

Explanatory Power of Earnings Management Models

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Aim

The aim of the paper is **to test the explanatory power of selected foreign models in the Slovak Republic.**

Contribution responds to the current issue of Earnings Management initiatives.

It can be said that the emphasis on this issue is constantly growing, especially abroad. Under the condition of Slovak economy, earnings management practices are considered to be a currently developing issue. Based on the globalization, EM practices, models and techniques created abroad are also reaching European countries. Mainly after the recent economic fluctuations caused by financial crisis or COVID-19, the application of earnings management principles in companies with an effort to achieve a balanced profit can be assumed. Within studies or researches, there are many earnings management models. Most of them were created abroad. It means in different economic conditions. There is therefore a question of their use in the conditions of the Slovak economy. Particular importance is their explanatory power, which they achieve in different economic conditions than those in which they arose.

Theoretical Background

- ▶ Many definition of earnings management can be found
- ▶ *White Earnings Management*
- ▶ *Gray Earnings Management*
- ▶ *Black Earnings Management*
- ▶ Studies tending to a less negative way of perceiving EM are mainly from recent decades. These are studies by the authors Beneish (published in 2001), Sankar and Subramanyam (published in 2001), Scott (published in 2003) or Fields, Lys and Vincent (published in 2001). Older studies by the authors (Healy, Wahlen, Levitt, Shipper, Tzur or Yaari) perceive earnings management initiatives as an effort by the company to reduce the transparency of the profit reported in the financial statements.
- ▶ Earnings management realized by using accounting principles is called *accrual-based earnings management*. On the other hand, the earnings management realized through real operating activities is called *real earnings management*.

Methodology

- ▶ The sum of total accruals calculation.

$$TA = \Delta CA - \Delta CL - \Delta Cash + \Delta STD - Dep$$

- ▶ Variables of earnings management models calculation.

Jones model

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta REV_{it}}{A_{it-1}} + \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it}$$

Where:

TA_{it} the sum of total accruals in year t ;
 A_{it-1} the sum of assets in year $t-1$;
 ΔREV_{it} the change in revenues between year t and $t-1$;
 PPE_{it} the sum of the property, plant & equipment in year t ;
 ε_{it} statistical error;

Modified Jones model

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it}$$

Where:

ΔREC_{it} the change in receivables between years t and $t-1$.

Theoh, Welch and Wong model

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta SALE_{it} - \Delta REC_{it}}{A_{it-1}} + \varepsilon_{it}$$

Where:

$\Delta SALE_{it}$ the change in sales between years t and $t-1$.

Kasznik's model

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta REV_{it}}{A_{it-1}} + \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \alpha_3 \frac{\Delta CFO_{it}}{A_{it-1}} + \varepsilon_{it}$$

Where:

ΔCFO_{it} the change in operating cash flow between years t and $t-1$.

Kothari's model

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \alpha_3 \frac{ROA_{it-1}}{A_{it-1}} + \varepsilon_{it}$$

Where:

ROA_{it-1} return on assets in year $t-1$.

Methodology

► Criteria used for explanatory power estimation.

CRITERION	CALCULATION	AUTHOR/AUTHORS
Adjusted coefficient of determination (adjusted <i>r</i> square)	$1 - \left[\frac{(1 - r^2)(N - 1)}{N - k - 1} \right]^*$	Key, Peasnell, Burgstahler, etc.
Predicted sign of a variable	<p><i>Jones model</i> ΔREV (predicted +) PPE (predicted -)</p> <p><i>Modified Jones model</i> ΔREV - ΔREC (predicted +) PPE (predicted -)</p> <p><i>Theoh, Welch and Wong model</i> ΔSALE - ΔREC (predicted +)</p> <p><i>Kasznik's model</i> ΔREV (predicted +) PPE (predicted -) ΔCFO (predicted -)</p> <p><i>Kothari's model</i> ΔREV - ΔREC (predicted +) PPE (predicted -) ROA (predicted -)</p>	Peasnell, McNichols, Bartov, Kothari, etc.
Standard deviation	<p>St.dev $\frac{1}{a_{it-1}}$</p> <p>St.dev $\frac{\Delta rev_{it} - \delta rec_{it}}{A_{it-1}}$</p> <p>St.dev $\frac{Ppe_{it}}{A_{it-1}}$</p>	Dechow, McNichols, Jeanjean, Bartov, Kothari, etc.
Significance level of model	<p><i>F</i> - test of statistical significance was used The following hypotheses were set:</p> <ul style="list-style-type: none"> - <i>h</i>₀: the model is not statistically significant; - <i>h</i>₁: the model is statistically significant** 	Mcnichols, Jeanjean, etc.

Methodology

- ▶ The aim of the paper is to test the explanatory power of selected foreign models in the Slovak Republic Data for research were obtained from the Amadeus database providing standardized annual accounts (consolidated and unconsolidated), ownership data, sectoral activities, and financial ratios. Obtained data cover financial statements of Slovak entities for 2018. The dataset consists of 950 companies.

Results

- ▶ Within literature, models for earnings management measurement can be found. have been developed in order to measure degree of earnings management. Most of them were created abroad. It means in different economic conditions. There is therefore a question of their use in the conditions of the Slovak economy. Particular importance is their explanatory power, which they achieve in different economic conditions than those in which they arose. The aim of the paper is to test the explanatory power of selected foreign models in the Slovak Republic. Authors describe explanatory power of the most used earnings management models the Jones model (1991), the modified Jones model (proposed by Dechow, Sloan and Sweeney, 1995), the Theoh, Welch and Wong model (1998), Kasznik's model (1999) and Kothari's model (2005). Explanatory power was measured by selected indicators described in table 1. Based on the results, the highest explanatory power due to the adjusted coefficient of determination has Modified Jones model. On the other hand, the lowest has Theoh, Welch and Wong model. Modified Jones model has the highest explanatory power due to the predicted sign indicator, too. Due to the standard deviation of variables the results are inconclusive. The indicator “intercept” achieves higher variability within Jones model. All used models are statistically significant.
- ▶ The modified Jones model is a worldwide model used in EM measurements. Its explanatory power even in the conditions of the Slovak Republic is adequate.

Thank you for your attention