Civic Review · VOL. 17. Special Issue, 2021, 187–208., DOI: 10.24307/psz.2021.0014

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Impact of IFRS Adoption for Individual Reporting Purposes on the Profit of Hungarian listed Companies

Summary

The purpose of this article is to analyze the effects of the mandatory transition to IFRS (International Financial Reporting Standards) in Hungary at the beginning of 2017 (Act CLXXVIII of 2015) on the profits and financial performance of companies listed on the Budapest Stock Exchange. The research assumes a change in accounting regulations that will affect the measurement of results and valuation procedures that will have a significant impact on the financial condition of companies. The method of the analysis is the inverse of the comparability index - originally developed by Gray (1980), which allows the results to be compared between different accounting systems. The calculation of the indexes is based on financial data published in the individual annual reports of the various accounting systems mentioned above for listed companies transitioning to IFRS. The study uses mathematical-statistical calculations to compare the values of the indexes. In connection with the establishment of the study, it was found that there is a significant difference between the results and indicators of the examined companies according to the IFRS and the Hungarian Accounting Standards, of which higher average values can be observed in the case of IFRS.

Journal of Economic Literature (JEL) codes: M41
Keywords: International Financial Reporting Standards, comparability, accounting harmonisation, Hungary, IFRS adoption, Gray index, income statements, earnings management

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Introduction

The process of implementing uniform accounting standards began decades ago. Single set of directives have existed within the EEC since the 1970s, but they were still too comprehensive and general to produce comparable financial statements. The solution was the establishment of the IASC (International Accounting Standards Committee) in 1973, the main purpose of which was to establish unified International Accounting Standards (IAS) (Hajnal, 2017). From 2001, the successor International Accounting Standards Board (IASB) integrated IAS into the new regulations and continued to standardize by issuing IFRSs. In 2002, the European Union issued EC Regulation No 1606/2002, which required Member States to require companies listed on stock markets to apply IFRS in their consolidated financial statements from 2005 onwards instead of national rules. It left it to each Member State to decide whether to adopt IFRS for separate reporting or for which other entities to allow or require the transition to IFRS (Csebfalvi, 2012a). As a result of the EU harmonization, listed companies have been required to publish consolidated financial statements in accordance with the IFRS (International Financial Reporting Standards) since 2005. The regulation has also entered into force in Hungary.

Developments in accounting regulations within the European Union have also accelerated the start of the process of developing the domestic accounting standard. In Hungary, before the accession to the European Union in 2004, steps were taken towards harmonization only in the interest of the planned harmonization, after which the harmonization efforts began to intensify. As a result of two years of preparatory work to implement the new European Accounting Directive 2013/34 /EU, it was decided in 2015 (Decision No. 1387/2015) to apply the IFRS for individual financial statements (or separate financial statements in accordance with IFRSs). The aim of this multi - stage implementation was to provide entities and authorities with adequate preparation time for the transitioning companies (Kovács–Menich, 2021). The new national accounting system came into force on January 1, 2016, the primary objective of which was to ensure better compliance with international accounting directives and international comparability by establishing consistency between the Hungarian accounting legislation and the IFRS. Although the accounting profession in Hungary is highly qualified and Hungarian accounting closely follows the central measures of the EU and the developed Western world in the age of digitalisation (Hegedűs et al., 2020), there is no doubt that the change in the law on individual financial reporting has been a big change. As of January 1, 2017, it became effective for individual financial statements that companies listed on the European Union's stock exchange, as well as credit institutions, financial companies and other credit institutions will be required to apply IFRS. While entitites whose parent company prepares consolidated financial statements in accordance with the IFRS, and the insurers, investment firms and other payment institutions are permitted to prepare their financial statements in accordance with international standards, these companies are not required to prepare their financial statements in accordance with national accounting regulations (Act CLXXVIII of 2015).

Thanks to legal harmonization, the application of the international accounting system will allow greater comparability of accounting documents showing the performance of companies applying IFRS around the world. To date, the IFRS has emerged as one of the most dominant global accounting regulatory systems, as evidenced by the growing number of adopters internationally. According to the latest survey of the IFRS Foundation, 144 (87%) of the 166 jurisdictions surveyed in 2018 require the application of IFRS from a majority of entities, while 12 jurisdictions (7%) allow the application of IFRS to any of the interested entities (The IFRS Foundation, 2018). According to a 2017 survey, 127 companies out of a total of 400,841 registered companies in Hungary reported according to the IFRS. Despite the seemingly low number, the effects of these companies on the Hungarian economy are very significant (Tóth, 2017).

Accounting data is the basis for decision-making in various areas of management, as well as for investors, creditors and business partners. We need true, fair, real and accurate data to make the right decision (Tangl–Vajna, 2016). National accounting regulations in line with international directives draw the attention of preparers to the provision of complete, reliable, true and balanced information, which also applies to the presentation of their multifaceted performance (Kardos–Madarasi, 2013). However, due to the different regulatory criteria and evaluation methods of the international standards, significant changes in the accounting and financial data according to the IFRS can be observed compared to the same income statement or balance sheet data reported according to the Hungarian Accounting Act (Zéman, 2018).

The results of this study contribute to the debate that cultural, political, economic, institutional and many other differences between countries are hampering the process of accounting harmonization worldwide and that the adoption of accounting directives has not significantly reduced European differences. European accounting harmonization remains an elusive goal (Ali et al., 2016; D'Alauro, 2019).

The aim of this work is to analyze the level of comparability of Hungarian listed companies calculating their incomes according to the IFRS, by identifying and analyzing the extent and direction of the differences between the financial statements issued according to the Hungarian and international standards.

Literature Review

Common law vs. code law

Differences in accounting between and within countries tend to be very deep, influenced by a number of cultural, social or economic factors and therefore resist long-term harmonization (Nobes, 2011). Due to the different national accounting traditions and local legal systems of each state, the process of accounting harmonization also develops differently. The transition from a rule-based accounting system to a principle-based accounting system has been applied in different ways in Europe, and the comparability and equivalence of financial statements has not been sufficiently achieved across Europe (Haller, 2002). It has been observed that

where dual financial statements are prepared, the international standard results in different results than national regulations (Gray, 1980, 1988; Ding et al., 2005).

The extent of value changes is highly dependent on the legal system of each country. Based on this, two major groups can be distinguished when classifying the accounting systems of countries: countries that apply the Anglo-Saxon model and countries that apply the continental model (Nobes, 2011). The Anglo-Saxon model includes countries that are part of the former British Empire (in addition to the United Kingdom, some examples are: the United States, Canada, Australia, New Zealand, Malaysia, etc.) and exercises common law. The continental model (Germany, Belgium, Spain, Portugal, France, Italy, Japan, South American countries, etc.) emphasizes code law (Clarkson et al., 2011).

In the Anglo-Saxon model, the origins of regulation are more related to commons and traditions. These countries are characterized by strong, active capital markets, investor-centered financial statements, little government influence and legal formalization, a self-regulated accounting profession, and independent tax- and financial reporting. In the continental model, the norms derive from the legal text, that is, in order for something to have value, it must be mentioned clearly and specifically in the law. In these countries, financial markets are less important, financial statements are more targeted at creditors and tax authorities, there is greater government intervention and fiscal-oriented government regulation, greater formalism and uniform application of rules, less accountant professional decision-making, close link between financial- and tax reporting, and a greater degree of conservatism in measuring profit (Nobes, 1998; 2008; 2011). Companies in the continental model have to expect a significant difference between their own accounting regulations and the IFRS (Istrate, 2013).

Hungary is a continental code law country, where national accounting shows many similarities to German terminology, accounting principles and valuation procedures. The Hungarian Accounting System is a detailed, comprehensive and prescriptive regulation, characterized by a lack of flexibility. It is characterized by strong state control, legal and tax influence (Borbély–Evans, 2006). Hungarian corporate taxation is closely related to the Hungarian Accounting Act (Fehér–Karai, 2020). It is strongly defined by the Hungarian social values and the prudence principle (Takáts, 2014).

Contrary to the Hungarian formalist tradition, the IFRS is based on rules of principle, where the application of certain standards depends on flexibility and judgment in interpretation. The IFRs standards proclaim the primacy of accounting content over the legal form in which the principles of true and fair view prevail. The IFRSs are based on an assessment of economic reality as opposed to a purely regulatory assessment that promotes investor transparency. IFRS favors better quality and more comparable preparation of financial statements, limiting the income increasing application of accounting practices among managers, thereby better reflecting economic reality (Barth et al., 2012).

Due to the move away from detailed rules and the more principled approach of convergence with IFRS, the study assumes that the transition to IFRS will have a major impact on the financial statements. Thus, the hypothesis of this work is that in Hungary the transition to IFRS for individual reporting purposes usually results in significantly different results for listed companies than the previous Hungarian standard.

Measuring IFRS Harmonization

A number of studies examine the progress made in each country in harmonizing IFRSs (IASs) between local accounting rules, that in terms of regulatory pr§inciples and valuation methods and numbers what legal (de jure) and numerical (de facto) differences the IFRS shows against national accounting regulations.

According to a comprehensive study, there are significant differences in the de jure harmonization of financial reporting between EU Member States. On this basis, the lowest level of adoption of IFRS is demonstrated by Austria, where the IAS Regulation has been applied to the least extent in national law. Similarly, in France, Spain and Hungary, only the minimum requirements are met, and the range of companies applying IFRS is quite narrow (Procházka, 2012).

Strouhal et al. (2017) used the Jaccard and Lance-Williams coefficient method for de jure harmonization to examine the level of harmonization of local accounting legislation with IFRS in the V4 countries (Czech Republic, Slovakia, Hungary and Poland). Examination with both methods has shown that Hungary is lagging behind most, while Slovakia the least in terms of harmonization.

The transition to IFRS has had a major impact on accounting- and financial data in many countries that have adopted IFRS. In the following, we examine research on the impact of IFRS on financial statements and the performance of companies with the Gray (1980) index on the international and domestic stage.

Gray's (1980) methodology has been used in a number of works to compare de facto differences in accounting harmonization between international and national standards, for example: in England (Weetman–Gray, 1990); in Finland (Adams et al., 1993); in Sweden (Hellman, 1993); in Australia (Norton, 1995); in England, Sweden and the Netherlands (Weetman–Grey, 1991). Following the mandatory adoption of IFRS in Europe in 2005, the following studies were conducted with the method of the Gray-index: Beckman et al. (2007) and Haller et al. (2009) for Germany, O'Connell and Sullivan (2008) for large companies in seven Eurocontinental countries, Cordazzo (2013) for Italy, Tsalavoutas–Evans (2010) for Greece, Fifield et al. (2011) for the United Kingdom, Ireland and Italy, Hellman (2011) for Sweden, Lopez–Viana (2008) for Portugal, Iatridis (2012) for UK hedging firms, Istrate (2013) for Euronext markets (Belgium France Netherlands Portugal), Ali et al. (2016) for UK Alternative Investment Market (AIM) listed companies. Studies confirm that in the companies surveyed in these countries, IFRS had a significant initial impact on the companies' incomes, with a significant positive impact. Hellmann (2015) found statistically significant differences in the measurement of net income between strong (Class A: UK, Australia, the Netherlands, and Denmark) and weak (Class B: Sweden, France, Italy, and Spain) equity financing groups. Its outcomes suggest that the international accounting classifications developed decades ago have still persisted in the accounting figures of large companies in the countries since the mandatory adoption of the IFRS for consolidated reporting purposes in 2005.

The changes in the value of IFRS financial statements prepared for individual reporting purposes have been examined in the following studies.

Istrate (2014) examined the impact of the mandatory transition to IFRS on individual financial statements for listed companies in Romania (68) using the accounting data for the comparative year 2011, also using the Gray index. In terms of net income, the averages of the Gray indexes showed overall a decline in income, except for premium stock companies, which recorded modest growth, but this trend is offset by a sharp decline in other firms. The impact of IFRS on operating profit is already clearer, showing a consistent decline in income. The mean values of the Gray index showed a significant decrease in ROE, ROA, and ROS due to the transition to IFRS. The lower values of IFRS incomes on average may seem surprising, which the author explains by the fact that the individual financial statements do not include Goodwill, which, due to the elimination of IFRS implementation in 2005, has been identified in the literature as a significant contributor to increase net income in consolidated reports.

Tofanica (2015) also examined the impact of the first application of the IFRS in the 2012 financial statements of listed companies in Romania using the Gray index. The average Gray index of the outcomes of the 66 sampled companies shows that the majority of companies are neutral in adopting IFRS (they do not differ significantly from national regulations), while the results calculated on the basis of Romanian Accounting Standards are on average lower (deviation exceeds 5% on average) than IFRS figures.

Finally, Robu et al. (2019) the impact of the transition to IFRS at the individual level for 63 listed companies in Romania in the period 2007-2016 were also examined. Comparability of accounting information was done by the Gray index and panel data analysis. The main results showed significant differences in the financial position and performance information under RAS and IFRS. The main differences were at the level of both profitability indicators and financial structure indicators.

The positive and negative effects of the introduction of the IFRS for individual reporting purposes can also be identified with regard to the financial performance of Romanian companies, the vast majority of these authors report a significant impact. The results can be considered relevant for this study, as Romania can also be classified as part of the European continental accounting model as a code law country (Istrate, 2014).

Turning to domestic studies, by the end of this work no empirical study has been published that would have identified the effects of the adoption of IFRS in Hungary with the Gray index. Therefore, the most significant studies related to the de facto measurement of the IFRS are presented below.

Fekete et al. (2008) examined whether the consolidated financial statements of Hungarian listed companies after 2005 complied with the IFRS disclosure requirements. Based on this, the average value of the IFRS disclosure index is 0,6169 (62%), which indicates a significant non-compliance with the disclosure.

Beke (2011) examined the impact of the adoption of international accounting standards on the management performance and business decisions of companies listed on the Budapest Stock Exchange. Differences between national rules and international accounting standards were measured using a logistic regression model comparing the period before (2006) and after (2007) the adoption of the standards, in order to determine whether IFRS reduce

the level of profitability and business profit. The sample included 65 companies using the IFRS and 260 companies using local accounting rules. The results of the research showed an unpleasant view of the performance indicators following the application of the IFRS. The adoption of IFRS in the companies surveyed had a significant impact on the decline in net profit and income and even more on the deterioration of solvency, however, the author noted that he experienced a higher level of quality reporting due to the transition to IFRS.

Beke and Tiszberger (2012) in their research examined whether the economic and financial indicators of listed companies that adopt international standards show a significant difference compared to companies with more than 50 employees who prepare annual reports and follow Hungarian regulations. In the course of their research, they carried out a comparative study on whether the financial performance of companies that have already adapted to international standards shows a significant difference compared to companies that follow Hungarian Accounting Standards. Based on the Hungarian practice, no significant difference could be detected between the two accounting clusters in the examined period (2005–2007). The averages of the sales to taxed profit and sales to operating profit indicators are lower for the companies preparing IFRS reports than for the companies preparing reports according to the Hungarian Accounting Standards, but the decrease was not considered significant.

Csebfalvi (2012) also examined the effects of the adoption of international standards on the changing business environment, for example the extent to which the IFRS affected Hungarian companies in terms of business performance in the studied periods (before introduction 2004-2006 and after introduction 2008-2010). As in the case presented earlier, he also used the financial statements of 65 listed companies prepared in accordance with the IFRS and 260 companies in accordance with local accounting rules. He pointed out that the introduction of IFRS had a negative impact on company balance sheet data, net profit values, and profitability and solvency ratios. On the other hand, it found it positive that IFRSs provide higher quality information and clearer and more transparent information compared to domestic regulatory standards.

Albu et al. (2013) in 4 countries (Hungary, Czech Republic, Romania and Turkey), a total of 23 interviewees (5-7 per country) examined the introduction of IFRS among SMEs. The smaller effect of the accounting regulations (de jure) was found in Hungary and in the Czech Republic. However, the de facto application of international standards has been controversial in countries due to reduced professional competencies, close links with taxation and lower levels of implementation.

The impact of IFRS on taxation in Hungary was examined by Fehér–Karai (2020). It was found that in the year of transition, the average effective tax rates for companies in 2017 decreased significantly and that the elimination of the positive effects of fair value on profit before tax resulted in a significant decrease in the effective tax rate. The results show significant differences in the profit before tax calculated on the basis of the two different accounting systems. These are partly due to the transition to IFRS and partly due to the change in the tax rate. Due to the transition, the tax liability of companies decreased and the change in the effective corporate tax rate became significant.

In summary, previous studies show that the adoption of IFRS has more negative effects for consolidated reporting purposes, while only a single study reports the positive effects of the transition from the period of application of the IFRS in 2017 for individual reporting purposes. However, it can also be seen from the secondary data that the impact of IFRS on the profits of the Hungarian companies is by no means negligible. This study reflects the expectation that the adoption of IFRS in Hungary, as in other countries, will have a significant impact on the income statement and financial performance of companies, and thus on the comparability of accounting numbers. Although the purpose of this work is not to analyze the reasons for the differences, but rather to present the impact of accounting regulatory changes in the financial statements for information purposes.

Research Data And Methodology

The main objective of the study is to compare the international standards (IFRS) and the Hungarian accounting profits and financial ratios using the inverse of the Gray (1980) comparability index, for instance to determine the extent of the de facto impact of changes due to through the income statements and financial ratios of companies. The index was originally developed by Gray (1980) and was called the conservatism index. Later, Weetman et al., (1998) renamed the index to the comparability index (CI) to focus more on relative accounting, without having to judge which accounting treatment is more or less conservative (Street et al., 2000; Gray et al., 2009)

Most studies start from the original comparability index of Gray (1980):

$$CI(ComparabilityIndex) = 1 - \frac{Profit_{NewGAAP} - Profit_{PreviousGAAP}}{|Profit_{NewGAAP}|} \tag{1}$$

We also find authors who provide figures for previous standards in the denominator (Beckman, 2007; Istrate, 2014; Tofănică, 2015; Robu, 2019):

$$CI = 1 - \frac{Profit_{NewGAAP} - Profit_{PreviousGAAP}}{|Profit_{PreviousGAAP}|} \tag{2}$$

A formula similar to the one below is described by Street et al. (2000); Gray et al. (2009), and Istrate (2013) used:

$$CI^{-1} = 1 - \frac{Profit_{PreviousGAAP} - Profit_{NewGAAP}}{|Profit_{PreviousGAAP}|} \tag{3}$$

This study uses the inverse of the original Gray-index in the Hungarian legal environment, modeled on Pires–Decourt (2015) and Souza–Shikida (2021):

$$ICI = 1 + \frac{Profit_{IFRS} - Profit_{HAS}}{|Profit_{HAS}|} \tag{4}$$

Where:

ICI = Inverse Comparability Index

$Profit_{IFRS}$ = Profit (or loss) according to IFRS

$Profit_{HAS}$ = Profit (or loss) according to the previous Hungarian Accounting Standards.

The values of the inverse comparability index can be interpreted as follows:

- ICI = 1: the two sets of standards give the same value;
- ICI is higher than 1: IFRS values are higher than those of the Hungarian standards;
- ICI is lower than 1: IFRS values are lower than values obtained using the Hungarian standards.

Gray (1980) identified the ratios based on three groups: a pessimistic, neutral, and optimistic zone, which he classified into nine categories from the highly pessimistic or conservative (<0,50) category to the optimistic or less conservative (> 1,50) category. Based on the inverse of the original classification, the following ranges were set up:

- neutrality (index values between 0,95 and 1,05), with three subclasses: between 0,95 and 0,99; 1; Between 1,01 and 1,05;
- pessimism (IFRS is more conservative than previous standards for; <0,95 index) with three subclasses: below 0,50; between 0,50 and 0,74; between 0,74 and 0,94;
- optimism (IFRS is less conservative than previous standards; >1.05 for), with three subclasses: between 1,06 and 1,25; between 1,25 and 1,50 and above 1,51.

From Equation (4), the hypothesis of this work can be formulated as follows:

- H0: the IFRS standard generates the same results as the Hungarian standard;
- H1: the IFRS standard generates different results (pessimistic or optimistic) than the Hungarian standard.

The use of inverse index is more in line with the objectives of this study, in contrast to the interpretation of the original index, because when an increase in results generates values greater than one, and vice-versa, it expresses the effect of the IFRS in a more intuitive way.

Although there is no generally accepted threshold given the materiality of differences, traditionally five percent of revenue represents the level of whether an item is material or not (Street et al., 2000). In Hungary, according to the Accounting Act, an accountant may classify an item as material if the adjustment exceeds 2% of the balance sheet total for a given business year (Act C of 2000).

The subject of the analysis was companies trading in premium shares on the Hungarian stock exchange, with the exception of credit institutions and equivalent financial enterprises. The securities of the highest value, for example the premium category, include a total of 20 joint-stock companies, three of which are financial institutions and insurers under the supervision of the National Bank, which provide accounting data in a different reporting structure from other joint-stock companies. Companies operating in the financial sector have fundamentally different accounting concepts due to their core business, and due to the specifics of the accounting system, comparability could have been difficult to ensure in this sector, therefore 17 publicly owned companies were included in the analysis. The research data is derived from the individual annual financial statements of companies published in accordance with the IFRS in 2017 and the annual reports prepared in accordance with the Hungarian Accounting Act from the year 2016, namely the period before the first IFRS financial statements, consists of net sales, operating profit, profit before taxes and taxed profit. For a single company, the one year earlier IFRS financial statements (2016) and Hungarian

financial statements (2015) were used, thanks to the fact that the IFRS were first adopted on a voluntary basis a year earlier. The basic data of the study are from 2016 for 16 companies and from 2015 (first-time adaptation) for the comparative period of transition to IFRS for individual reporting purposes.

It is important to highlight the extent to which the financial data provided in the individual annual accounts has improved or deteriorated as a result of the transition due to different regulatory criteria and procedures. The performance of companies is measured in terms of profitability, using different types of Return on Sales (ROS) indicators.

Several methods of calculating the ROS indicator are known, practically projecting each profit category onto sales.

We used three types of determination of the ROS indicator in the study:

- Sales to operating profit = operating profit / net sales;
- Sales to profit before tax = profit before tax / net sales;
- Sales to taxed profit = taxed profit / net sales.

The studies cover only one business year per company and do not reflect trends in performance in previous and subsequent years, as the ultimate goal of the studies was not to evaluate and compare the performance of each year from the periods surrounding the introduction of the IFRS, but to try to point out the volume and significance of the differences between the indicators shown.

The analysis was also performed using mathematical-statistical methods: Shapiro–Wilk normality test and Wilcoxon test. For the whole sample (n=17), none of the variables had a normal distribution (p-value of the Shapiro–Wilk test <0,05; the distribution of the datasets on the density diagram is not symmetrical bell-shaped) and therefore the study was continued with the Wilcoxon test.

The latter is known to be a non-parametric test used to compare two sets of scores and to examine changes in scores, or when these differences are not normally distributed. These statistical tests were performed to check whether the means (medians) of the financial data and indicators after the application of IFRS differ from the means (medians) of the data according to the Hungarian Accounting Act and the indicators formed from them.

Because the data in the sample are not normally distributed, the study focuses on the median effect of the IFRS measurements rather than the mean through the comparability index. The Wilcoxon test is used to determine if the values of the index are statistically different from the neutral median value of 1,0.

Weetman et al. (1998) note that due to outliers, the comparability index (CI) tends to be extreme when the denominator approaches zero. Therefore, the study uses the method proposed by Gray et al. (2009): quartiles 1 and 3 (Q1 and Q3) were calculated, thus the interquartile range was determined (IQR = Q3 − Q1), and then all values outside Q1 − 1,5 x IQR and Q3 + 1.5 x IQR intervals have been removed.

Regardless of whether a small sample group is tested, it is not necessary to remove outliers when using the Wilcoxon test. The non-parametric statistical method allows room for comparison of data from different firm- and industry-specific companies, as it is a paired test, and comparing financial data of different sizes is not a problem, as the Wilcoxon test is based on ranking of differences. For this reason, the results obtained by the non-parametric statistical test can be considered reliable together with the outliers. However, in the study, tests were also performed with the removal of outliers.

Results

Impact on the profit

In this chapter, the main results of the study are presented in tables comparing the changes in the financial data of companies according to Hungarian Accounting Standards (HAS) and International Financial Reporting Standards (IFRS) using the inverse of the Gray (1980) index from the comparative period of the first application of IFRS. Table 1 shows the values and statistical figures of the inverse comparability index of net sales, operating profit, profit before tax and taxed profit according to HAS and IFRS. To the question of whether there is a significant difference between the two accounting systems in the value of the main income categories, a Wilcoxon test was performed and the result obtained is indicated by the p-value.

Table 1: Inverse Comparability Index (ICI) values for the main income statement categories from the comparative period of first-time adoption of IFRSs

Firm	Net Sales		Operating profit		Profit before tax		Taxed profit	
	ICI	ICI after elimination of outliers	ICI	ICI after elimination of outliers	ICI	ICI after elimination of outliers	ICI	ICI after elimination of outliers
1	1,000	1,000	1,708	1,708	1,237	1,237	1,189	1,189
2	1,162	-	1,657	1,657	1,657	1,657	1,638	1,638
3	1,000	1,000	1,083	1,083	15,369	-	15,206	-
4	3,822	-	18,897	-	0,223	-	0,221	0,221
5	0,532	-	1,678	1,678	1,555	1,555	1,571	1,571
6	1,292	-	2,268	2,268	-9,775	-	-13,848	-
7	1,034	1,034	-12,145	-	1,118	1,118	1,128	1,128
8	1,000	1,000	1,036	1,036	1,031	1,031	1,097	1,097
9	1,002	1,002	4,726	-	1,165	1,165	0,709	0,709
10	1,000	1,000	1,138	1,138	1,145	1,145	1,150	1,150
11	0,772	-	1,432	1,432	2,044	2,044	1,997	1,997
12	1,000	1,000	1,788	1,788	1,197	1,197	0,994	0,994
13	0,508	-	1,080	1,080	1,074	1,074	0,922	0,922
14	0,947	0,947	0,670	0,670	1,040	1,040	0,539	0,539
15	1,006	1,006	1,140	1,140	1,089	1,089	0,996	0,996
16	0,955	0,955	1,793	1,793	1,558	1,558	1,901	1,901
17	0,778	-	2,542	2,542	0,664	0,664	0,963	0,963

Firm	Net Sales		Operating profit		Profit before tax		Taxed profit	
	ICI	ICI after elimination of outliers	ICI	ICI after elimination of outliers	ICI	ICI after elimination of outliers	ICI	ICI after elimination of outliers
mean	1,106	0,995	1,911	1,501	1,376	1,255	1,081	1,134
median	1,000	1,000	1,657	1,544	1,145	1,155	1,097	1,097
p-value	0,666	0,787	0,008*	0,002*	0,089**	0,005*	0,949	0,330
IQR	0,059	0,002	0,710	0,671	0,515	0,398	0,649	0,437
SD	0,727	0,025	5,589	0,516	4,495	0,341	5,158	0,483

**Indexes significant difference from 1,00 at p-values of 0,01, or less.*

***Indexes significant difference from 1,00 at p-values of 0,10, or less.*

Source: own research based on the financial statements of the surveyed companies

Based on the Inverse Comparability Index of net sales, it can be seen that sales increased by an average of 10,6% for the whole sample (n = 17) (mean of ICI = 1,106), while after removing the outliers (n = 10) 0,5% decreased (mean of ICI = 0,995), which is thus considered insignificant. The change compared to 1 is not statistically significant either. The p-value of the Wilcoxon test (p = 0,666 and p = 0,787) is higher than the significance level of 0,05, therefore we have to accept the null hypothesis and conclude that the median net sales values obtained by the transition to IFRS do not differ significantly from median values according to.

By calculating the inverse comparability indexes of operating profit, the study seeks to answer the extent, direction, and significance of the changes associated with the transition to IFRS. In this case, there is a clear increase in value due to the IFRS, as the average increase in operating profit is almost double (mean of ICI = 1,911), which resulted in a significantly high average increase of 1,5 times (mean of ICI = 1,501) even after the removal of outlier values. The Wilcoxon-test indicates that the difference between the inverse comparability index and 1 is statistically significant. These index values are significant at the 99% confidence level with a 1% probability of error, the Wilcoxon p-value (p = 0,008 and p = 0,002) is much lower than the 0,01 significance level, so we can say that median operating profits under IFRS according to Hungarian accounting are significantly different, i.e. they are significantly higher than the median values according to Hungarian accounting.

Subsequently, the inverse comparability index of the Profit before tax of the companies were calculated on the basis of the data of the two accounting systems from the same period, and we can observe that the index values increased on average by 37,6% (mean of ICI = 1,376), which is only at the 90% confidence level, there is a 10% probability of error is considered significant (p = 0,089). After removing the outliers, the average increase due to the transition is 25,5% (mean of ICI = 1,255) and it can be seen that the median IFRS values differ significantly from the median values according to the Wilcoxon-test, as the index values are statistically significantly higher (p = 0,005) than 1, among companies using IFRS.

Finally, in the case of the inverse comparability index of companies' profit, the extent and significance of the changes in value resulting from the transition to the IFRS were also interpreted. According to the indexes, profit according to IFRS improved, with an average increase of 8,1% for the entire sample (mean of ICI = 1.081) and an average increase of 13,4% after removing outlier values (mean ICI = 1,134). However, the difference is not significant at all compared to 1, as the Wilcoxon p-value is already much higher (p = 0,949 and p = 0,330) than the significance level of 0,05, so the p-value they do not differ significantly from the median HAS values for net income.

It can be seen that the profit categories show a large standard deviation (SD), which in turn supports the removal of outliers. Without it, it cannot be said that all companies increased their profits to a similar extent during the transition.

In Table 2, companies were classified into 3 groups (including 3 subgroups) based on the values of the inverse comparability indexes based on the conservatism scale proposed by Gray (1980).

Table 2: Number of companies by intervals of the inverse comparability index (ICI) for the main income statement categories

Invers IC classified by subgroups		**Net Sales**	**Operating profit**	**Profit before tax**	**Taxed profit**
		Number of companies	**Number of companies**	**Number of companies**	**Number of companies**
I	<0,5	-	1	2	2
II	0,5-0,74	2	1	1	2
III	0,75-0,94	3	-	-	1
Pessimistic (<0,95)		5 (29%)	2 (12%)	3 (18%)	5 (29%)
IV	0,95-0,99	1	-	-	3
V	1	5	-	-	-
VI	1,01-1,05	3	1	2	
Neutral (0,95-1,05)		9 (53%)	1 (6%)	2 (12%)	3 (18%)
VII	1,06-1,25	1	4	7	2
VIII	1,26-1,5	1	1	-	2
IX	>1,5	1	9	5	5
Optimistic (>1,05)		3 (18%)	14 (82%)	12 (70%)	9 (53%)
TOTAL		17 (100%)			

Source: Own research based on Gray's (1980) classification and financial statements of the companies surveyed

If we analyze the number of companies used in the sample within the three ranges suggested by Gray (1980), we can see that the majority of companies (53%) in terms of net sales fall in the neutrality range, for example IFRS sales do not differ significantly from

HAR sales. Of the surveyed companies, only three companies (18%) fall into the optimistic range (The IFRS is less conservative than the Hungarian regulation), while five companies (29%) fall into the pessimistic range (IFRS is more cautious than the Hungarian regulation).

The grouping based on the values of the inverse comparability index of the operating profit of companies is much more spectacular than this. The majority of companies (82%) are above 1,05 (optimistic), i.e. the operating profit according to IFRS significantly exceeds the values in accordance with Hungarian regulations. Of the surveyed companies, only one company can be classified in the neutral range and two companies in the pessimistic range.

The proportion of companies in the optimistic range based on the inverse comparability indexes of profit before tax is also significant. The results suggest that the application of the IFRS has led to a significant increase in profit before tax. 70% of the companies surveyed are above 1,05, while 18% are in the area of pessimism and 12% in the area of neutrality.

In the breakdown by taxed profit, we can see that the majority of companies (53%) fell into the optimistic group, while the rest fell into the pessimistic (29%) and neutral (18%) ranges. Overall, this means that the application of IFRS has led to less conservatism in profit than the Hungarian regulation, i.e. the impact of IFRS on profit is not negligible.

Overall, comparability indexes exceeded the materiality level of 5% in terms of net sales 94% of the sampled companies, in terms of profit before tax 88%, and in terms of taxed profit 82% of the companies.

Impact on financial performance

In the rest of the article, the study illustrates the differences between the Hungarian Accounting Standards (HAS) and the International Financial Reporting Standards (IFRS) from the comparative period of the first application of the IFRSs using the inverse comparability index values of the ROS indicators compiled from companies' financial data. Table 3 shows the values of the inverse comparability index of the ROS indicators, which can be used to determine the extent and direction of value differences resulting from changes in the accounting system. To answer the question of whether there is a significant difference between the two accounting regulatory systems, we performed a Wilcoxon test based on the values of the inverse comparability index formed from the ROS indicator. With the help of the test, we compare the values of the inverse index, which are derived from the data prepared on the basis of Hungarian and international accounting rules for the comparable period of the listed companies. The results obtained are summarized in the table below.

Table 3: Inverse comparability index values for ROS indicators from the comparative period of first-time adoption of IFRSs

Firm	Sales to operating profit		Sales to profit before tax		Sales to taxed profit	
	ICI	ICI after elimination of outliers	ICI	ICI after elimination of outliers	ICI	ICI after elimination of outliers
1	1,708	1,708	1,237	1,237	1,189	1,189
2	1,705	1,705	1,705	1,705	1,689	1,689
3	1,083	1,083	15,369	-	15,206	-
4	4,944	-	0,058	0,058	0,058	0,058
5	3,154	3,154	2,923	-	2,954	2,954
6	2,207	2,207	-7,568	-	-10,721	-
7	-11,676	-	1,147	1,147	1,157	1,157
8	1,036	1,036	1,031	1,031	1,097	1,097
9	4,720	-	1,163	1,163	0,707	0,707
10	1,138	1,138	1,145	1,145	1,150	1,150
11	1,264	1,264	2,058	2,058	1,996	1,996
12	1,788	1,788	1,197	1,197	0,994	0,994
13	2,128	2,128	2,116	2,116	1,816	1,816
14	0,596	0,596	0,986	0,986	0,458	0,458
15	1,133	1,133	1,082	1,082	0,990	0,990
16	1,877	1,877	1,631	1,631	1,991	1,991
17	2,697	2,697	0,282	0,282	0,667	0,667
mean	1,265	1,680	1,621	1,203	1,376	1,261
median	1,708	1,706	1,163	1,155	1,150	1,150
p-value	0,009*	0,002*	0,089**	0,078**	0,329	0,252
IQR	1,074	0,931	0,673	0,489	1,109	0,904
SD	3,551	0,704	4,197	0,572	4,645	0,726

**Indexes significant difference from 1,00 at p-values of 0,01, or less.*

***Indexes significant difference from 1,00 at p-values of 0,10, or less.*

Source: own research based on the financial statements of the surveyed companies

Based on the values of the inverse comparability index in Table 3, we can observe that the sales to operating profit increased by an average of 26,5% as a result of the transition to IFRS (mean of ICI = 1,265) and by removing the outliers by an average of 68% (mean of ICI = 1,680) for the companies examined, which can be considered extremely high.

The increase compared to 1 was statistically significant, as indicated by the p-value of the Wilcoxon test in both cases (p-value = 0,009 and p-value = 0,002). From this we can conclude that the median sales to operating profit indicators obtained with the transition to IFRS are significantly higher than the median values according to the Hungarian accounting.

By calculating the values of the inverse comparability index of the sales to profit before tax indicators, we also looked for the answer to the extent, direction and significance of the changes in the indicator in connection with the transition to IFRS. It can be read from Table 3 that sales to profit before tax indicators prepared in accordance with the IFRS also improved significantly on an average, increasing by 62,1% compared to the indicators assessed according to the Hungarian accounting (mean of ICI = 1,621). After the removal of the outliers, the deviation remains high, with the ROS indicators increasing by an average of 20,3% as a result of the transition to the IFRS (mean of ICI = 1,203). According to the Wilcoxon-tests, the values of the index are more than 90% significant (p-value = 0,089 and p-value = 0,078), which means that with a 10% probability of error, the differences are already significant, i.e. the median values according to the IFRS are in the case of sales to profit before tax indicators, these are significantly higher than the median values according to Hungarian accounting.

Finally, in the case of the sales to taxed profit indicator, we also performed the inverse comparability index calculations from the same comparison period according to the data of the two accounting systems. Based on the results presented in Table 3, we interpreted the significance of the changes in value resulting from the transition to IFRS for the income position of companies. According to the comparison shown in Table 3, similarly to the sales to profit before tax, the average values of the indicators for sales to taxed profit improved by 37,6% compared to the average values of HAR (mean of ICI = 1,376), which was also maintained by the removal of outliers, as the increase was still significant, that is 26,1% (mean of ICI = 1,261). According to the Wilcoxon test, however, the difference is not statistically significant at all, as the p-value is already much higher (p-value = 0,329 and p-value = 0,252) than the generally accepted significance level of 0,05, i.e. the median values according to IFRS are not differ statistically significantly from the median HAS values for sales to taxed profit.

To interpret the indexes, the study again uses the interpretation of Gray (1980), who sets a conservatism scale for different groups depending on the value of the index.

Table 4: Number of companies by intervals of the Inverse Comparability Index (ICI) for the ROS indicator

Inverse IC classified by subgroups		**Sales to operating profit**	**Sales to profit before tax**	**Sales to taxed profit**
		Number of companies	**Number of companies**	**Number of companies**
I	<0,5	1	3	3
II	0,5-0,74	1	-	2
III	0,75-0,94	-	-	-

Inverse IC classified by subgroups		Sales to operating profit	Sales to profit before tax	Sales to taxed profit
		Number of companies	**Number of companies**	**Number of companies**
Pessimistic (<0,95)		2 (12%)	3 (18%)	5 (29%)
IV	0,95-0,99	-	1	2
V	1	-	-	-
VI	1,01-1,05	2	1	-
Neutral (0,95-1,05)		2 (12%)	2 (12%)	2 (12%)
VII	1,06-1,25	2	6	4
VIII	1,26-1,5	1	-	-
IX	>1,5	10	6	6
Optimistic (>1,05)		13 (76%)	12 (70%)	10 (59%)
TOTAL		17 (100%)		

Source: Own research based on Gray's (1980) classification and financial statements of the companies surveyed

It was previously noted that during the transition to IFRS there was a significant change in the majority of the sample in the main profit categories, excluding sales, and the change was mostly positive, i.e. the values in IFRS generally increased significantly compared to the Hungarian regulation.

In terms of the relationship between operating profit and sales, the figures for the sales to operating profit indicator show a clear increase in IFRS, as 76% of companies have an index higher than 1,05 and only 24% of companies (12-12%) fall outside this range. The value of the sales to operating profit indicator represented by the IFRS resulted in an increase in the number of companies under the Hungarian accounting system, which is in line with the previous finding that the IFRS significantly increased operating profit.

The sales to profit before tax comparability indexes developed similarly to the previous indicator. In 70% of companies, the index exceeds the threshold of 1,05 (optimistic), while in 18% it remains below 0,95 (pessimistic) and in 12% it is around 1 (neutral). Due to the increase in profit before tax from the transition to the IFRS, the ROS ratio also increased significantly compared to the previous Hungarian regulations.

As noted above, there was a significant change in profit for the sample as a whole during the transition to the IFRS. As a result of the relationship between taxed profit and sales, the value of the ROS indicator increased significantly (optimistic; p> 1,05) in most companies (59%) and decreased significantly (pessimistic; p <0,95) to a lesser extent (29%), while 12% of the companies did not cause a change (neutral; p = 0,95 – 1,05) in the value of the sales from the taxed profit indicator to the IFRS.

Overall, the comparability index for both sales to operating profit, sales to profit before tax and sales to taxed profit exceeded the materiality level of 5% for 88% of the sampled companies.

Conclusions

In the framework of the comparative analysis, the inverse values of the Gray (1980) Comparability Index calculated using the financial results of Hungarian listed companies published on the basis of two different accounting rules and the return on sales (ROS) indicators formed from them were presented. Based on the local Hungarian Accounting Standards (HAS) and International Financial Reporting Standards (IFRS) income statement and profitability indicators of the companies' annual reporting, the research shows the extent and direction of the transition to IFRS for individual reporting purposes in the comparative year of IFRS application (In 2016 and in 2015 for 1 company). In addition to the inverse of the Gray (1980) Comparability Index, a non-parametric statistical test was used to examine the significance level of the impact of the transition to IFRS on income statement and financial performance. Through the example of 17 Hungarian listed companies, the research pointed out the link between the transition to IFRS for individual reporting purposes and resulting of this the development of financial data.

The results of this research are in line with research conducted in countries with a Euro-continental accounting culture and show that the application of the IFRS for individual reporting has a significant impact on the profit and financial performance of listed companies. All this means is that by determining the comparability indexes of the transition to the IFRS, it is possible to show an improvement in the profit and return on sales indicators reported by companies. The main profit categories excluding net sales after the removal of outliers, where there is a minimal average decrease, improved significantly on average in the IFRS standard environment (above 10%). Only the average increase in taxed profit is lower than this value (8,1%), taking into account the total pattern. Statistical tests show that changes in value are more than 99% statistically significant for operating profit and more than 90% statistically significant for profit before tax.

The ROS indicators formed using the income statement categories show significantly higher values than in the Hungarian regulatory environment, in this respect the transition to IFRS produced more efficient, profitable indicators. The lowest increase in the average indicator after removal of outliers was for sales to profit before the tax indicator (20,3%) and the highest for sales to the operating profit indicator (68%). The extent of increase is also statistically significant, although in the case of the former only at the significance level of 0,1, but in the case of the latter it is already at the significance level of 0,01. Thus, the statistical test rejects H0, thus confirming the optimism hypothesis in IFRS.

However, if the comparability of the figures under the two sets of standards is examined, this is significantly impaired, as the vast majority of the companies surveyed exceeded the materiality level of 5% (94% of the sampled companies in terms of net sales, 88% of the companies in terms of profit before tax, 82% of the companies in the case of taxed profit, and uniformly 88% of the companies in the case of the ROS indicators). This indicates a significantly different profit under IFRS and HAS, i.e. the standards significantly affect the comparability.

From this study, it can be concluded that the HAS has not yet achieved full harmonization with the IFRS and with the de jure amendments to the accounting legislation that came into force on January 1, 2016. As the transition at the individual level has widened the gap between profits, this suggests low de facto convergence. However, the study covers only a single business year and comparability indexes should be calculated in the pre and post adaptation periods to confirm the results. The problem is that the companies only provided comparative data in one business year. Longer-term studies are needed to determine whether the IFRS experience of these companies results in greater comparability with Hungarian accounting.

Extreme differences, when the ICI is much higher or lower than 1, suggest that there is no consensus among companies not only on regulations but also on the interpretation of standards, which may lead to further differences in the preparation of accounting policies. Probably because of the principle-based standards, the interpretations resulted in a bold assessment and estimation for most companies. Most of these companies would merit a separate case study. Deviations of more than 5% of profit also raise very important questions for the audit profession when it comes to declaring compliance with the IFRSs.

These significant differences are very important for the evaluation of companies and the measurement of performance, because they can influence the decisions made by users and investors on the basis of financial statements, and may even lead to different conclusions among management, which may affect strategic decision-making. Therefore, the correct interpretation of accounting information and financial data is imepritive.

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