

# Could globally used Beneish M-score predict the manipulation of the accounting statements in the Slovak republic?

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## Abstract

**Research background:** Globalization is characteristic by many companies which are doing their business worldwide in various tax policies, so they are able to use the possibilities of creative accounting for their own benefit. And although the term creative accounting is concerned mainly with multinational companies, it is not an unknown technique also for local companies.

**Purpose of the article:** The PwC's Global Economic Crime and Fraud Survey proved that economic crime is constantly evolving worldwide. At present, there is a huge number of frauds, which include corruption, misappropriation of assets, or fraudulent reporting. These papers are focused only on accounting fraud and creative accounting as the way to adjust accounting books and reports.

**Methods:** The aim of the papers is to analyse the detection ability of the Beneish M-score model in the specific condition of the Slovak republic. These specific conditions consider tax minimization as the key factor for creative accounting implementation. The analysis was made with a Slovak company that was legally convicted of intentional manipulation of the accounting statements.

**Findings & Value added:** The consideration of the specific condition in M-score for Slovak republic showed the best detection ability to reveal the frauds. As our study reveals, reduced  $M - score_5$  was unreliable in the condition of the Slovak republic and although Beneish consider 3 indicators as redundant it seems that in the condition of the Slovak republic it is important to carefully consider their implementation.

**Keywords:** *Beneish M-score; creative accounting; manipulation of the accounting; fraudulent reporting; the Slovak republic*

**JEL Classification:** *C52; H21; H25; M41*

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## **1 Introduction**

If we focus on the theoretical definition of the term entrepreneurship, whether we consider the legal, economic, or social definition of this term, we are constantly considering the term profit – achieving the profit. Most of the modern approaches to this issue also emphasize the factor of achieving stakeholders' (internal or external) satisfaction, or society, but the term achieving of the profit is still present in these definitions (Strakova, 2020, Valaskova et al., 2020). From this knowledge, we are able to deduce that profit is the main aim of entrepreneurship and that is why many of the entrepreneurs are focusing on the highest rate of profit. But on the other hand, the higher profit the enterprise achieves, the higher tax has to be paid. And while the highest profit is in the best interest of the entrepreneurs and stakeholders, the highest taxes are not in their best interest. That is why many of the companies are trying to reduce their profit, mostly in a legal way. One of the ways, how to make it, is the application of creative accounting.

Globalization is characteristic by many companies which are doing their business worldwide in various tax policies, so they are able to use the possibilities of creative accounting for their own benefit. And although the term creative accounting is concerned mainly with multinational companies, it is not an unknown technique also for local companies.

The PwC's Global Economic Crime and Fraud Survey (2020) proved that economic crime is constantly evolving worldwide. It is generally known that for example distortions in economic performance led to the bankruptcy of several huge companies (for example Enron) and such fraud can have far-reaching consequences not only for the company's owners but also for its employees or wider society (and if the company is doing business globally the consequences could be also worldwide). At present, there is a huge number of frauds, which include corruption, misappropriation of assets, or fraudulent reporting. These papers are focused only on accounting fraud and creative accounting as the way to adjust accounting books and reports.

The papers consist of four chapters. The first chapter is focused on the introduction to the issue from the research literature point of view. The aim of the papers is to analyse the detection ability of the Beneish M-score model in the specific condition of the Slovak republic. The analyse was made with a Slovak company which was legally convicted of intentional manipulation of the accounting statements. The consideration of the specific condition in M-score for Slovak republic showed the best detection ability to reveal the frauds.

### **1.1 Literature review**

The accounting law states that an accounting entity must keep the books in such a way that the financial statements provide a true and fair view of the facts that are the subject of the accounting and the financial position of the entity. (Accounting law, 2014). Dimension of creative accounting is considered both - legally and illegally depending on the country of origin (for example USA definition is broader and it is associated also with fraud, on the other hand, Great Britain definition stress the implementation of creative accounting within the law apart from the fraud) (Jones, 211). Also, many definitions of this term highlight this issue. Creative accounting is represented by many motives, forms, and outputs. Increasing competition, loss avoiding, improving financial indicators, maintaining, or increasing the company's value, minimization of the tax base, personal interests of the managers, etc. could be considered the main motives for implementing creative accounting (Remenaric et al., 2018; Bailey et al., 2021). It could be observed different motives for implementation of creative accounting in the developed countries and the states like for example Slovakia. In

the USA the main motive is to overestimate the value of the company (mainly when they enter to the stock of exchanges), and on the other hand in Slovakia, the main aim of creative accounting is tax optimization (Jones, 2011, Remenaric et al., 2018, Blazek et al., 2020, Kramarova and Valaskova, 2020)

There is no generally accepted definition of creative accounting in the literature because a lot of various motives lead to the implementation of these practices. It could be said that the common sign of these definitions is that companies abuse creative accounting for their benefit, because there are no boundaries for creativity, and it is used in every phase of accounting books' manipulation (Blazek, 2021). Many of the definitions stress the fact, that the aim of creative accounting is to manipulate accounting books in the way how their creators want them to be to describe a better picture of the company (Naser, 1993, Krupova, 2001, Remenaric et al., 2018) with the main aim to mislead the stakeholders (mainly investor) (Paul and Olayinka, 2021). But the difference in definition comes from the line between legal and illegal behavior. The principle of creative accounting is to comply with the conditions laid down by law but deviate from the order the law wants to achieve (Remenaric et al., 2018; Mitchell et al., 2021). Creative accounting benefits from gaps in the law to improve the image of the company. Also, Blazek et al. (2020) agree with this definition of creative accounting and state that creative accounting aims to exploit legal gaps to achieve the advantage of the information presented in a misleading, more favorable light. Drabkova (2013) describes the creativity in accounting as the activities covered by applicable legislation in which the ethics is followed to the limits associated with fraud and defines all intentional activities which can be divided into three grades according to the relevance of breaking of the law. And it needs to be stress that also creative accounting could easily slip to a level that conflicts with legislation. Olojede and Erin (2021) stress both – positive and negative attitudes to creative accounting. Positive creative accounting is focused on the reduction of earnings' variability when shareholders benefit from the reduction of uncertainty. The negative aspect of creative accounting is concerning unethical practices to reach the capital by providing inaccurate financial information, but still in a legal way. As Blazek (2021) claims creative accounting put together adaptability, creativity, and gaps in the law to create the desired picture of the company. At this place, we consider as appropriate to stress the negative aspect of creative accounting implementations, as mentioned by Akpanuko and Umoren (2018), which lies not only in the increasing number of companies' defaults but also in misleading stakeholders.

As it was mentioned above, we can claim, that creative accounting is focused mainly on improving economic results. These techniques include for example choosing and implementation of accounting principles, manipulation of the profit to achieve pre-determined objectives, earmarking of depreciation, off-balance-sheet financing, or minimizing of differences between reported profits over the years (Cugova and Cug, 2020), which is also proved by Pepernickova and Jandova (2017) in their study made in the Czech Republic. The used techniques can be divided into two groups: (Volkanová, 2014)

- window dressing – it could be defined as management of accounting transactions in which the statements provide a distorting or unrepresentative picture of the company's financial condition.
- off-balance-sheet financing – the company's assets and liabilities are reported in the balance sheets of other entities to maintain the optimal financial position of the company.

The study of Olojede and Erin (2021) stress the importance of corporate governance mechanism in the field of implementation of creative accounting whereby they stress this importance in emerging economies. Also, Ababneh and Aga (2019) proved by their study the important role of government in the implementation of creative accounting practices. Rossetto and Chapple (2019) proposed another look at this issue. They claim that it is

necessary to lead students to creativity and critical thinking in accounting to explore the ethical dimensions of creative accounting.

## 2 Methods

The researchers identify various methods to reveal the implementation of creative accounting – from basic financial analysis to statistical methods, implementation of ethic principles or software applications to direct detection of financial books' manipulation. Strakova (2020) summed up models focused on revealing creative accounting into three groups.

Beneish (1999) manipulation score (here and after M-score) model is one of the most used models to detect the manipulation of the accounting books. This model was proposed by professor Beneish as a probability model, so it is not able to identify manipulation of accounting books at the level of 100 % certainty (according to Beneish the model is able to correctly identify manipulating in accounting from 58 % to 76 % and the higher M-score, the higher probability of manipulations). The model consisted of 8 indicators, which in themselves, have high explanatory value but for the brevity of the papers, we are not going to deal with an explanation of their impact. Lately, professor Beneish modified this model and edited out 3 indicators with lower explanatory power (Corsia et al., 2015). It is recommended to use at least 2 years of financial reporting for this model, but Kramarova and Valaskova (2020) claim that for the better identification of manipulation is better to use at least 5 years of Beneish M-score.

Beneish M-score uses indicators, which are mentioned in Table 1.

**Table. 1** – Indicators of the Beneish M-score

<b>DSRI</b> (Days' sales in a receivable index)	$\frac{\frac{Net\ Receivables_t}{Sales_t}}{Net\ Receivables_{t-1}}$
<b>GMI</b> (Gross margin index)	$\frac{Gross\ margin_{t-1}}{Gross\ margin_t};$ $Gross\ margin = \frac{Sales - Cost\ of\ goods\ Sold}{Sales}$
<b>AQI</b> (Asset quality index)	$1 - \frac{(Current\ Assets_t + PP\ \&E_t + Securites_t)}{Total\ Assets_t}$ $= \frac{1 - \frac{(Current\ Assets_{t-1} + PP\ \&E_{t-1} + Securites_{t-1})}{Total\ Assets_{t-1}}}{1 - \frac{(Current\ Assets_{t-1} + PP\ \&E_{t-1} + Securites_{t-1})}{Total\ Assets_{t-1}}}$ PP&E = Plant, Property and Equipment
<b>SGI</b> (Sales growth index)	$= \frac{Sales_t}{Sales_{t-1}}$
<b>DEPI</b> (Depreciation index)	$\frac{Depreciation_{t-1}}{(PP\ \&E_{t-1} + Depreciation_{t-1})}$ $= \frac{Depreciation_t}{(PP\ \&E_t + Depreciation_t)}$
<b>SGAI</b> (Sales and general administrative expensese index)	$\frac{SGA_t}{Sales_t}$ $= \frac{SGA_{t-1}}{Sales_{t-1}}$ SGA = Sales, General, and Administrative expense
<b>LVGI</b> (Leverage index)	$\frac{Leverage_t}{Leverage_{t-1}}; Leverage = \frac{Debts}{Assets}$
<b>TATA</b> (Total accruals to total assets)	$\frac{\Delta Current\ Asset - \Delta Cash - (\Delta Current\ Liabilites - \Delta Current\ maturities\ of\ LTD - \Delta Income\ tax\ payable) - Depreciation_t}{Total\ Assets_t}$ LTD = Long Term Debth

Source: Nguyen and Nguyen (2016)

M-score calculation (Beneish, 1999) is as follows (2):

$$M - score_8 = -4,84 + 0,92 \cdot DSRI + 0,528 \cdot GMI + 0,404 \cdot AQI + 0,892 \cdot SGI + 0,115 \cdot DEPI - 0,172 \cdot SGAI + 4,679 \cdot TATA - 0,327 \cdot LVGI \quad (1)$$

As it was mentioned, lately, professor Beneish adjusted his formula (Corsia et al., 2015). It uses only 5 indicators (2):

$$M - score_5 = -6,065 + 0,823 \cdot DSRI + 0,906 \cdot GMI + 0,593 \cdot AQI + 0,717 \cdot SGI + 0,107 \cdot DEPI \quad (2)$$

The final value of  $M - score$  is compared with value  $-2,22$ . If the value of  $M - score > -2,22$  Beneish claims (1999), that it indicates a high probability of manipulation of the accounting books. If the calculated value of  $M - score < -2,22$  there is observed low probability of manipulation. Lately, this compared value was changed from  $-2,22$  to  $-1,77$  (Beneish et al., 2013). The reference value  $-2,22$  is used in these papers, because another model of Svabova and Kramarova (2020) also uses this value. The authors of this model claim, that it is more suitable for Slovak conditions and its reliability is higher than the classic Benish M-score. The authors consider indicators of  $M - score$  relevant and the formula for the conditions of the Slovak republic is (3):

$$M - score_{SVK} = 0,29 \cdot AQI_b + 0,060 \cdot AQI_{tf} - 0,437 \cdot DEPI_b + 0,180 \cdot DEPI_{tf} + 0,100 \cdot DSRI_b + 0,667 \cdot DSRI_{tf} + 0,943 \cdot GMI_b + 1,511 \cdot GMI_{tf} - 1,561 \cdot LVGI_b - 1,523 \cdot LVGI_{tf} + 0,427 \cdot SGAI_b + 0,681 \cdot SGAI_{tf} - 0,051 \cdot SGI_b + 1,920 \cdot SGI_{tf} + 0,497 \cdot TATA_b + 1,031 \cdot TATA_{tf} - 3,699 \quad (3)$$

$M - score_{SVK}$  calculates with 16 indicators. Each indicator is calculated twice:  $tf = t - 1$  (the value of the indicator year before the current time  $t$ );  $b = t - 2$  (two years before).

### 3 Results

Commerce is according to Nguyen and Nguyen (2016) the sector with the highest addiction to manipulate accounting statements and we can not leave out the consideration that tax optimization is one of the most frequent motives for creative accounting (Kramarova, Valaskova, 2020). Arising from this knowledge the Slovak company from the commerce sector was chosen for this case study. The chosen company is obligatory to publish its statements of finances. The legal form of the company is a limited liability company, it is classified as a medium company and the SK NACE code of the company is 46510. This company was charged with an offense of fraud in 2019 and 2020. The indicators presented in Table 1 were calculated based on the publicly presented information (shown in Table 2).

**Table 2.** Indicators of M-score

<i>Indicator</i>	<i>2016/2017</i>	<i>2017/2018</i>	<i>2018/2019</i>	<i>2019/2020</i>
<i>DSRI</i>	1,11438	0,85609	0,90313	0,89523
<i>GMI</i>	1,48430	1,03812	1,01974	1,29836
<i>AQI</i>	1,71835	1,87536	1,97468	0,83061
<i>SGI</i>	0,95922	0,94430	1,52268	1,08812
<i>DEPI</i>	1,03042	0,94430	1,52268	1,08812
<i>SGAI</i>	1,00659	0,95725	1,14803	0,72876
<i>LVGI</i>	1,01534	1,01127	0,94456	0,99194
<i>TATA</i>	0,16665	-0,21870	0,12092	0,14068

Source: own processing of the authors

The indicators of M-score were calculated in the years 2017 – 2020 as is recommended by Kramarova and Valaskova (2020).

As we can notice, the values of the indicators are not stable. The highest level of volatility (calculated as standard deviation) is observed for indicator AQI (0.45337; indicator 2019/2020 shows a significant decrease to 2018/2019). AQI is considered an asset quality index that measures the quality of assets. If the level of AQI is higher than 1, it is considered as positive relation between AQI and probability of manipulation (Mantone, 2013). In 2019/2020 the significant change of indicator was caused by increasing value of current assets from about 47 640 thousand € to 67 925 thousand € whereby the highest change was in cash.

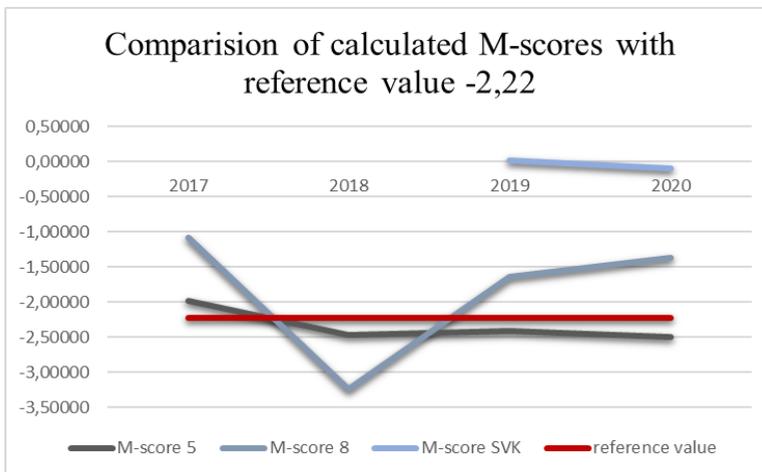
Then the M-score according to the three mentioned methods was calculated with the aim to compare the result and applicability in the specific condition of the Slovak republic (which arise from the fact that the main aim of creative accounting implementation is tax optimization, not to create higher value of the company). The results are shown in Table 3 and are compared with reference value -2,22 in Picture 1.

**Table 3.** Calculated M-score

	2016/2017	2017/2018	2018/2019	2019/2020
$M - score_5$	<b>-1,98609</b>	-2,47106	-2,41826	-2,49880
$M - score_8$	<b>-1,08810</b>	-3,24138	<b>-1,63510</b>	<b>-1,36268</b>
$M - score_{svk}$			<b>0,01740</b>	<b>-0,10144</b>

Source: Own processing of authors

The company was accused of accounting manipulation in 2019 and 2020. As it is shown in Table 3 according to  $M - score_5$  the possibility of fraud was detected only in 2017. According to  $M - score_8$  detection of manipulation was in 2017, 2019, and 2020. Model specific for the Slovak condition was calculated only in 2019 and 2020 because of the missing data (it would be necessary to calculate indicators for 2015 and 2016). As we know, the higher  $M - score$ , the higher probability of fraudulent behavior. From this point of view, we can claim, according to our results, that the most reliable model in the condition of the Slovak republic is  $M - score_{svk}$ . According to our results we came to conclusion that  $M - score_5$  is not suitable for the condition of the Slovak republic because it did not detect the manipulation with accounting in 2019 and 2020 when the company was legally convicted.



**Figure 1.** Comparison of calculated M-score with reference value -2,22

Source: Own processing

## 4. Discussion

Many researchers claims that it is very important to consider specific condition of the countries, because not every model can be implemented globally without any restriction. It could be agreed also in the case of Beneish M-score which is focused on the identification of possible manipulation with accounting statements. Specific of the Slovak republic is in a tendency of aggressive tax optimizations opposite to create a higher value of the company which is the main aim of creative accounting in developed economies.

As our case study proves, considering specific conditions should be in the mind of the users of these models because M-score proposed for Slovak conditions brings better results than classical M-score. But it needs to be considered the limits of the papers. The study was made only as a case study on the one company which were legally convicted that manipulated its accounting statements. Another limit is an absence of the information of the legally convicted companies in the condition of the Slovak republic what was mentioned also by Kramarova and Valaskova (2020) or Svabova and Kramarova (2020). As our study reveals, reduced M – score<sub>5</sub> was unreliable in the condition of the Slovak republic and although Beneish consider 3 indicators as redundant it seems that in the condition of the Slovak republic it is important to carefully consider their implementation.

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