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Examination of the Effects of the Transition on IFRS Based on the Du-Pont Analysis

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ABSTRACT

In the course of our research, we examined the value judgment of investors of companies switching to IFRS in the two accounting systems. Before examining the hypothesis (H1), it was justified to examine the evolution of the ROE indicator in the two different accounting systems using the Wilcoxon rank sum test. For the ROE indicator, a significant difference can be clearly established in the two accounting systems, as the significant relationship can be demonstrated both in companies with low and high capital requirements. Overall, in the IFRS, the converting companies showed a more favorable profitability situation with regard to the ROE indicator. The main investigation of our research focused on whether the significant deviation of the ROE indicator in the year of the transition can really be attributed to the transition to IFRS. The hypothesis (H1) was tested using a random effects panel regression model. The profitability ratio that most determines investors' value judgment is the ROE indicator. With the help of the study, we can get an answer to the question of whether the ROE indicator changed as a result of the transition to IFRS or due to the direct effect of other indicators in the year of the transition. Our aim is to investigate which variable significantly influences the development of the ROE indicator. In the course of the investigation, based on the correlations of the Du-Pont formula, in addition to transition, the ROS indicator, the turnover rate of all assets, and the equity multiplier were included in the regression model as explanatory variables. Based on the results of the random effects panel regression, the change in the ROE indicator in the year of the transition is not caused by the transition to IFRS in companies with high or low capital requirements. Based on the results of the regression model, the significant difference is closely related to the differences in the rotation speed of all assets and the ROS indicator. Based on this, we determined that the transition to IFRS certainly does not distort the investor value judgment of companies applying IFRS.

INTRODUCTION

Nowadays, the main purpose of preparing company financial statements is to provide information to internal and external stakeholders, especially potential investors, which is why it has become necessary to develop a standardised system of accounting and a set of financial statements that allow comparisons (Barbuta-Misu et al., 2023; Zhao et al., 2023). The Hungarian Accounting Act of 2000 and its subsequent amendments seek to follow the principles of the European Union accounting rules, which are also constantly changing from year to year. After Hungary's accession to the European Union, Regulation 1606/2002 on the application of international accounting standards, adopted by the European Parliament and the Council of the European Union on 19 July 2002, became applicable to Hungary as a member state (Beke, 2014). According to the European Union's decision, since 2005, listed companies are required to apply IFRS in the preparation of their consolidated accounts in order to increase international (EU and global) comparability (Alexander - Nobes, 2013). The next important milestone for the domestic implementation of IFRS is the adoption of Act CLXXVIII of 2015 on the adoption of International Financial Reporting Standards for individual reporting purposes and on certain financial amendments to the law, which was adopted by the Parliament on 29 November 2015. In accordance with the law, the application of IFRS is mandatory for certain types of companies in Hungary and optional for others in the preparation of their individual financial statements. Given that the application of IFRS in the preparation of individual financial statements in Hungary has only been an option since 2016, and since then it has become an obligation for an increasing number of companies, the timeliness and topicality of the topic can be clearly established, as this is a real corporate issue that is currently of concern to market players. One of the most important reasons for this is that all decisions by owners, authorities and investors are primarily based on individual financial statements, so the key question is whether they are prepared in accordance with IFRS.

1. LITERATURE REVIEW

In research on the introduction and first application of IFRS, the authors approach the purpose and significance of IFRS from different perspectives. A number of differences between the research can be identified as to why the authors consider it important to apply IFRSs and the benefits of doing so.

Central and Eastern European countries are emerging transition economies that emerged from the domination of the Eastern bloc in the 1990s and aspired to become members of the European Union (Hoskisson et al., 2000). Although each country has its own specific culture, the common experience of Central and Eastern European countries is that they were command economies in the Soviet Union's sphere of influence for at least two generations (Borker, 2012). Over the past three decades, Central and Eastern Europe has undergone rapid and revolutionary economic development. The countries of the Visegrad Group (Czech Republic, Hungary, Poland and Slovakia) are of particular interest in this respect (Závodny - Procházka, 2023). Despite the generally positive economic situation, some institutions within the Visegrad Group countries remain underdeveloped and struggle with the legacy of a centrally planned economy (Lukac et al, 2022). In the transition towards greater adoption by the European Union and the global financial community, the countries of Central and Eastern Europe appear to have excellent reasons to adopt IFRS as the basis for their financial reporting (Fekete et al., 2008). G. Csebfalvi (2012) argues that a highly competitive business environment requires companies to create a clear and transparent business strategy, and that accounting should be part of this strategy, thereby helping individual companies to achieve their business objectives. According to V. Vágner (2021), in an expanding global economy, it is in the interest of investors to be able to compare the performance of companies operating in different countries. Financial statements prepared under different accounting rules in different countries do not give a clear picture of the companies.

For capital holders to be able to choose the most profitable investment options, a single system is needed to compare the options. It is therefore necessary to develop a more uniform

accounting system that allows companies to be compared on the basis of their assets, financial position and profitability. The transition to IFRS can help to improve the transparency of financial reporting and build trust in financial markets, as there are still significant differences between accounting systems (Becsky-Nagy - Droppa, 2015; Tamimi - Orbán, 2022). However, the transition to IFRS is significantly constrained by a lack of professionals (Droppa - Becsky-Nagy, 2019).

The impact of the transition to IFRS on earnings determines, among other things, not only the dividends to shareholders or possibly the corporate tax base, but also the evolution of a set of relative indicators related to earnings, such as the profitability position or the financial position.

Profitability is a measure of a company's performance, showing how efficiently it is using the resources at its disposal. Basically, it is the ratio of earnings to capital invested over a given period (Birher - Pucsek, 2009). The most important indicators of profitability include the profitability ratios ROS, ROA and ROE, the interrelationship of which is illustrated by the Du-Pont formula. The value of the ROE indicator is influenced by a number of factors, and the Du-Pont indicator system allows the ROE indicator to be defined as the multiplication of the Equity multiplier (EM), the ROS indicator and the Total Asset Turnover indicator (TAT) (Birher - Pucsek, 2009).

A. Tangl and V. Vágner (2021) examined how the profitability of listed companies in Hungary changed after the transition to IFRS. The study is mainly concerned with the changes in the different types of ROS indicators of companies applying IFRS at the individual reporting level in the year of transition. The authors compare ratios from the same period, but calculated under different accounting systems, with the aim of helping managers of companies considering the transition or potential investors to make informed decisions by identifying the underlying accounting relationships. Based on the results of the study, the authors found that there is a significant difference in operating ROS between the two different accounting environments and that IFRS shows a more favourable profitability position compared to the Hungarian accounting environment. A. Takács et al. (2017) examined the evolution of the capital strength ratio and ROE ratio after the transition. The research was conducted on a sample of 200 European companies. The results of the research showed that the value of the ratios calculated from data adjusted for the effects of fair value measurement evolved more favourably after the transition to IFRS.

In their study, E. Tarpataki et al. (2022) examined the balance sheet, income statement and cash flow statement data of 42 Hungarian companies operating in different industries in the Hungarian and IFRS accounting environments that have individually transitioned to IFRS. The authors examined the changes in the main categories of the income statement, finding that significant changes in profit after tax occurred only in a few companies, with most cases involving a reclassification of sub-categories. In addition, an analysis was carried out of indicators that determine the rating criteria for credit institutions. The indicators included the ROS indicator which, due to lower turnover, was higher in IFRS than in the Hungarian accounting environment.

2. DATA AND METHODOLOGY

The research topic is the impact assessment of the transition to IFRS for companies operating in the Hungarian accounting environment. The first adopters of IFRS are the companies that already prepare their individual financial statements according to IFRS. The main objective of the research is to investigate the profitability situation and investor value judgements of companies that have switched to IFRS. In line with this objective, the following hypothesis was formulated:

H1: The transition to IFRS significantly distorts the ROE ratio, the most important determinant of investor value judgments.

The data required to carry out the secondary research are contained in the annual accounts prepared in accordance with the provisions of the Hungarian Accounting Act and the financial statements prepared

in accordance with IFRS. The first step of the data collection was to identify all (134) companies operating in Hungary that apply IFRS, assuming that these companies would be able to study the direct effects of the transition. This was done with the help of the EMIS database, which provides access to companies in Hungary that publish financial statements under international accounting standards. Following the data collection, a cluster analysis was performed in order to create two predefined clusters on the population under study. In the cluster analysis, asset structure indicators were chosen as the clustering criteria, thus creating the two clusters: high and low fixed asset requirement companies. All statistical tests were performed on a cluster-by-cluster basis.

We started our research by examining the differences in ROE ratios using the Wilcoxon rank sum test. We then analysed the impact of the factors influencing the ROE ratio, as it is the most important determinant of investors' value judgements among the profitability ratios studied (Zéman - Béhm, 2016). The analysis was carried out using random effect (RE) panel regression with the (1) formula:

$$Y = ß_0 + ß_1 X_1 + ß_2 X_2 + \ldots + ß_n X_n \quad (1)$$

For panel regression, both a random-effects and a fixed-effects model can be used, which can be chosen based on the results of the Hausman test (Hausman, 1978). Regression models can be used if all conditions are met (Wooldridge, 2002). For the data used in the random-effects panel regression model, all conditions were met except for a normal distribution of the data. This required a transformation of the data, which was performed by logarithmization, as the procedure can normalize the distribution for errors. After logarithmising the data, the normal distribution of the errors was checked. Therefore, it can be concluded that all conditions are fulfilled by the data and the regression model can be applied to investigate the impact of factors affecting the ROE ratio.

Finally, we carried out a variance analysis of the ROE indicator, which allowed us to present in detail the factors explaining the variation of the indicator. The variance analysis is generally used in the analysis of the plan-actual and base-period variances (Cruz - Sukoco, 2022). For the analysis of the factors affecting the Du-Pont, we used the absolute differences method based on the (2) formula:

$$ROE = ROS \times TAT \times Total\ Assets \times \frac{1}{Equity} \quad (2)$$

The analysis of variance by cluster was carried out using the absolute difference method, based on the correlations of the Du-Pont formula, the results of which were presented in the form of waterfall diagrams.

3. RESULTS

3.1 Statistical analysis of the impact of the transition on ROE

Before testing the hypothesis (H1), it was appropriate to examine the evolution of the ROE ratio in the two different accounting systems by applying the Wilcoxon rank sum test. The ROE indicator clearly shows a significant difference between the two accounting systems, as a significant relationship can be found for both companies with low and high fixed asset requirements. Overall, IFRS showed a more favourable profitability situation for the ROE indicator for the migrating companies.

A random-effects panel regression model was used to test the hypothesis (H1). ROE ratio is the most significant determinant of investor value judgments. The analysis can be used to answer the question whether the ROE ratio changed due to the impact of the transition to IFRS or due to the direct impact of other ratios in the year of transition. The objective is to investigate which variable significantly influences the evolution of the ROE ratio, based on the Du-Pont indicator structure. Therefore, the independent variables of the regression model are the three indicators that can be multiplied to determine the ROE ratio,

so the ROS ratio, the Total Asset Turnover (AT) ratio and the Equity Multiplier (EM) ratio, and the time variable is the effect of the transition. The results of the random effects panel regression are presented in Table 1.

Table 1: Results of a random-effects panel regression model explaining ROE for companies with high fixed asset requirements

Title	*Beta*	*Standard error*	*Z test*	*p-value*	*Konfidence intervallum (95%)*	
Transition	0,9339	0,806	1,16	0,247	-0,6459	2,5138
ROS	0,7468*	0,1446	5,16	0,000	0,4633	1,0303
TAT	0,7138*	0,1697	4,21	0,000	0,3811	1,0465
EM	-0,0903	0,0631	-1,43	0,153	-0,214	0,0334
Constans	-2,0708	1,5156	-1,37	0,172	-5,0416	0,8898

* Significant at p<0.05 level
Source: own edit, 2024

The panel regression for companies with high fixed asset requirements has an adjusted R^2 value of 0.2988, which means that the explanatory power of the regression model is 29.88%. The Wald Chi-square test result is 43.9, p=0.00. This suggests that the regression model can be applied to the entire population, although Table 2 presents the results of the regression model applied to the indicators formed from the reporting data of a smaller proportion of the population. The significance value of the transition (24.7%) is above the 5% level, suggesting that the ROE indicator has not changed as a result of the adoption of IFRS. The results show that for companies with high fixed asset requirements, the evolution of the ROE ratio is significantly influenced by the ROS ratio and AT, based on the p-values. The level of significance of EM (15.3%) is also above 5%, so that no significant correlation can be found for this indicator with respect to the ROE indicator. Subsequently, a random-effects panel regression model for firms with low fixed asset requirements was applied to the ROE indicator (Table 2).

Table 2: Results of a random-effects panel regression model explaining ROE for companies with low fixed asset requirements

Title	*Beta*	*Standard error*	*Z test*	*p-value*	*Konfidence intervallum (95%)*	
Transition	0,8304	0,4467	1,86	0,063	-0,0451	1,7061
ROS	0,6675*	0,1289	5,18	0,000	0,4147	0,9203
TAT	0,5997*	0,1403	4,27	0,000	0,3245	0,8748
EM	-0,1138*	0,0499	-2,28	0,023	-0,2118	-0,0158
Constans	-0,9486	1,1574	-0,82	0,412	-0,2172	1,3199

* Significant at p<0.05 level
Source: own edit, 2024

The R^2 value for the low fixed assets companies is 0.2956, which indicates that the explanatory power of the regression model is 29.56%. The Wald Chi-square test is 48.84, p=0.00, which means that the regression model can be applied to the whole population. The results of the regression model shown in Table 3 apply to the ROE ratios of only 80 companies from the base population, as Cluster 2 is composed of 80 companies with low fixed asset ratios.

Similar results can be observed for this cluster, as the significance value of the transition (6.3%) is higher than the accepted level of 5%. Hence, it can be concluded that the ROE indicator in this case has not changed due to the transition to IFRS. It is important to note, however, that the p-value of 6.3% is very close to the 5% level, which suggests that there may be a stronger correlation between the transition and the ROE ratio than in the previous case. Based on the significance values of the regression model, it can be stated that all independent variables significantly affect the evolution of the ROE indicator in the year of conversion.

After setting up the random-effects panel regression model, we performed the analysis of the variance of the ROE ratio for low and high fixed-asset-demand firms separately. Our aim is to focus on the extent to which the difference between the ratios calculated in the two accounting environments under investigation is caused by which factors. To perform the gap analysis, we have also used the factors of the Du-Pont formula. The EM indicator has been split into two factors for higher meaningfulness. The result of the variance analysis is illustrated by a waterfall diagram, which allows to show in detail the effect of the variation in the factors affecting the ROE indicator, with increases and decreases marked in different colours (Figure 1).

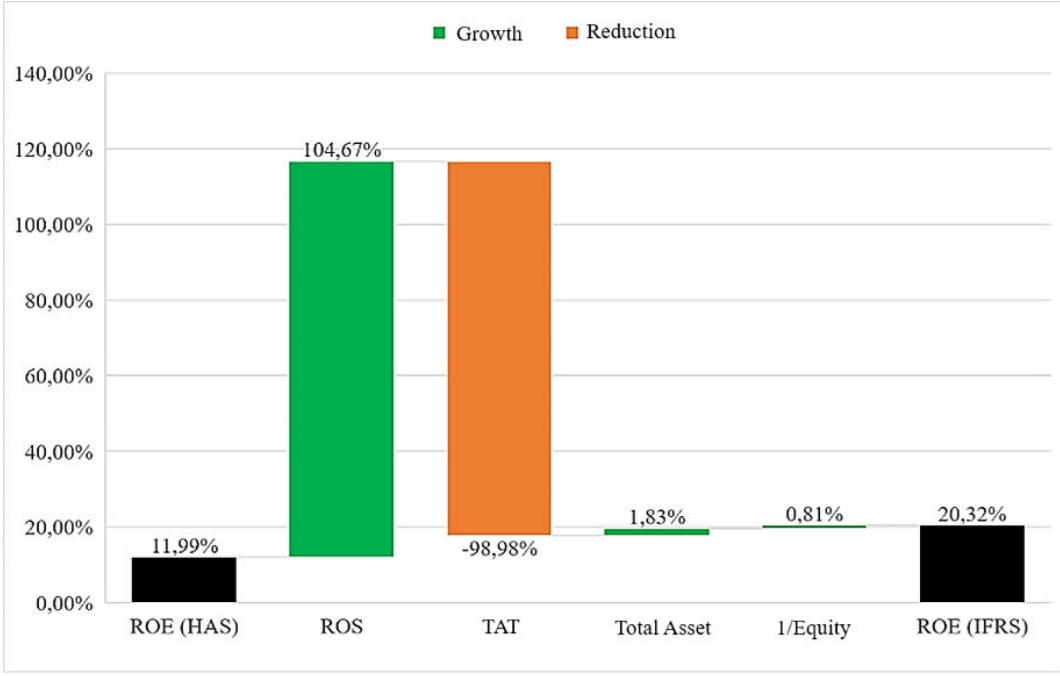

Figure 1 Analysis of variance of the ROE ratio for companies with high fixed asset requirements
Source: own edit, 2024

As can be seen in Figure 1, the ROE of companies with high fixed asset requirements, calculated on the basis of financial statements prepared in accordance with the Hungarian Accounting Act, averages close to 12%, which has increased to more than 20% on average as a result of the transition to IFRS. The waterfall diagram shows in green the changes in factors that had an increasing impact and in orange those that had a decreasing impact on the ROE ratio. From this, it can be concluded that the changes in the ROS indicator, the reciprocal of Total Assets and Equity increased the average ROE, while the changes in the AT indicator significantly decreased it. It is important to highlight that the significant impact on the ROE evolution is due to the ROS indicator (almost 105% increase) and the AT indicator (almost 99% decrease). Despite the significant effects, there is no significant difference in the ROE indicator, as the effects of the opposite changes relatively offset each other. The results obtained in the analysis of variance confirm that companies with high fixed asset requirements have shown a more favourable profitability situation in

terms of ROE as a result of the transition. In addition, there is a strong correlation between the analysis of variance and the results of the random-effects panel regression, as the regression model is set up to conclude that among the Du-Pont metrics, EM is the only metric that does not significantly affect the ROE.

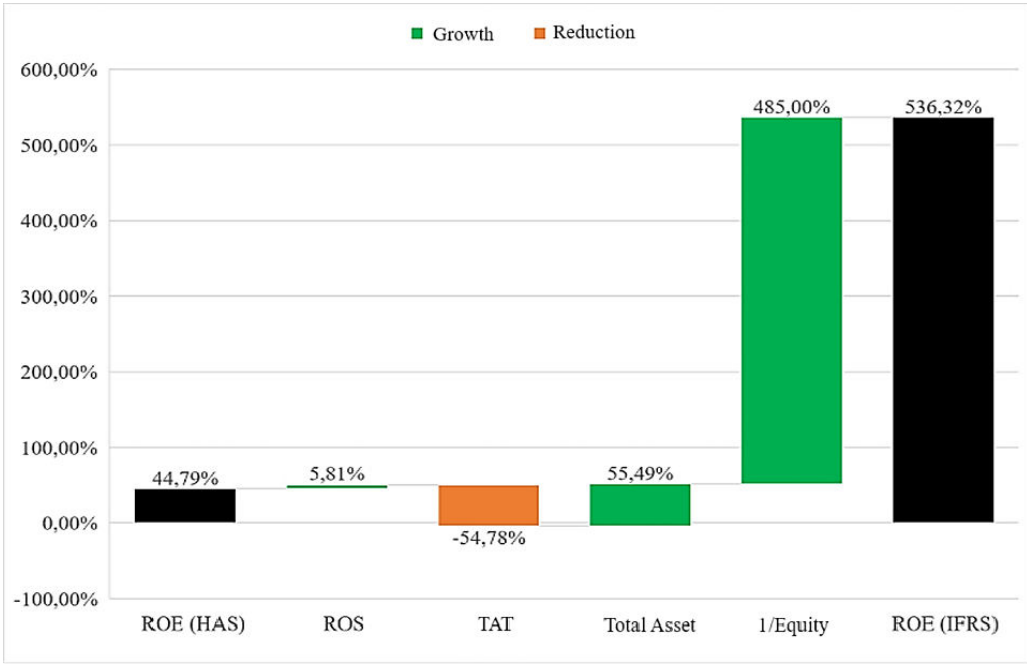

Fig. 2 Analysis of variance of the ROE ratio for companies with low fixed asset requirements
Source: own edit, 2024

For companies with low fixed asset requirements, the average ROE ratio calculated in the Hungarian accounting environment is close to 45%, which increased significantly (to around 536%) during the transition to IFRS. Similar to the previous cluster, the ROE evolution is influenced by ROS, Total Assets and Equity reciprocally increasing, while AT decreasing. It is important to underline that the average change in the ROS indicator (almost 6% increase) has the least impact on the average value of the ROE indicator, contrary to the results presented for the previous cluster. The average change in the AT indicator (almost 55% decrease) and the average change in Total assets (about 56% increase) are almost the same, but due to their opposite direction, it can be said that they offset each other. Contrary to the previous cluster, the average change in the reciprocal of Equity has a significant impact on the evolution of the ROE indicator for companies with low fixed asset requirements, increasing it by exactly 485%. This suggests that the average change in the ROE ratio in this cluster is most closely related to the average change in the value of Equity. The results of the analysis of variance for firms with low fixed asset requirements also support and are closely related to the results and conclusions presented above. On the one hand, we find that the ROE value indicator is significantly higher in the IFRS system than in the Hungarian accounting environment, the primary reason being the significant difference in equity due to the non-significant difference in after-tax profit. Furthermore, the results of the random effects panel regression show that EM significantly affects the value of the ROE indicator, which is explained by the significant variation in the value of equity.

There may be a significant difference between the value of equity under the Hungarian Accounting Act and under IFRSs, which are mainly not due to differences in valuation between the two accounting systems, but to differences in recognition and classification requirements. One of the most significant differences in the value of equity in the transition to IFRS is caused by the

repurchase by companies of their own shares. Under Hungarian accounting rules, treasury shares are recognised as current assets, which, in the transition to IFRS, must be presented within equity with a negative sign as a deduction from equity. The reclassification also has a reducing effect on the value of total assets in addition to equity, which in addition to the ROE indicator also affects the development of the ROA indicator and the rate of return on total assets indicator.

Based on the results of the random-effects panel regression model, we conclude that our hypothesis (H1) is rejected, so it is not proven that the transition to IFRS significantly distorts the ROE ratio, the most important determinant of investor value judgements.

CONCLUSIONS

There is a significant difference in ROE between companies with high and low fixed asset requirements. Based on the results obtained, the profitability analysis has shown that the ROE ratios of the migrated companies, calculated from the data of the financial statements prepared according to the Hungarian Accounting Act and IFRS, differ significantly in the year of migration.

Further examination of this research is closely related to our previous finding. Based on the fact that we found that the ROE indicator differed significantly for both clusters during the transition to IFRS and that this indicator is most closely related to investor value judgements, we considered it appropriate to examine the factors affecting the ROE indicator. The analysis was performed using random-effects panel regression, where the effect of the transition to IFRS, TAT, EM and ROS were included as explanatory variables in the regression model. Based on the results of the regression model, we found that the difference in the ROE ratio for the companies in none of the clusters is caused by the adoption of IFRS, but by changes in the ROS ratio and TAT. Consequently, our hypothesis was rejected, it was not proven that the switch to IFRS significantly distorts the ROE ratio, which is the most important determinant of investor value judgements.

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