fairness, as it is in the service of its users and it must be neutral in order to answer objectively to all the parties that are interested in the operation and the results included in company reports.

One may notice that, increasingly, creative accounting practices have become intensely used at the economic entity level, regardless of the size of the enterprise or of the industry where they activate. Our paper aims at carrying out an analysis of the manipulation degree of financial statements for Romanian companies, taking into account the specific fields of activity (Production, tourism, financial

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intermediation, trade, transport, services). For this purpose, we used a sample represented consisting of 62 companies listed on the Bucharest Stock Exchange for the period 2017-2018. The results of our study show that a majority percentage of the Romanian companies (approx. 86%) resort to the manipulation of information provided through financial statements.

The remaining part of our work is organized as follows.

The "Literature review" section reviews and evaluates existing research on creative accounting and its valuation models. The "Research Methodology" section describes the techniques used, the variables and the working data. The section "Results and discussions" presents and comments on the results obtained from our search through the specialized literature. The "Conclusions" section highlights the main conclusions of the paper, the limits of the research meant to constitute future research directions on the researched topic.

## 2. Literature review

### *Creative accounting and fraud*

From the perspective of those involved in setting up, checking and controlling statements, it is necessary to delimit the concept of creative accounting from the concept of fraud and to clarify the two concepts. In specialized literature, there are countless concerns regarding the setting of boundaries between creative accounting and fraud, particularly when approaches differ from one country to the next.

The concept of creative accounting is usually used to describe the process by which accounting professionals use their knowledge to manipulate the numbers included in the annual accounts. Accounting has been defined as "the art of making a balance" (Bertolus, 1988), "the art of calculating benefits" (Lignon, 1989), "the art of presenting a balance" (Gounin, 1991) or "the art of saving" money "(Ledouble, 1993). Almost, in the same manner, Trotman (1993) defines creative accounting, as being a communication technique that takes into account the improvement of the information provided to investors. Thus, the economic entity presents to investors or potential investors certain financial statements transmitted through the filter of techniques capable of generating a more favorable image on the market, but also the illusion of more attractive results, that is normal. Defining creative accounting through a well-known practice, which is "the result of smoothing" (income smoothing), Barnea, Ronen and Sadan (1976) appreciate that this is felt whenever profits have a large fluctuation, unjustified by the economic reality.

As regards the *definition of creative accounting*, Griffith, an American journalist, believes that: "All enterprises are hiding their benefits. The published synthesis documents are based on registers that have been delicately "arranged" or even substantially modified. The numbers presented to the investors have been completely changed to protect the guilty persons. This scam is legitimate and bears

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the name of "creative accounting." (quoting by Feleagă & Malciu, 2002). However, the professional's opinion seems to be a little less incisive regarding this practice. As an accounting professional, Jameson (1976) appreciates that the accounting process in its essence requires an operation with different motivations, different ideas. This diversity gives birth to manipulations, deceit and forgery practiced by some less scrupulous accounting fellows. He asserts that these creative accounting practices do not violate the law or the accounting standards, therefore they comply with the law, but not with its spirit. Jameson thus declares the negative nature of creative accounting, which distorts the financial results of the enterprise by misleading the users of accounting information. A very complete definition is given by Naser (1993), who appreciates creative accounting as a process by which "accounting numbers are manipulated and, taking advantage of flexibility, those measurement and information practices are chosen, that allow turning synthesis documents from what they should be into what managers want them to be; and transactions are also structured in such a way as to allow them to provide the intended accounting result." The techniques used in creative accounting for outcome smoothing refer at least to the following (Achim, 2008): choosing the accounting methods, policies and options and altering them; using accounting estimates and forecasts; making artificial transactions to manipulate the numbers written in the balance sheet or in order to smooth the result; the moment of choosing transactions, that would normally generate an alteration of the image through the accounts; using alternatives to recognize the elements of the financial standing and performance. On the other hand, referring to creative accounting, Shapiro (1997) quoted by Vladu (2016) adds that no scientific method will allow anyone to discover or respect the absolute accounting truth.

As regards the notion of "fraud", according to the Oxford dictionary, the word "fraud" is defined as the crime of cheating somebody in order to get money or goods illegally. On the same note, the Explanatory Dictionary of the Romanian language defines fraud as an act "of deceit, an act of ill faith committed by someone, usually to make a material profit by taking advantage of the rights of another person, or theft." The international standards of audit (ISA), through ISA 240, define financial fraud as "an intentional act committed by one or more individuals at management level, by persons in charge with governance, employees or third parties, that involves the use of deceit in order to obtain an unfair or illegal advantage".

The notion of "fraud" is defined in several ways by both scholars and laymen alike, the most simplistic one being that fraud is any crime committed for profit (Wells, 2011). Although scholars have addressed this notion in a multitude of manners, it has generally been agreed that fraud may ultimately be defined as "the act intended to mislead or harm others, in order to gain an unfair or illegal advantage"

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(Albrecht, 2004; Singh, 2011). Kranacher (2010) further simplified the notion as "theft by deceit". As scholars have agreed, fraud involves elements such as deceit and dishonesty (Singh, 2011), and they typically involve senior management (Adrian, Lawrence & Cristal, 2009). Moreover, unlike a mistake or an error, fraud is deliberate, intentional, and, most of the time, it involves the intentional concealment of the deeds (Administrative Leadership Academy, 2011).

In general, the American definition includes the notion of "fraud" in creative accounting, placing it in the sphere of illegality, while in the UK, creative accounting is not seen as an illegal act, but only as a use of flexibility in accounting, and it excludes fraud.

The flexibility allowed in accounting is used insofar as the company provides users with a fair image of the financial statements, so that they may make the right economic decisions, such as the decision to buy, to sell or to keep stocks. However, this flexibility allowed by the accounting law offers managers the opportunity to use creative accounting. The resort to such techniques is carried out in compliance with the law, but the problem is that they move far away from the basic purpose of accounting – that of providing users with a faithful image of the accounting statements. Both creative accounting and fraud occur mainly in times of financial difficulty of a company, and they intend to change the truth. Creative accounting involves "masking the accounting information, a process that is not considered to be illegal, but which certainly violates the ethical standards. On very many occasions, creative accounting and fraud are considered synonymous, but there are numerous differences. Fraud is an act committed in ill faith, that violates the law, has a negative character, while creative accounting complies with the law, but not with the spirit of the law.

Creative accounting is legal, it may even be a factor of reaching a faithful image, when applied in good faith (Groșanu, 2013). On the other hand, creative accounting may prove to be closer to fraud, "if the gateways from regulations are used to obtain advantages by certain categories of users of the accounting information to the detriment of others." (Groșanu, 2013). In general, specialized literature identifies two opinions regarding creative accounting, one by which, a priori, it has a negative character, and another by which creative accounting is not necessarily a negative action, on the contrary, it may contribute to achieving the faithful image. The common denominator of the different approaches regarding creative accounting presented as legal aims at creating a distorted image of the company, presenting it as being more prosperous, more attractive, misleading investors and shareholders.

The similarities and differences between creative accounting and fraud may be schematically presented in the table below:

**Table1 Similarities and differences between creative accounting and fraud**

	Creative accounting	Fraud	
<b>Similarities</b>	1. Intentional actions		
	2. Distorting the truth		
	3. They occur at times of financial difficulty		
	4. Creating advantages		
<b>Differences</b>	1. They respect the letter of the law	1. They do not respect the letter of the law	
	2. They do not respect the spirit of the law	3. They do not respect the spirit of the law	
	4. It may be carried out in good faith (when the result of flexibility contributes to the achievement of faithful image) or in ill faith (some of the users of the accounting information are disadvantaged)	2. It is carried out in ill faith	

Source: Achim & Borlea (2019)

As you may see from the previous table, creative accounting is situated at the border between legal and illegal, respectively at the border between „lawfulness and moral fraud, while the step to real fraud is most of the time small and invisible” (Groşanu, 2013).

*Manners to detect the financial statement manipulation degree*

From the previously presented information, we may conclude that the border between creative accounting and fraud is extremely thin, and the application of creative accounting on a larger scale may be considered an important red flag for substantiating certain suspicions of fraud. Thus, it is important to prevent and detect fraud before it may lead to the collapse of the business.

The employees, the internal audit, the financial audit, the management are the first to identify the existence of fraud, besides the specialists in the field. They are able to identify the existence of fraud by the mere fact that the reporting documents are submitted in delay, by the behavior of the fraudster, by the fact that certain goods start missing or by the fact that certain employees get rich "overnight". Besides the manner of directly observing the manipulation of financial statements, specialized literature has drafted statistical-mathematical methods able to emphasize the risk of manipulation of results through financial statements.

The existence of the risk of fraud may be pointed out by a series of specific indicators, referred to in the literature as "red flags" (Robu, 2011). Based on these red flags, the auditor may apply analytical procedures that would help him obtain evidence regarding the existence of fraud through financial statements.

The best fraud detection techniques according to the opinion of several specialists (ACFE, 2010) are the statistical models and the extraction of data from financial statements. Fraud detection based on the statistical method focuses on the use of Benford's Law, while the Beneish model, which focuses on the analysis of the report, may also be used to detect anomalies and fraud (Aris et al., 2013).

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Fraud may always be disclosed because there are interconnections between the profit and loss account, the cash flow statement and the balance sheet. Fraud may be investigated in financial statements using the detection indexes of accounting manipulations, proposed by Beneish (1999). By considering the analysis of certain financial rates, the specialized studies (Talab & Flayyih Ibrahim Ali, 2017; Robu & Robu, 2013; Hassan, 2017; Vladu et al., 2017) believe that an appropriate tool to support auditors in detecting accounting fraud is the M-Score model developed by Beneish (1999).

The M score is a reliable tool for fraud detection, being built to support auditors in the process of fraud risk detection in financial statements. A comprehensive study quoted by Talab et al. (2017) has led to the conclusion that the M score elaborated by Beneish and used to identify the possibility of accounting fraud is a reliable one. Beneish's M-score has been proven to be a popular and powerful model and efficient manipulation detection tool. The Beneish model is also known for its popularity, simplicity and reliability in detecting fraud.

Despite its popularity, the most common techniques for measuring the degree of manipulation of financial statements proposed by Dechow et al. (1995) have not changed significantly in the last 30 years (Vladu et al., 2017).

*Presentation of M-Beneish model*

Among the most popular models for assessing the degree of manipulation of financial statements is the model developed by Professor Beneish (1999). The M-Beneish model is a statistical model that uses financial indicators calculated with the accounting data of a specific company, with the purpose to check the probability of manipulating the results reported through financial statements. The M-Beneish score is a probabilistic model, and therefore it cannot detect the companies that manipulate their results with 100% accuracy. In developing the M score, Beneish excludes financial institutions from the sample. This means that the M score for fraud detection cannot be used for financial institutions (banks, insurance companies). The model constitutes the object of comparisons between the current year and the previous year (Beneish, 1999). In 1999, Professor Messod Beneish published the original variant of the score function (M) that uses eight financial indicators to detect the manipulation of the results presented in financial statements. The equation is the following:

$$M = -4.84 + 0.92*DSRI + 0.528*GMI + 0.404*AQI + 0.892*SGI + 0.115* DEPI - 0.172* SGAI + 4.679* TATA - 0.327 *LVGI \tag{1}$$

Where:

DSRI represents the Days' Sales in Receivables Index, GMI represents the Gross Margin Index, AQI represents the Asset Quality Index; SGI represents the Sales Growth Index; DEPI represents the Depreciation Index; SGAI represents the Sales, General, and

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Administrative expenses Index; LVGI represents the Leverage Index and TATA represents the Total Accruals to Total Assets Index.

A value of M score greater than -2.22 indicates a high probability of manipulation of earnings.

The indices developed by Beneish (1999) were used to develop various models to identify the risk of financial statement manipulation in many countries: Romania (Robu & Robu, 2013), Spain (Vladu et al., 2017), Asian countries - Malaysia, Indonesia, Thailand, Hong Kong, Singapore, China, and Japan (Hasan et al., 2017).

### 3. Research methodology

Our paper is an exercise developed with the purpose to create tools to differentiate between the manipulated statements, as is the case of the listed firms, and not manipulated, as is the case of the Romanian market. The group of companies taken as a sample is represented by 62 non-financial companies listed on the Bucharest Stock Exchange, that activate in various activity fields, so that we may be able to analyze which field is more engaged in the manipulation of financial results (Appendix 1). The informational sources are represented by the financial reports for the financial years 2017 and 2018.

Previous research has documented the analysis of financial rates as useful in detecting revenue management practices (Beneish, 1999). Likewise, in specialized literature, the advantages of analyzing financial rates are well emphasized, as representing a simple and cost-effective way to discriminate between manipulation of financial data and non-manipulation of said data.

In our study, we will apply the model developed by Robu & Robu (2013) for the Romanian area, with the purpose to analyze and evaluate the risk of fraud triggered by accounting manipulations, starting from the indications proposed by Beneish. The **M-Risk Fraud-Beneish** model developed by Robu & Robu (2013) is presented as follows:

$$M\text{-RiskFraud-Beneish} = -0.383 \cdot DSRI + 0.039 \cdot GMI - 0.325 \cdot AQI + 0.448 \cdot SGI + 0.273 \cdot DEPI + 0.915 \cdot DGAI + 0.478 \cdot LVGI - 0.153 \cdot TATA \quad (2)$$

The Beneish indexes (1999) used in the research carried out by Robu & Robu (2013) are detailed as follows:

1. *The Days' Sales in Receivables Index (DSRI)* represents the ratio between the duration of the collection of receivables from one financial year to the next. As long as there is no extreme change in the lending policy, this index is expected to have a linear structure.

$$DSRI = \frac{Receivables_t}{Turnover_t} / \frac{Receivables_{t-1}}{Turnover_{t-1}} \quad (3)$$

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2. *The Gross Margin Index (GMI)* represents the ratio between the gross margin rate recorded one year before the fraud was notified and the gross margin rate recorded in the financial year when the fraud was reported. The reduction of the index represents a negative signal for future prospects and reflects the fact that such companies are more engaged in result manipulation.

$$GMI = \frac{Gross\ margin_{t-1}}{Turnover_{t-1}} / \frac{Gross\ margin_t}{Turnover_t} \quad (4)$$

3. *The asset quality index (AQI)* is used to detect possible frauds at the company level, concerning asset valuation.

It indicates the change in weight of other fixed assets, except tangible fixed assets within the total assets, compared to the previous period. The higher the AQI value, indicating a reduction of asset quality, the greater the possibility to manipulate results.

$$AQI = \frac{Fixed\ assets_t - Net\ tangible\ fixed\ assets_t}{Total\ assets_t} / \frac{Fixed\ assets_{t-1} - Net\ fixed\ assets_{t-1}}{Total\ assets_{t-1}} \quad (5)$$

4. *The Sales Growth Index (SGI)* represents the ratio between the level of turnover recorded during two consecutive reporting periods. Sales growth in itself is not an indicator of result manipulation; nevertheless, companies registering growth are more likely to manipulate results.

$$SGI = \frac{Turnover_t}{Turnover_{t-1}} \quad (6)$$

1. *The Depreciation Index (DEPI)* represents the ratio calculated between the weightings of value adjustments (expenses) of fixed assets for two consecutive financial years, the previous one and the current one. The higher the value of the depreciation index, the more the situation reflects a growing revision of the estimated lifetimes of tangible fixed assets, that would eventually generate the increase of income.

$$DEPI = \frac{\frac{Value\ adjustments\ expenses_{t-1}}{Value\ adjustments\ expenses_{t-1} + Tangible\ fixed\ assets_{t-1}}}{\frac{Value\ adjustments\ expenses_t}{Value\ adjustments\ expenses_t + Tangible\ fixed\ assets_t}} \quad (7)$$

2. *The Sales, General, and Administrative Expenses Index* and the turnover (SGAI) measures the variation of this type of expenses in reference to the level of the turnover. The general expenses of administration may include a series of bonuses or awards for managers. A correlation between SGAI and sales is expected. A disproportionate increase in this ratio reflects a negative index regarding the company's future prospects.

$$SGAI = \frac{General\ management\ expenses_t}{Turnover_t} / \frac{General\ management\ expenses_{t-1}}{Turnover_{t-1}} \quad (8)$$

3. *The Leverage Index (LVGI)* measures the ratio between the total debt of an enterprise and the total assets. The higher the ratio, the greater the debt in reference to total assets. This variable is included to capture incentives in debt contracts in order to manipulate earnings.

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$$LVGI = \frac{\text{Total debts}_t}{\text{Total liabilities}_t} / \frac{\text{Total debts}_{t-1}}{\text{Total liabilities}_{t-1}} \quad (9)$$

4. **The Total Accruals to Total Assets Index (TATA)** describes the relationship that is established in time between the level of receivables outstanding and the level of the total assets. For companies at risk of fraud, in time, one may notice an increase of the percentage of unpaid commitments, as a result of fraud on financial statements, possibly caused by a series of fictitious sales (Robu & Robu, 2013).

$$TATA = \frac{\text{Net outcome of exercise}_t - \text{Cash flows from exploitation activities}_t}{\text{Total assets}_t} \quad (10)$$

The classification by risk groups of the Romanian companies according to the model (Robu & Robu, 2013) is carried out as follows:

- The interval [-2.841; -0.355] represents area without risk of financial fraud, secure area.
- The interval (-0.355; 0.313) represents an area of uncertainty (grey area) concerning the occurrence of the risk of fraud, which implies the application of additional audit procedures;
- The interval [0.313; 2.453] represents the area at risk of financial fraud, there is the practice of using tricks to distort the image of the company or to reduce the transparency of financial reports

#### 4. Results and discussions

Based on the values of Z scores, the classification areas by risk categories of the companies are shown in table 2.

**Table 2 Classification of companies in risk areas**

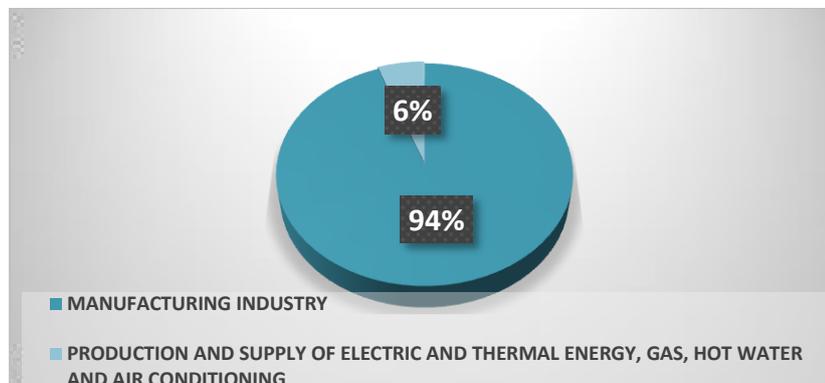
Sector of activity	Companies	Risk area					
		Risk area		Area of uncertainty		Risk-free area	
Production	36	31	86%	4	11%	1	3%
Tourism	3	3	100%	0	0%	0	0%
Constructions	3	3	100%	0	0%	0	0%
Financial mediations	5	4	80%	1	20%	0	0%
Trade	4	4	100%	0	0%	0	0%
Transport	3	3	100%	0	0%	0	0%
Services	8	4	50%	2	25%	2	15%
Total	62	52	84%	7	11%	3	3%

We may see that, in the majority (approx. 84%), the Romanian companies listed on the Bucharest Stock Exchange resort to the manipulation of information provided through financial statements, offering a low degree of credibility by the users of financial information.

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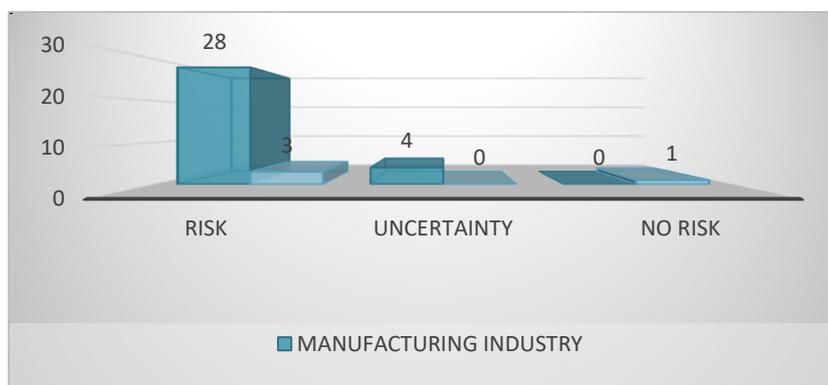
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Due to the fact that the weight of the number of the companies in the production field in the total number of the companies is over half, about 58% (36 companies within the production field in a total of 62 companies), further, we will individually focus on these companies. In addition, in Graph 1 we analyze the structure of the production companies by the two branches, namely "manufacturing industry" and "production and supply of electricity and heat, gas, hot water and air conditioning".



**Graph 1 The structure of the production sector**

From Graph 1 we may note that the highest percentage (94%) is occupied by the companies activating in the manufacturing industry. Thus, we provide a detailed analysis of fraud areas in the manufacturing industry (Table 3). One may notice that, in the manufacturing industry, the risk of manipulation is significantly higher compared with other production companies (in the field of "production and supply of electricity and heat, gas, hot water and air conditioning) (Graph 2).



**Graph 2 Manipulation and non-manipulation in the Production sector**

**Table 3 Z-score values, manufacturing industry**

No.	Company	Risk fraud area	No.	Company	Risk fraud area
1	SC BERMAS SA	0.72	19	ELECTROMAGNETICA S.A.	0.56
2	S.C.CONTED S.A.	0.31	20	MECANICA FINA SA	0.51
3	ROMPETROL RAFINARE S.A.	0.61	21	AAGES SA	1.05
4	OLTCHIM SA	-0.02	22	RETRASIB SA	0.53
5	SINTEZA SA	0.67	23	ELECTROAPARATAJ S.A.	0.84
6	SC ANTIBIOTICE SA	0.58	24	GR. IND.ELECTROCONTACT SA	-0.29
7	SC BIOFARM SA	0.77	25	ELECTROARGES SA	0.62
8	SC ZENTIVA SA	1.64	26	COMELF SA	0.36
9	SC ROMCARBON SA	0.46	27	UCM RESITA SA SOCIETATE	1
10	PRODPLAST SA	0.62	28	SC ARMATURA SA	0.4
11	SC CEMACON SA	0.76	29	MECANICA CEHLAU SA	0.22
12	PREFAB SA	0.58	30	ALTUR SA	0.49
13	S.C. PREBET AIUD S. A.	0.6	31	S.C. COMPA SA	0.71
14	COMCM SA	0.85	32	SC UAMT SA	0.88
15	CARBOCHIM SA	0.81	33	AEROSTAR SA	0.35
16	COS TARGOVISTE SA	0.51	34	SOCIETATEA TURBOMECANICA SA	0.55
17	TMK-ARTROM SA	1.08	35	AMONIL SA	-0.87
18	S.C VES S.A.	0.68	36	SN NUCLEARELECTRICA SA	0.48

Our study points out that, for Romanian companies, the critical explanatory variables identified as manipulative are: The gross margin index (it may be noticed from significant increases, from one period to another, achieved from fictitious sales); The sales growth index (following the growth of sales, from one period to another, on account of recognizing up front certain income or earnings obtained from fictitious sales); The depreciation index (to conceal receivables resulting from fictitious sales, they may be depreciated, causing the significant growth, from one period to another, of the depreciation value); the *sales, general, and administrative expenses index* (if the remuneration system and the system of evaluation of managers' performances are correlated with the level of registered sales, pointing out a high volume of expenses concerning the granted bonuses, from one period to another, this may indicate the presence of fraud); the leverage index (growth of the indebtedness degree from one period to another, if the enterprise does not achieve future economic benefits, may make the company prone to the occurrence of the risk of fraud).

According to our results, in most of the cases, the calculated variables show signs according to the theory and they are statistically significant. Thus, we may state that the financial report plays an important role in detecting the level of manipulation of financial data. In other words, they are significant in terms of indicating the manipulation of financial statements.

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## 5. Conclusions

The manipulation of the information submitted through financial statements may represent a significant red flag of the existence of suspected fraud. In our paper, we investigated the extent to which Romanian companies resort to the manipulation of information submitted through the reported annual financial statements. For this purpose, we used a group of 62 non-financial companies listed on the Bucharest Stock Exchange for the analyzed period 2017- 2018. The results of our study show that a majority percentage of the Romanian companies (approx. 84%) resort to manipulation of information provided through financial statements. Following the analysis carried out by activity fields, it is shown that the companies in the fields of tourism, constructions, trade and transport resort to the greatest extent (100%) to manipulation of information from financial statements, followed by companies in the field of production (86%) and services (50%). In the field of production, much is called for the techniques of creative accounting, because this field gives a greater possibility to those who prepare the financial statements to resort to such techniques with stocks available. They can "play" with this category by recording expenses with deterioration, expiration of some stocks. We did a more detailed analysis of the financial statements in this sector and in more than 90% of the cases, we found expenses with damaged stocks. They resort to such techniques, to reduce the profit, which directly influences the tax.

The obtained results are extremely useful to users of financial information, who must know all the risks that they are exposed to when making various decisions based on the results provided through the financial-accounting reports of companies.

Our study has several important limitations. Firstly, our model only considered the companies listed in Romania. Secondly, our results are based on the statistical model developed by Robu & Robu (2013), with the error margins implied by the application of statistical techniques. Further developments of our research aim primarily at developing our own models to detect the manipulation degree of financial results, as well as to extend the group to similar companies operating in Eastern European countries.

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### Author Contributions

All the authors have had equal contributions, both in the documentation and the revision of the specialized literature, as well as in the data collection and processing.

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**Appendix 1 Companies sample**  
**(62 non-financial companies listed on the Bucharest Stock Exchange)**

<i>Areas of activity</i>	<i>Company name</i>	<i>Name of the main activity object</i>	<i>Classification of Activities in the National Economy (CAEN)</i>
<i>Output</i>	AAGES SA	Manufacture of electric motors, generators and transformers	2711
	AEROSTAR SA	Manufacture of aircraft and spacecraft	3030
	ALTUR SA	Manufacture of other parts and accessories for motor vehicles and motor vehicles	2932
	AMONIL SA	Electricity generation	3511
	SC ANTIBIOTICE SA	Basic pharmaceutical products manufacturing	2110
	SC ARMATURA SA	Manufacture.art.of faucets	2814
	SC BERMAS SA	Manufacture of beer	1105
	SC BIOFARM SA	Manufacture of pharmaceutical preparations	2120
	CARBOCHIM SA	Manufacture of abrasive products	2391
	SC CEMACON SA	Manufacturing bricks, tiles and other construction products, of burnt clay	2332
	COMCM SA	Manufacture of concrete	2363
	COMELF SA	Manufacture of engines and turbines (except those for airplanes, vehicles and motorcycles)	2811
	S.C. COMPA SA	Manufacture of other parts and accessories for motor vehicles and for motor vehicles	2932
	S.C.CONTED S.A.	Manufacture of other articles of clothing (excl. Underwear)	1413
	COS TARGOVISTE SA	Production of ferrous metals in primary and ferroalloy forms	2410
	ELECTROAPARATAJ S.A.	Manufacture of distribution and control devices for electricity	2712
	ELECTROARGES SA	Manufacture of home appliances	2751
	SC GRUPUL INDUSTRIAL ELECTROCONTACT SA	Manufacture of distribution and control devices for electricity	2712
	ELECTROMAGNETICA S.A.	Manufacture of instruments and devices for measurement, verification, control, navigation	2651
	MECANICA CEAHLAU SA	Manufacture of machinery and equipment for agriculture and forestry	2830
	MECANICA FINA SA	Manufacture of instruments and devices for measurement, verification, control, navigation	2651
	SN NUCLEARELECTRICA	Electricity generation	3511
	OLTCHIM SA	Manufacture of other basic organic chemicals	2014
	PREFAB SA	Manufacture of concrete products for construction	2361
	S.C. PREBET AIUD S. A.	Manufacture of concrete products for construction	2361
	PRODPLAST SA	Manufacture of other plastic products	2229
	RETRASIB SA	Manufacture of engines, electric generators and transformers	2711
	SC ROMCARBON SA	Manufacture of plastic plates, sheets, tubes and profiles	2221
	ROMPETROL RAFINARE S.A.	Manufacture of products obtained from crude oil processing	1920
	SINTEZA SA	Manufacture of other basic organic chemical products	2014
	TMK-ARTROM SA	Products of tubes, pipes, tubular profiles and accessories therefor, of steel	2420
	SC TURBOMECHANICA SA	Manufacture of aircraft and spacecraft	3030
	SC UAMT SA	Manufacture of other parts and accessories for motor vehicles and motor vehicles	2932

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	UCM RESITA SA SOCIETATE	Manufacture of engines and turbines (except those for airplanes, vehicles and motorcycles)	2811
	S.C VES S.A.	Manufacture of other articles of metal n.c.a.	2599
	SC ZENTIVA SA	Manufacture of pharmaceutical preparations	2120
<b>Tourism</b>	CASA DE BUCOVINA CLUB DE MUNTE SA	Hotels and other similar accommodation facilities	5510
	SC TURISM FELIX SA	Hotels and other similar accommodation facilities	5510
	T.H.R. MAREA NEAGRA S.A.	Hotels and other similar accommodation facilities	5510
<b>Construction</b>	CONDMAG S.A.	Construction works utility projects for fluids	4221
	TRANSILVANIA CONSTRUCTII SA	Construction of residential and non-residential buildings	4120
	SOCIETATEA DE CONSTRUCTII NAPOCA SA	Construction of residential and non-residential buildings	4120
<b>Financial intermediation</b>	SIF Banat-Crisana SA	Other financial intermediaries n.c.a.	6499
	SOCIETATEA DE INVESTITII FINANCIARE SA MOLDOVA	Other financial intermediaries n.c.a.	6499
	SIF MUNTENIA SA	Other financial intermediaries n.c.a.	6499
	SOCIETATEA DE INVESTITII FINANCIARE OLTENIA S.A.	Other financial intermediaries n.c.a.	6499
	SOCIETATEA DE INVESTITII FINANCIARE TRANSILVANIA S.A.	Other financial intermediaries n.c.a.	6499
<b>Trade</b>	SC ALUMIL ROM INDUSTRY SA	Wholesale of metals and metal ores	4672
	SC FARMACEUTICA REMEDIA SA	Retail sale of pharmaceutical products in specialized stores	4773
	Ropharma SA	Retail sale of pharmaceutical products in specialized stores	4773
	SIF HOTELURI SA	Bars and other beverage serving activities	5630
<b>Transport</b>	CONPET SA	Pipeline transportation	4950
	CNTEE TRANSELECTRICA	Electricity transport	3512
	ALRO SA Slatina	Aluminum metallurgy	2442
<b>Services</b>	SC DAFORA SA	Ancillary service activities for crude oil and natural gas extraction	910
	SC COMPANIA ENERGOPETROL SA-SOC IN REORG.JUD.	Electrical works	4321
	IMPACT DEVELOPER CONTRACTOR SA	Real estate development (promotion)	110
	OIL TERMINAL	Manipulations	5224
	OMV PETROM SA	Extraction of crude oil	610
	SANTIERUL NAVAL 2 MAI S.A.	Other activities of support services for enterprises n.c.a.	8299
	S.N.G.N. ROMGAZ S.A.	Natural gas extraction	620
	SOCEP S.A.	Manipulations	5224
	SOCIETATEA ENERGETICA ELECTRICA SA	Business and management consultancy activities	7022