

Differences in the Values of Financial Indicators Depending on the Reporting System

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Abstract – The scientific contribution focuses on the statistical analysis of selected indicators of the financial performance of enterprises, which within the same accounting period are reported according to national accounting legislation and according to IAS/IFRS. Due to the different approach to the reporting of asset and liability items, individual items of the statements change, which is the reason for achieving different values of financial liquidity indicators, or the golden balance rule and other financial indicators. In the introduction to the article, we will present similar research in this area. In this paper we will deal with statistical testing of absolute changes of indicators using the Wilcoxon test and t-test. The main hypothesis of the paper is to examine whether there are statistically significant differences between the values of the indicator according to national accounting legislation and IAS/IFRS.

Keywords – IAS/IFRS, national accounting legislation, differences, financial indicators.

1. Introduction

The change in individual items of the financial statements during the transition to the IAS/IFRS accounting system is influenced by the dictations of

the accounting standards themselves, on the basis of which the entity reports the items in the financial statements of the financial statements. Significant differences between Slovak accounting legislation and IAS/IFRS are found in IAS 2 (Inventories), IAS 16 (Property, Plant and Equipment), IAS 40 (Investment Property) and IAS 12 (Income Taxes). It is by applying these standards that will be the main area of our research in the paper.

2. Theoretical Background

As a result of the application of IAS/IFRS, there is a change in the individual items of the financial statements, as the items have to comply with the IAS/IFRS methods for recognition, measurement and disclosure, while presenting the facts faithfully and fairly. There is also a difference in the preparation of new financial statements, which we do not find in the Slovak accounting regulations. The change in the values of the items in the financial statements as well as their name is also associated with a change in the structure of the item itself. An item change is caused by decomposing into smaller items or aggregating into larger items. It is these changes in the regrouping of accounting items that cause a change in the values that affect the difference in the evaluation of indicators and methods of financial analysis in the transition from Slovak accounting legislation to the accounting system of International Financial Reporting Standards.

With these changes between national legislation and International Financial Reporting Standards, financial indicators also change. This is the issue of the research contribution in part Results. We also confirmed this fact by performing financial analyzes and statistical tests.

Similar results have been reported by several authors in their research. Using the same methods, research team analyzed 62 banks in the Asia-Pacific region in 1995-2009, with the results that after the introduction of IFRS, revenues will increase, but revenues will fall, which will also affect financial indicators [1]. The impact of the adoption of IFRS for small and medium-sized enterprises operating in the retail sector using the domestic accounting

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system was analyzed by other author based on the ROE decomposition methodology. Based on the analysis, it was found that when converting to IFRS for small and medium-sized enterprises, the main ROE indicator decreased by 0.74%. For other ROE decomposition indicators, 7 indicators were reduced, while 12 of these indicators increased [2].

The adoption of IFRS is still a controversial issue in Japan [3]. Research suggests that a significant percentage of SME respondents consider the cost of adopting IFRS to be significant. According to the companies, there are significant advantages in terms of the comparability of financial statements on an international scale and in relation to large and overseas listed companies, and not to smaller and domestic companies. Other author analyzed that the relationship between revenues before and after the adoption of IFRS decreases in line with the reduced quality of earnings and IFRS does not affect the value of revenues. In addition, it notes that, following the adoption of IFRS in China, there has been a disproportion in planned foreign investment due to the weak institutional security of IFRS [4]. The same research of other author in his result shows that there is no convincing evidence and that the quality of accounting has improved since the convergence to IFRS [5].

Another approach is to measure impact of IFRS 16 on the financial statements. He assumed that in 2017 the companies used IFRS 16 instead of IAS 17. In comparison, it is possible to see the impact on the financial statements and financial statements items according to IAS 17 and IFRS 16. The result of the research is a decrease in profit for the period [6]. Similar research deals with the analysis of the way in which the new standard will affect selected financial data in the reporting of Russian companies. The study object is Russian public companies applied the new IFRS 16 standard in advance in 2018 [7].

The research yielded several results and the impact of the adoption of International Accounting Standard IAS 1 - Presentation of Financial Statements on the qualitative characteristics of accounting information for the financial statements of a selected bank is significant [8].

3. Methods and Research Object

The sources of information for conducting the research are the financial statements prepared in accordance with national accounting legislation (next "SUL/CUL" – Slovak and Czech legislation) and in accordance with IAS/IFRS for the same accounting period. In the research, we focused mainly on the transformation of the Balance Sheet statement into the Statement of Financial Position of the company. We analyzed 10 small and medium-sized enterprises

that carry out business activities in several sectors. Sources of data from financial statements are scientific and professional monographs, habilitation and dissertation theses and contributions from domestic conferences dealing with the issue of preparing financial statements in accordance with IAS/IFRS.

The reason why we chose the resources obtained in this way is the low traceability of the prepared financial statements according to both accounting systems for the same accounting period. Low traceability is related to the small number of companies reporting under IAS/IFRS and the fact that companies which report under IAS/IFRS do not prepare financial statements under national accounting legislation, but under IAS/IFRS. According to the Register of Organizations of the Statistical Office of the Slovak Republic, 219 466 enterprises were registered in 2017, which were obliged to prepare financial statements. According to the Ministry of Finance of the Slovak Republic, only 112 of them prepare financial statements in accordance with IAS/IFRS, which represents 0.05 %.

According to the national accounting legislation, the entity is obliged to quantify only the profit or loss for the purposes of calculating the income tax base and the tax. The sources of information chosen in this way reflect the real-time conversions of the Balance Sheet in enterprises, which are used for scientific research and educational needs. If we chose the form of transformation of financial statements according to national accounting legislation into statements according to IAS/IFRS, the data would be significantly distorted. With the IAS/IFRS accounting system, it is up to the accountant himself to report individual items of assets and liabilities, and of course he has to follow the methodological guidelines of IAS/IFRS. An example could be the reporting of spare parts, where according to national accounting legislation this item is an inventory, but in IAS/IFRS it is up to the entity to keep this item in current assets in inventories or to transfer it to non-current assets to the item land, buildings, equipment. Based on such accounting operations, which would be on the subjective decision of the author of the contribution, the reality of the reported facts would be limited.

The aim of statistical tests of normality is to test the distribution of the analyzed at a preselected level of significance called α (alpha). Using statistical tests of good agreement, we can test the hypothesis in which the given distribution is normal (we examine the assumption of normality). A prerequisite for statistical testing of significant differences between indicators of financial performance of enterprises in the transition from national occupational legislation to IAS/IFRS is to verify whether the analyzed data

meet the condition of normality in distribution. We will verify the normality of the distribution by means of the Kolmogorov-Smirnov test and the Shapiro-Wilk test [9], [10]. Test hypothesis determination:

H0: Individual financial performance indicators or corporate accounting items correspond to the normal distribution.

H1: Individual financial performance indicators or corporate accounting items do not correspond to the normal distribution.

Testing of statistical hypotheses can be divided into parametric and nonparametric tests based on the conditions of normality of variables. If the assumed distribution of data is a normal distribution, we use parametric tests. Nonparametric tests are used if the normal distribution is not confirmed.

In these tests, we test the equality of two values of the indicator before and after the implementation of IAS/IFRS at the level of significance α (0.05) and we determine the following hypotheses of the test:

H0: There is no statistically significant differences between the values of the indicator according to national accounting legislation and IAS/IFRS.

H1: There is statistically significant differences between the values of the indicator according to national accounting legislation and IAS/IFRS.

We will verify these hypotheses in the paper for the following indicators: golden short-term balance rule, golden long-term balance rule, total indebtedness of assets, long-term debt, short-term debt, L1, L2, L3, ROE, and ROA.

We will use these statistical tests to find out the results. Paired t - test is used to compare the values of a variable for the same object (respondent, company, accounting item) in two different experimental conditions. For example, before and after the respondent's training, or before and after an event. It is used when two groups of measurements are performed based on the same sample of objects based on input and output measurements. The condition is that these measurements have to be compared with each other. A prerequisite for using the t-test is a normal distribution of the pairwise difference of the variables [11].

Let $(Y_1, Z_1), \dots, (Y_n, Z_n)$ represent a two-dimensional distribution with a vector of mean values (μ_1, μ_2) . It follows from this definition that the initial data consists of n independent objects, where each object is defined by two measurements. We test the following hypothesis [12]:

$H_0: \mu_1 - \mu_2 = \Delta$ against the alternative hypothesis $H_1: \mu_1 - \mu_2 \neq \Delta$, where Δ is given - most often $\Delta = 0$. We reject the null hypothesis H_0 at the level α if:

$\frac{|\bar{X} - \mu_0| \sqrt{n}}{S} \geq t_{n-1} \left(1 - \frac{\alpha}{2}\right)$, kde $\bar{X} = \frac{1}{n} \sum_{i=1}^n X_n$, $S^2 = \frac{1}{n-1} \sum_{i=1}^n X_i - \bar{X}$ represents an unbiased estimate σ^2 and t_{n-1} is the density of the Student's distribution when:

$$T = \frac{\bar{X} - \mu}{S} \sqrt{n} \sim t_{n-1}.$$

The use of the Wilcoxon test is conditioned by the use of data that do not have a normal distribution, and this places it among nonparametric tests. Like the t-test, it is used to compare the values of a variable for the same object under two different experimental conditions. [13]

Let X_1, \dots, X_n , be a random selection from a continuous distribution with density f which is symmetric about the point a , where a is equal to \tilde{x} (median). Assuming the finiteness of the mean value of this distribution, $EX_i = a \forall_i$ has to hold. We test the following hypothesis:

$H_0: \tilde{x} = x_0$ versus the alternative hypothesis $H_1: \tilde{x} \neq x_0$, where x_0 is a predetermined number.

In the case of this research paper we use the analogy of one-sample t-test and it is applied as a pair test to the values of differences $X_i = Y_i - Z_i$, in which (Y_i, Z_i) , $i = 1, \dots, n$ is a random selection from a two-dimensional distribution [14].

4. Theoretical Background

As the aim of the scientific paper is to determine whether there are statistically significant differences between indicators of financial performance of companies in the transition from national accounting legislation to IAS/IFRS, we decided to test the absolute changes that occurred as a result of implementing IAS/IFRS.

The precondition for statistical testing of significant differences between indicators of financial performance of enterprises in the transition from national accounting legislation to IAS/IFRS is to verify whether the analyzed data meet the condition of normality of distribution. We will verify the normality of the distribution by means of the Kolmogorov-Smirnov test and the Shapiro-Wilk test. Test hypothesis determination:

H0: Individual indicators of financial performance of enterprises correspond to the normal distribution.

H1: Individual indicators of financial performance of enterprises do not correspond to the normal distribution.

Table 1. Tests of normality of financial indicators

	Kolmogorov-Smirnov		Shapiro-Wilk	
	Statistic	Sig.	Statistic	Sig.
L1 SUL/CUL	0,453	0,000	0,437	0,000
L1 IFRS	0,456	0,000	0,435	0,000
L2 SUL/CUL	0,321	0,004	0,685	0,001
L2 IFRS	0,362	0,001	0,691	0,001
L3 SUL/CUL	0,406	0,000	0,606	0,000
L3 IFRS	0,396	0,000	0,609	0,000
ROE SUL/CUL	0,226	0,158	0,888	0,161
ROE IFRS	0,249	0,079	0,808	0,018
ROA SUL/CUL	0,261	0,052	0,694	0,001
ROA IFRS	0,363	0,001	0,658	0,000
Golden short-term balance rule SUL/CUL	0,485	0,00	0,431	0,000
Golden short-term balance rule IAS/IFRS	0,488	0,00	0,421	0,000
Golden long-term balance rule SUL/CUL	0,477	0,00	0,423	0,000
Golden long-term balance rule IAS/IFRS	0,483	0,00	0,415	0,000
Total indebtedness of assets SUL/CUL	0,163	0,200	0,929	0,437
Total indebtedness of assets IAS/IFRS	0,152	0,200	0,919	0,353
Long-term debt SUL/CUL	0,259	0,05	0,668	0,000
Long-term debt IAS/IFRS	0,325	0,004	0,683	0,001
Short-term debt SUL/CUL	0,161	0,200	0,945	0,613
Short-term debt IAS/IFRS	0,238	0,11	0,929	0,435

By comparing the value of Sig. (p-value) from the previous Table 1 with the determined level of significance α (0.05) we can state that for the indicators:

Quick liquidity (SUL/CUL and IAS/IFRS), current liquidity (SUL/CUL and IAS/IFRS), total liquidity (SUL/CUL and IAS/IFRS), ROE (IAS/IFRS), ROA (SUL/CUL and IAS) (IFRS), the gold balance rule long-term (SUL/CUL and IAS / IFRS), the gold balance rule short-term (SUL/CUL and IAS/IFRS) and long-term indebtedness (SUL/CUL and IAS/IFRS) we state that individual indicators of financial performance of companies do not have a normal distribution.

Total asset indebtedness (SUL/CUL and IAS/IFRS), short-term indebtedness (SUL/CUL and IAS/IFRS) and ROE (SUL/CUL) do not reject the null hypothesis of a normal distribution and state that individual indicators of financial performance of companies have a normal distribution.

Previous tests of normality show that in the scientific contribution some indicators do not meet the condition of normal distribution, we cannot use the parametric test (t-test), which can be used for indicators with normal distribution, but we have to use the nonparametric equivalent of the test (Wilcoxon test).

In the t-test, we test the agreement of two average values of the indicator before and after the implementation of IAS/IFRS at the level of significance α (0.05) and we determine the following hypotheses of the test:

H_0 : There is no statistically significant differences between the values of the indicator according to SUL/CUL and IAS/IFRS.

H_1 : There is statistically significant differences between the values of the indicator according to SUL/CUL and IAS/IFRS.

Table 2. Tests of normality of financial indicators

Pair		Total indebtedness of assets	Short-term debt	ROE
Mean		-0,01012	0,002056	0,054004
Std. Deviation		0,0362	0,055887	0,113022
Std. Error Mean		0,011447	0,017673	0,03574
95% Confidence Interval of the Difference	Lower	-0,03601	-0,03792	-0,02685
	Upper	0,015779	0,042035	0,134856
t		-0,884	0,116	1,511
Sig. (2-tailed)		0,4	0,91	0,165

By comparing the value of Sig. (p-value) from the previous Table 2 with the specified level of significance α (0.05) we can state that for all indicators of financial performance of companies, the p-value is higher than the specified level of significance. We can state that the difference between the values of the indicator before and after the implementation of IAS/IFRS is statistically significant, because the p-value is higher than α (0.05). We do not reject hypothesis H_0 .

We will proceed similarly in the non-parametric Wilcoxon test (Table 3), when selected indicators of financial performance of companies do not meet the condition of normality of distribution. In the test, we test the agreement of two median values of the indicator before and after the implementation of IAS/IFRS at the level of significance α (0.05) and we determine the following hypotheses of the test:

H_0 : There is no statistically significant differences between the values of the indicator according to SUL/CUL and IAS/IFRS.

H_1 : There is statistically significant differences between the values of the indicator according to SUL/CUL and IAS/IFRS.

Table 3. Wilcoxon test - test statistics

Pair	Test statistics	Std. Error	Standardized test statistics	Sig. (2-tailed)
Quick liquidity	17,000	9,811	-1,070	0,285
Current liquidity	6,000	9,811	-2,191	0,028
Total liquidity	7,000	9,811	-2,090	0,037
ROA	25,000	9,811	-0,255	0,799
Golden balance rule (long-term)	47,000	9,811	1,998	0,047
Golden balance rule (short-term)	0,000	9,811	-2,803	0,005
Long-term debt	30,000	9,811	0,255	0,789

By comparing the value of Sig. (p-value) from the previous Table with the specified level of significance α (0.05) we can state that for the indicators of financial performance of company's ready liquidity, ROA, long-term indebtedness, the p-value is higher than the specified level of significance. The difference between the values of the indicator before and after the implementation of IAS/IFRS is statistically significant, because the p-value is higher than α (0.05). We do not reject hypothesis H_0 .

We reject hypothesis H_0 in terms of financial performance indicators of companies, current liquidity, total liquidity, the golden balance rule (long-term) and the golden balance rule (short-term). By comparing the value of Sig. (p-value) of the mentioned financial indicators from the previous table with the determined level of significance α (0.05) we state that the p-value is lower than the determined level of significance. We can say that the difference between the values of the indicator before and after the implementation of IAS/IFRS is not statistically significant, because the p-value is lower than α (0.05).

5. Conclusion

The final part of the paper is a summary of testing the statistical significance of absolute changes in accounting items and financial indicators. We tested statistical significance according to the t-test and the Wilcoxon test. The results are shown in the Table 4.

The result of statistical testing of absolute differences of indicators is the statement in which for the variables golden balance (short and long – term), current and total liquidity, there is no statistically

significant difference between the values of indicators before and after the implementation of IAS/IFRS. For other variables, the statistical significance of differences in financial indicators after the implementation of IAS/IFRS was confirmed.

Table 4. Results of statistical testing of absolute differences

Financial indicator	Parametric / nonparametric test	Result
Golden balance rule (short-term)	Wilcoxon test	There is no statistically significant difference
Golden balance rule (long-term)	Wilcoxon test	There is no statistically significant difference
Total indebtedness of assets	t-test	There is a statistically significant difference
Long-term debt	Wilcoxon test	There is a statistically significant difference
Short-term debt	t-test	There is a statistically significant difference
L1	Wilcoxon test	There is a statistically significant difference
L2	Wilcoxon test	There is no statistically significant difference
L3	Wilcoxon test	There is no statistically significant difference
ROE	t-test	There is a statistically significant difference
ROA	Wilcoxon test	There is a statistically significant difference

Among the most important results for the practice of companies we can include disproportions in the reporting of individual items of assets and liabilities - which ultimately has an impact on the values of financial indicators. The final part describes the principles, methods and procedures applied in the conversion of the Balance Sheet prepared in accordance with national accounting legislation to the Statement of Financial Position of the company prepared in accordance with IAS/IFRS. The mentioned transfer is a benefit for companies in the area of practical application of the applied procedures when changing the accounting system.

The change in the accounting system is reflected in improved comparability of financial statements, opening up market opportunities for the company and increasing access to foreign sources of financing. On the other hand, compared to the advantages, we also find certain increased costs caused by employee training, bookkeeping and according to the national accounting system due to the need to determine income tax or the use of external accounting services.

By switching to the IAS/IFRS accounting system, companies can improve several financial indicators. Different values of financial indicators for the same accounting period are due to different approaches to the valuation of assets and liabilities compared to national accounting legislation. The different values of the indicators are due to the different definition and classification of assets and liabilities, while IAS/IFRS prefer the nature of the assets and liabilities themselves to the form of the accounting item.

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