

IMPACT OF IFRS ADOPTION ON KEY FINANCIAL RATIOS

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Abstract

The purpose of this paper is to provide evidence which will assist in assessing the economic consequences of International Financial Reporting Standards (IFRS) adoption, by estimating the impact of IFRS adoption on key accounting ratios in a chosen continental European country that is also classified as a credit-based/code-law country (i.e. Finland). We investigate whether there are changes in accounting numbers after conversion to IFRS compared to before the conversion. Thus we first analyze the differences between financial ratios calculated before and after the conversion from Finnish accounting standards (FAS) to IFRS and test the statistical significances of the differences. We calculate the financial ratios that represent three key economic dimensions of a firm, i.e. profitability, financial leverage and liquidity, and one market-based financial ratio. Further, if there are differences between the financial ratios calculated before and after the conversion, we investigate the main reasons for the differences using a two steps approach. Firstly, we investigate which of the financial statement items, i.e. the balance sheet items and income statement items, changed after the conversion from FAS to IFRS. Secondly, we further investigate which of the IFRS/IAS-standards cause these differences between FAS-based and IFRS-based financial ratios.

Keywords: International Financial Reporting Standards; IFRS;

1. Introduction

Prior studies report that countries adopt IFRS (International Financial Reporting Standards) to change domestic accounting systems towards a more capital market orientated systems (e.g. d'Arcy, 2001). Moreover, they report that adoption of IFRS by firms leads to improved disclosure quality and investor protection, and make capital markets more accessible to foreign investors (e.g. Daske & Gebhardt, 2006; Barth et al., 2005; Kang et al., 2005). The evidence from these studies is mostly from continental European countries that are also classified as code-law and/or credit-based countries.

The results of these academics are in line with what was expected. The motivation for IFRS adoption across the EU member states was the need to improve quality, comparability

and transparency of financial reporting. These results are also in line with the prior literature that suggests reasons for international differences in financial reporting. The literature shows that the financing system is relevant in determining the purpose of financial reporting. While in credit-based countries the purpose of financial accounting is a prudent calculation of distributable and taxable profit, in capital market based countries the purpose of financial reporting is to provide useful information to investors (see e.g. Nobes, 1998). Therefore, replacing IFRS – that are designated to serve market based systems – for national accounting standards in the continental European countries that are also classified as credit-based countries should improve the usefulness of financial reporting to investors.

Prior literature reports economic consequences of IFRS adoption in credit-based and/or code-law countries. Barth et al. (2005) find that adoption of IFRS/IAS by firms lead to less earnings management, more timely loss recognition and more value-relevant accounting information. Moreover, Bartov et al. (2004) report that IFRS/IAS earnings are of higher information quality than German GAAP earnings. Daske and Gebhardt (2006) show that disclosure quality, as perceived by experts in their ratings of annual reports, of Austrian, German and Swiss firms increased significantly under IFRS. Moreover, Ding et al. (2006) report that a higher level of absence - i.e. the extent to which the rules regarding certain accounting issues are missing in domestic accounting standards while covered in IFRS – implies more opportunities for earnings management. Thus, IFRS adoption improves accounting quality in these countries. Although prior studies report economic consequences of the IFRS adoption, there is no evidence on the impact of IFRS adoption on key accounting ratios that are used by financial analysts and loan officers as key performance indicators (see e.g. Rees, 1995).

The purpose of this paper is to provide evidence which will assist in assessing the economic consequences of IFRS adoption, by estimating the impact of IFRS adoption on key

accounting ratios in a continental European country that is also classified as a code-law / credit based country. Finland is chosen as a case country, because it is classified as one of the typical code-law countries¹ and credit-based countries. Moreover, Ding et al. (2006) show that Finnish GAAP differs significantly from IFRS. Thus, conversion from Finnish GAAP to IFRS had likely a significant impact on the accounting numbers of Finnish companies.

We extend the current literature investigating the economic consequences of IFRS adoption (e.g. Ding et al., 2006; Barth et al., 2005; Bartov et al., 2005; Daske & Gebhardt, 2006) by investigating the impact of IFRS adoption on key accounting ratios. We investigate whether IFRS changes key accounting ratios by considering the differences between accounting ratios calculated before and after the conversion from Finnish accounting standards (FAS) to IFRS. Further, if there are differences between the FAS-based and IFRS-based accounting ratios, we investigate the main reasons for the differences using a two steps approach. Firstly, we investigate which of the financial statement items changed after the conversion from FAS to IFRS and which of them explain the differences in the accounting ratios. Secondly, we further investigate which of the IFRS/IAS-standards mainly explain the differences in the accounting ratios.

The result of the study....

The remainder of this paper is organized as follows. Next section reviews the literature. Section three describes the research methodology, design and data. Section four reports the results and finally, discussion and concluding remarks of the paper are provided in Section five.

¹ Finnish law belongs to the group of Scandinavian tradition or family which is one of the three major families within the civil tradition.

2. Differences between IFRS and ‘traditional’ continental European accounting practices

Jermakowicz, & Gornik-Tomaszewski (2006) report that European firms believe that the adoption of IFRS improves financial transparency and comparability of financial statements between firms. Moreover, Kang et al. (2005) report that countries are more likely to adopt IFRS to improve investor protection, to make their capital market more accessible for foreign investors, and to improve the comparativeness and comprehensiveness of their financial information. Consequently, earlier studies report that firms have higher financial reporting and disclosure quality after adoption of IFRS than before (e.g. Barth et al., 2005; Daske & Gebhardt, 2006). In addition, Barth et al. (2005) finds that results are strongest for code-law countries. This is consistent with prior research which uses legal systems and the extent of political influence on accounting (code-/common-law system) as an explanation for the international differences in financial statement transparency. For instance, Ball et al. (2000) shows that accounting income is less timely in code-law countries – where is strong political influence on accounting - than in common-law countries where accounting practices are determined mainly in the private sector. Therefore, adoption of IFRS – that are viewed as reflecting a largely common-law approach of ‘transparent’ disclosure – should improve financial reporting quality especially in code-law countries.

In general, prior literature shows that the extent of political influence on accounting and the legal origin of the country affect the need for ‘transparent’ financial information (see e.g. Ball et al., 2000). These studies suggest that information asymmetry between capital providers and a firm is likely to be resolved in code-law countries by institutional features other than transparent financial reports (e.g. Ball et al., 2000). Moreover, Nobes (1998) suggest that there is a high degree of correlation between capital market-based systems and

common law countries, and between credit-based countries and codified law countries. Consistent with this, in code-law countries, capital provided by the state, banks or families tends to be more important than in common-law countries, where companies are mainly financed by a large number of private investors (e.g. La Porta et al., 1997). Thus information asymmetry is more likely resolved by ‘insider’ communication with stakeholder representatives in code-law countries. By contrast, in common law countries, information asymmetry is resolved by providing transparent financial reports. Thus, while capital market based systems like common law countries emphasize the reporting of financial performance, thereby enabling the prediction of future cash flows, credit based countries like code-law countries have traditionally been more concerned with the protection of creditors and therefore with the prudent calculation of distributable and taxable profit.

Accounting classification literature suggests that the financing system and thus the differences between ways of resolving information asymmetry explain the differences between accounting practices internationally (see e.g. Nobes, 1998). Moreover, by investigation the financial reporting rules of 15 national systems d’Arcy (2001) finds that the level of the capital market orientation of a national accounting system and the fact that accounting methods are request or forbidden versus the possibility of accounting method choice seems to be relevant in classifying accounting systems internationally. d’Arcy (2001) identifies the main differences between European cluster and a relatively heterogeneous North-American cluster including the IASC (IASB). The results show that the North-American cluster is more orientated to capital market users – i.e. accounting methods are marked-orientated and require adequate presentation – than the European cluster (d’Arcy, 2001). The results are consistent with common view that continental European system (credit-based/code-law countries) is dominated by the prudence principle and by contrast, IFRS are set to provide useful information for investors. For instance, Ball (2006) describes the two

systems: *“Compared to the legalistic, politically and tax-influenced standards that historically have typified Continental Europe, IFRS are designed to: reflect economic substance more than legal form; reflect economic gains and losses in a more timely fashion (in some respects, even more so than US GAAP); make earnings more informative; provide more useful balance sheets; and curtail the historical Continental European discretion afforded managers to manipulate provisions, create hidden reserves, “smooth” earnings and hide economic losses from public view.”*

The cornerstone of capital market user – orientated accounting system is the focus on the primacy of assets/liability recognition and measurement. Thus capital market user – orientated accounting systems emphasize fair value accounting, because it incorporates more information into the financial statements and thus, makes them more useful to investors. For instance, according to Ball (2006): *“Fair value accounting rules aim to incorporate more-timely information about economic gains and losses on securities, derivatives and other transactions into the financial statements, and to incorporate more-timely information about contemporary economic losses (“impairments”) on long term tangible and intangible assets.”* For instance, the IASB considers fair value to be the most relevant measurement basis. This means that a substantial portion of assets and liabilities are required or allowed by IFRS to be measured at fair value. For instance, IFRS requires assets impairments to fair value and requires fair value for the most of financial instruments. In addition to fair value accounting, IFRS emphasizes that all assets and liabilities are recognized in a balance sheet and incomes and expenses are determined by the reference to changes in assets and liabilities. By contrast, accounting practices in continental European countries have traditionally been based on historical costs and focused on accounting for transactions. Moreover, they have not, for instance, allowed the recognition of the profits until profits are realized but required the matching of revenues with costs. Further, the accounting practices in continental European

countries have allowed companies to smooth their profits through the creation of hidden reserves or excessive provisions (see e.g. Ernst & Young: “How fair is fair value”, 2005). Consequently, the adoption of IFRS changed the ‘traditional’ continental European accounting practices largely. Therefore, the IFRS adoption in continental European countries (code-law/credit-based countries) had probably a significant impact on the accounting numbers. However, it has to be taken into account in measuring the impact of IFRS adoption on accounting ratios that an adopted IFRS/IAS-standard may have impact on a numerator, a denominator or on both the numerator and denominator of an accounting ratio. For instance, the income statement and/or balance sheet effect of an adopted standard may be substantial but the accounting ratio effect slight if the standard impacts on the numerator and denominator so that the combined impact is slight. Therefore, the impact of IFRS adoption on key financial ratios is an empirical question that is investigated in this paper.

3. Research methods, design and data

3.1 Research Methods and design

This study uses the archival method to investigate the economic consequences of the changes of the accounting practices. Therefore, we investigate whether there are changes in accounting numbers after conversion to IFRS compared to before conversion. Thus, we first analyze the differences between financial ratios calculated before and after the conversion from Finnish accounting standards (FAS) to IFRS and test the statistical significances of the differences. Further, if there are differences between the financial ratios calculated before and after the conversion, we investigate the main reasons for the differences using a two steps approach.

Firstly, we investigate which of the financial statement items, i.e. the balance sheet items and income statement items, changed after the conversion from FAS to IFRS. Therefore, we calculate the differences between balance sheet items and income statement items before and after the conversion and test the statistical significance of the differences. Moreover, we analyze these differences to explain which of them explain the differences in the financial ratios.

Secondly, we further investigate which of the IFRS/IAS-standards cause the differences in the financial ratios. Therefore, we calculate the restated ratios by adding a specific standard, firstly, to the numerator of the ratio, then to the denominator of the ratio and finally to the both. Thus this allows us to explore whether the differences between the ratios are mainly caused by the restatements in numerator, denominator or both of the elements. Restated ratios can be expressed as:

$$R_{\text{IFRS/IAS}} = \frac{\text{Numerator}_{\text{FAS}} + \text{standard}_{\text{IFRS/IAS}}}{\text{Denominator}_{\text{FAS}} + \text{standard}_{\text{IFRS/IAS}}} \quad (1)$$

Further, we calculate the difference between the FAS-based ratios and the ratios restated by a specific IFRS/IAS-standard. The difference between the ratios can be expressed as:

$$= R_{\text{IFRS/IAS}} - R_{\text{FAS}} \quad (2)$$

We chose three different key economic dimensions of a firm, i.e. profitability, financial leverage and liquidity, to investigate the impact of IFRS adoption on accounting numbers. These dimensions of firm performance are chosen, because they are most revealing (see e.g. Rees, 1995). Moreover, we investigate one financial market ratio due to its importance in

financial statement analysis nowadays. The profitability ratios analyzed are operating profit margin (OPM), return on equity (ROE) and return on invested capital (ROIC). Leverage is measured by equity ratio (ER) and gearing ratio (GR). In addition, liquidity ratios used in the study are current ratio (CR) and quick ratio (QR), and the market based ratio analyzed is price to earnings ratio (PE).

3.2 Data

The sample of the study consists of consolidated financial statements of 91 firms listed on Helsinki Stock Exchange. The firms represent almost all industries and all sizes, i.e. large, medium and small size listed firms. The data of the study were collected from firms' press releases where firms present the major changes in accounting principles, convert from FAS to IFRS, and present the effects of the transition from FAS to IFRS on consolidated financial statements. Overall, there were 149 firms that were required to report press releases. However, only firms that reported all information that was needed to calculate the seven financial ratios and one market-based financial ratio were included to the sample. Thus, the reported press releases of 91 firms included all information needed to calculate the financial ratios.

Firms listed on the Helsinki Stock Exchange reported about the effects of the transition from FAS to IFRS more actively than firms listed on other stock exchanges in the EU (the Finnish Financial Supervision Authority, 2005). The Finnish Financial Supervision Authority examined the quality of reported press releases. Overall, they concluded that on an average the quality of those reports was good. The Finnish Financial Supervision Authority recommended that the quantitative information presented in the reports would be audited. They did not give any directions when and how those numbers should be audited. However, it

was known that those numbers were audited no later than when the first annual IFRS financial statement would be audited.

Table 1 presents summary statistics for seven financial ratios and one market-based financial ratio. Ratios are calculated for the year when firms converted from FAS to IFRS, because firms reported consolidated financial statements in accordance with FAS and IFRS for that year. The most, i.e. 85, of the firms converted in 2004. Five of the firms converted in 2003 and one of the firms converted in 2002. The descriptive statistics presented in Table 1 reveal that ratios are not normally distributed and there is a considerable variation in ratios. Prior research also finds that financial ratios are non-normal (e.g. Ezzamel and Mark-Molinero, 1990). Because the descriptive statistics reveal that the distributions of ratios are extremely non-normal, the nonparametric tests are used in the latter investigations. Thus we use the median values of the financial ratios and the financial statement items in investigations and test the statistical significances of the differences using the sign test and the Wilcoxon sign-rank test.

(Insert Table 1 about here)

4. Results

4.1 Differences between financial ratios calculated under FAS and IFRS

Table 2 presents the median values of seven financial ratios and one market-based financial ratio calculated under FAS and IFRS. In addition, Table 2 reports the difference between the ratios and the statistical significances (the sign test and the Wilcoxon sign-rank test) of the differences. For the sign test, under the null hypothesis the positive and negative

changes in differences are equally likely, i.e. the median value of the difference is zero. The Wilcoxon test is used for testing the null hypothesis that the sum of the positive ranks equals the sum of the negative ranks, i.e. the median value of difference is zero.

(Insert Table 2 about here)

The results in Table 2 indicate that only the median difference between current ratios calculated under FAS and IFRS does not significantly differ from zero. The results reveal that all others of the median differences between ratios calculated under FAS and IFRS differ significantly (at 5 % level) from zero, i.e. the sign test and the Wilcoxon sign-rank test reject the null hypothesis.

The results in Table 2 indicate that after converting financial statements from FAS-based to IFRS-based the profitability ratios, i.e. OPM, ROE and ROIC, increase by 9-19 percent. The results also imply a 2.9 percent increase in GR and a 0.7 percent decline in ER. In addition, liquidity ratios, i.e. QR and CR, decrease by 0.1-0.2 percent and the market based ratio, i.e. PE, decreases by 11 percent. In general, the results indicate that IFRS changes the magnitudes of the financial ratios and one market based financial ratio. Thus the results support the hypothesis H1.

4.2 Reasons for the changes in financial ratios after conversion from FAS to IFRS explained by the changes in income statement and balance sheet items

To investigate the main reasons for the differences between the FAS-based and IFRS-based ratios we examine the differences between FAS-based and IFRS-based financial statement items. Table 3 reports the median values of income statement items and balance sheet items prepared in accordance with FAS and IFRS, and the median values of the

differences between them. Moreover, Table 3 also reports statistical tests of the median differences (the sign test and the Wilcoxon sign-rank test).

(Insert Table 3 about here)

In general, the results reveal that the most of the median values of FAS-based and IFRS-based income statement and balance sheet items differ significantly at 5 % level. Only the median values of following FAS-based and IFRS-based balance sheet items: inventories; cash and cash equivalents; current assets; equity (31, Dec.); equity (average); and advances, are not different. The results reveal a positive change in income statement numbers, i.e. higher profitability and lower expenses, and a negative change in balance sheet numbers, i.e. increase in debt items and decrease in equity. In addition, the results reveal that the total equity and liabilities increase after the change of reporting standards.

After finding the differences between the FAS-based and IFRS-based financial statement items, we examine which of them explain the differences in the financial ratios. Therefore, we compare and analyze the results presented in two tables: Table 2 and Table 3. We find that the OPM is caused by a relatively higher increase in the numerator, i.e. operating profit, than in the denominator, i.e. sales. The considerable (19 %) ROE is explained by an increase in the numerator, i.e. net profit, meanwhile the denominator, i.e. equity (average), of the ratio decreases, even though, not significantly. Moreover, ROIC increases (9 %) because the numerator of the ratio, i.e. operating profit, increases relatively more than the denominator, i.e. total equity and debt (average). The considerable (11 %) decrease in PE ratio is caused by an increase in net profit. In general, the increases in the profitability ratios (OPM, ROE and ROIC) and the decrease in the market-based financial ratio (PE) can be explained mainly by increases in the income statement profits.

The negative change in balance sheet numbers, i.e. increase in debt items and decrease in equity explain changes in financial leverage ratios as follows. A 2.9 percent increase in GR is caused by a relatively higher increase in the numerator, i.e. debt items (long-term debt and current debt), than in the denominator, i.e. equity (31, Dec.). In addition, ER decreases, because the numerator, i.e. equity (31, Dec.), increases, even though not significantly, relatively less than the denominator, i.e. total equity and liabilities (31, Dec.). The liquidity ratio, i.e. QR, decreases 0.2 percent, because the denominator, i.e. total current liabilities, increases relatively more than the numerator, i.e. current assets minus inventories.

4.3 Reasons for the changes in the financial ratios after conversion from FAS to IFRS

After finding which of the differences between the FAS-based and IFRS-based financial statement items explain the differences in the financial ratios, we further investigate which of the IFRS/IAS-standards cause the differences in the financial ratios. The results are reported in Tables 4-11. We reported all standards that changed the magnitudes of the ratios significantly. In other words, by adding a specific standard to the numerator and to the denominator changes the magnitude of the ratio significantly. Moreover, an effect of a standard on a numerator and a denominator is reported in different panels, i.e. Panel A and Panel B.

4.3.1 Explaining the differences between the operating profit margin ratios (OPM) by standards

Table 4 reports mean and median values of the differences between the OPM ratios calculated before and after the restatement of FAS-based ratio for specific IFRS/IAS-standards, i.e. IAS 19, IFRS 2 or IFRS 3. Moreover, the Table 4 reports the positive and negative values of the differences and the statistical significances of the median differences

(the sign test and the Wilcoxon sign-rank test). All statistically significant median differences are reported in Table 4.

(Insert Table 4 about here)

The results show that by restating the operating profit margin ratio for IAS 19 or IFRS 3 increases the value of the ratio. However, by restating the ratio for IFRS 2 decreases the value of the ratio. The results also reveal that IFRS 3 is the most important reason for the increase in the OPM. The results show that restating the OPM for IFRS 3 the median value of the ratio increases by 0.0041. Moreover, the results also show that restating the ratio for IFRS 2 or IAS 19 changes the median value of the ratio only a little. The median value of the ratio increases 0.0093 after restating the ratio for all three standards.

4.3.2 Explaining the differences between the return on equity ratios (ROE) by standards

Table 5 reports the results of restating FAS-based return on equity (ROE) for five IFRS/IAS-standards. The impacts of restatements on the numerator of ROE are presented in Panel A. The results indicate that restating the numerator for IAS 19 or IFRS 3, the median value of the ratio increases. The results reveal that after restating the numerator for IFRS 3 the median value of the ratio increases 0.0126. Moreover, the results show that restating the numerator for IFRS 2, the median value of the ratio decreases.

(Insert Table 5 about here)

The impacts of restatements on the denominator of ROE are presented in Panel B. The results reveal that after restating the denominator for IAS 19, IAS 16 or IAS 32, the median

value of ROE increases. By contrast after restating the denominator for IFRS 3, the median value of ROE decreases. The change in the median value of the ratio does not significantly differ from zero when the denominator is restated for IFRS 2. In general, after restating the denominator by any of the standards, the median value of ROE changes only a little.

The results presented in Panel C report that by restating both elements, i.e. numerator and denominator, for IAS 19, IFRS 2 or IFRS 3 changes the median value of the ROE. The median value of the ratio increases when the numerator and the denominator are restated for IAS 19 or IFRS 3. By contrast the median value decreases when both elements are restated for IFRS 2. Restating the ratio for IFRS 3 increases the median value of the ratio for 0.0114. The median value of ROE increases 0.0242 after restating the both elements for IAS 19, IFRS 2 and IFRS 3, and the denominator for IAS 16 and IAS 32. Moreover, the results reveal that the impact of IFRS 3 on the median value of the ratio is the strongest.

4.3.3 Explaining the differences between the return on invested capital ratios (ROIC) by standards

Table 6 reports the results after restating FAS-based return on invested capital (ROIC) for eight IFRS/IAS-standards. The results, in Panel A, indicate that after restating numerator of ROIC for IAS 19 or IFRS 3, the median value of the ratio increases. Moreover, after restating the numerator for IAS 2, IAS 17 or IFRS 2, the median value of the ratio decreases. However, the changes in the median value of ROIC caused by IAS 2 or IAS 17 do not significantly differ from zero. The impact of IFRS 3 on the numerator is the most strongest.

(Insert Table 6 about here)

Panel B report the impacts of restatements on the denominator of the ratio. The results, in Panel B, reveal that restating the denominator of ROIC for IAS 2, IAS 17, IFRS 2, IFRS 3 or IAS 40 decreases the median value of the ratio. However, the change in the median value of ROIC caused by IFRS 2 does not significantly differ from zero. The results reveal that after restating the denominator for IAS 19, IAS 16 or IAS 32, the median value of ROIC increases. In general, the results reveal that none of the restatements in the denominator has strong impact on the median value of the ratio.

Panel C reports the results concerning restatements to both elements of ROIC. The results indicate that by restating the numerator and the denominator for IAS 2, IAS 17 or IFRS 2 decreases the median value of ROIC. By contrast, restating both elements for IAS 19 or IFRS 3 the median value of the ratio increases. After restating ROIC for IFRS 3, the median value of the ratio increases 0.0075. Moreover, the results reveal that restating ROIC for IAS 19 increases the median value of the ratio for 0.0004. By restating both elements for IAS 2, IAS 17, IAS 19, IFRS 2 and IFRS 3, and the denominator for IAS 16, IAS 32 and IAS 40, the median value of ROIC increases 0.0097. Overall, the results reveal that IFRS 3 has the strongest impact on the median value of ROIC. However, IAS 19 has also strong impact on the median value of the ratio compared to the other standards.

4.3.4 Explaining the differences between the gearing ratios (GR) by standards

Table 7 reports the results of restating FAS-based GR for nine standards. Panel A reports the impact of the standards on the numerator of the ratio. The results in Panel A indicate after restating the numerator for any of the standards increases the median value of the ratio except restating the ratio for IAS 19 decreases the median value of the ratio. However, the change in the median value of the ratio caused by IAS 11 & 18 or IAS 19 does

not significantly differ from zero. In general, the results reveal that none of the restatements in the numerator has strong impact on the median value of the ratio.

(Insert Table 7 about here)

Panel B reports the results of restating the denominator of GR for nine standards. The results reveal that after restating the denominator for IAS 11 & 18, IAS 17, IAS 19 or IAS 32 & 39, the median value of the GR increases. However, the results reveal that the median change in the GR caused by IAS 11 & 18 or IAS 17 does not significantly differ from zero. The results in Panel B also reveal that after restating the denominator for IAS 2, IAS 40 or IFRS 3, the median value of the ratio decreases. In general, all of the changes in the median value of the ratio caused by restating the denominator for the standards are small, i.e. all changes in the median value of the ratio are lower than 0.000.

Panel C reports the impacts of four standards on both elements of the GR. The results reveal that after restating the elements for any of the four standards, the median value of the GR increases. By restating both elements for IAS 11 & 18, IAS 17, IAS 19 and IAS 32 & 39, and the denominator for IAS 2, IAS 40 and IFRS 3, the median value of the ratio increases 0.0059. In general, the results also reveal that no one of the restatements in the numerator or denominator has strong impact on the median value of the ratio.

4.3.5 Explaining the differences between the equity ratios (ER) by standards

The results of restating FAS-based ER for nine standards are reported in Table 8. Panel A report the impact of the standards on the numerator. The results show that after restating the numerator for IAS 2, IAS 38, IFRS 3 or IAS 12, the median value of the ratio increases. However, the change in the median value of the ratio caused by IAS 12 does not significantly

differ from zero. The results also reveal that after restating the numerator for IAS 17, IAS 19, IAS 36, IAS 16 or IAS 32, the median value of the ratio decreases. In general, the results reveal that IFRS 3 has strongest impact on the median value of ER.

(Insert Table 8 about here)

Panel B reports the results of restating the denominator of ER. The results reveal that restating denominator for IAS 36, IAS 16 or IAS 32 increases the median value of the ratio. By contrast, after restating the ratio for IAS 2, IAS 17, IAS 19, IAS 38, IFRS 3 or IAS 12, the median value of the ratio decreases. Overall, the results reveal that both IAS 12 and IFRS 3 have strong impact on the median value of the ratio.

Panel C reports the impact of nine standards on both elements of the equity ratio. The results reveal that restating the elements for IAS 2, IAS 38 or IFRS 3 increases the median value of ER. By contrast, after restating the elements for IAS 17, IAS 19, IAS 36, IAS 16, IAS 12 or IAS 32, the median value of ER decreases. The results also reveal that after restating the ratio for all nine standards, the median value of the ratio decreases 0.0047. In general, the results reveal that IAS 12 has the strongest impact on the median value of ER. However, also IFRS 3 has strong impact on the median value of the ratio compared to the other standards.

4.3.6 Explaining the differences between the quick ratios (QR) by standards

Table 9 reports the results of restating FAS-based quick ratio (QR) for two standards. The results, reported in Panel A, B and C, reveal that restating the denominator for IAS 17 or IAS 39, or both elements for IAS 17 decreases the median value of the QR. Moreover, after

restating the numerator and denominator for both standards the median value of the QR decreases.

(Insert Table 9 about here)

4.3.7 Explaining the differences between the current ratios (CR) by standards

Table 10 reports the impact of four standards on the current ratio (CR). The results, reported in Panel A, B and C, reveal that restating the numerator for IAS 2 increases the median value of the CR. However, after restating the denominator for IAS 12, IAS 17 or IAS 39, or after restating the both elements for IAS 17, the median value of the ratio decreases. The results in Panel C reveal that after restating both elements for all four standards, the median value decreases.

(Insert Table 10 about here)

4.3.8 Explaining the differences between the price to earnings ratios (PE) by standards

Table 11 reports the impact of IAS 17, IAS 19, IFRS 2 and IFRS 3 on PE ratio. The results reveal that restating the ratio for IAS 17 or IFRS 2 increases the median value of the ratio. Moreover, after restating the ratio for IAS 19 or IFRS 3, the median value of the ratio decreases. The results also reveal that after restating the ratio for all four standards, the median value of the ratio decreases 1.4067. Overall, the results reveal that IFRS 3 has the strongest impact on the ratio. After restating the ratio for IFRS 3, the median value of PE ratio decreases 0.8997.

(Insert Table 11 about here)

4.4 Summary of the results

5. Conclusion and discussion

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Table 1. Descriptive statistics of financial ratios.

Ratio	Mean	Median	Std	Skewness	Kurtosis	Min	Max
Panel A: Financial ratios calculated under FAS							
OPM	0.0657	0.0616	0.2467	-3.0874	23.2539	-1.5885	0.6855
ROE	0.0391	0.1063	0.3229	-2.9526	11.6495	-1.7345	0.6478
ROIC	0.0859	0.0995	0.1717	-1.5100	4.4034	-0.6092	0.4462
GR	0.5147	0.3753	0.7458	0.9435	1.3620	-1.3088	2.9103
ER	0.4967	0.4783	0.1768	0.5744	0.1422	0.1568	0.9981
QR	3.5811	0.9638	19.7304	9.3620	88.6083	0.0360	188.5316
CR	7.8776	1.4403	55.7204	9.4988	90.4629	0.0360	532.8228
PE	15.8245	13.3415	38.8936	3.8773	23.0716	-78.0000	262.5000
Panel B: Financial ratios calculated under IFRS/IAS							
OPM	0.0592	0.0668	0.4708	-7.0301	62.3634	-3.9919	0.8544
ROE	-0.1938	0.1282	2.8210	-9.4473	89.8042	-26.7234	0.7239
ROIC	0.0948	0.1061	0.1639	-1.8759	8.0004	-0.7518	0.4552
GR	0.5497	0.4355	0.9257	0.9867	6.5416	-2.8149	4.9792
ER	0.4522	0.4474	0.3005	-4.4354	33.3932	-1.7757	0.9951
QR	1.9730	0.9584	4.9150	7.3195	58.4182	0.0359	43.2987
CR	2.4450	1.4160	5.2601	6.6813	47.1235	0.0359	43.2987
PE	10.6541	11.1048	37.8835	-0.2439	19.8519	-206.0000	180.0000
Panel C: Differences between ratios calculated under FAS and IFRS/IAS							
OPM	-0.0065	0.0076	0.2821	-6.8034	59.5074	-2.4034	0.6396
ROE	-0.2328	0.0203	2.7141	-9.3723	88.9698	-25.6987	2.4584
ROIC	0.0089	0.0087	0.0730	-2.1212	20.4911	-0.4571	0.2596
GR	0.0350	0.0110	0.5882	-4.0091	35.4150	-4.3121	2.1436
ER	-0.0445	-0.0035	0.2095	-8.6301	79.1074	-1.9553	0.0734
QR	-1.6081	-0.0021	15.2281	-9.5300	90.8794	-145.2329	2.5773
CR	-5.4326	-0.0017	51.3112	-9.5389	90.9942	-489.5241	0.6564
PE	-5.1704	-1.4239	54.1387	-0.7595	14.4997	-283.5000	245.4545

Table 2. Medians of the financial ratios (number of observations = 91)

	FAS	IFRS/IAS	Difference	Test 1	Test 2
OPM	0.0616	0.0668	0.0076	0.000	0.000
ROE	0.1063	0.1282	0.0203	0.000	0.000
ROIC	0.0995	0.1061	0.0087	0.000	0.000
GR	0.3753	0.4355	0.0110	0.019	0.004
ER	0.4783	0.4474	-0.0035	0.045	0.000
QR	0.9638	0.9584	-0.0021	0.030	0.027
CR	1.4403	1.4160	-0.0017	0.198	0.119
PE	13.3415	11.1048	-1.4239	0.000	0.000

Test 1: Probability of sign statistics.

Test 2: Probability of Wilcoxon signed rank statistics.

Table 3. Medians of the financial statement items (number of observations = 91)

Thousand euros

	FAS	IFRS/IAS	Difference	Test 1	Test 2
Income statement					
Sales	97140	96469	0	0.016	0.000
Operating profit	8896	9298	1064	0.000	0.000
Financial income and expenses	-730	-779	-4	0.000	0.012
Income taxes	-2271	-2084	-20	0.020	0.033
Net profit (loss)	7966	7586	800	0.000	0.000
Balance sheet					
Assets					
Inventories	12290	9956	0	0.169	0.672
Cash and cash equivalents	6601	6601	0	1.000	0.763
Current assets	46444	45610	7	0.085	0.193
Shareholder's equity and liabilities					
Equity (1, Jan)	52799	48104	-627	0.000	0.002
Equity (31, Dec.)	46163	48238	301	0.203	0.786
Equity (average)	49928	49834	-8	0.832	0.140
Long-term debt (1, Jan.)	12200	16015	161	0.000	0.000
Long-term debt (31, Dec.)	11300	15300	188	0.000	0.000
Long-term debt (average)	11750	15405	229	0.000	0.000
Current debt (1, Jan.)	8161	8164	0	0.000	0.000
Current debt (31, Dec.)	9900	10281	61	0.000	0.000
Current debt (average)	9221	9549	48	0.000	0.000
Total equity and debt (average)	69249	73079	389	0.000	0.012
Advances	11600	11600	0	1.000	1.000
Total current liabilities	29656	30097	100	0.000	0.000
Total equity and liabilities (1, Jan.)	79573	83310	1218	0.000	0.000
Total equity and liabilities (31, Dec.)	84848	95247	2500	0.000	0.000
Total equity and liabilities (average)	85442	93844	2303	0.000	0.000

Test 1: Probability of sign statistics.

Test 2: Probability of Wilcoxon signed rank statistics.

Table 4. Differences between operating profit margin (OPM) ratios calculated under IFRS and FAS.

Numerator						
Standard	Mean	Median	Pos.	Neg.	Test 1	Test 2
IAS 19	0.0028	0.0000	40	5	0.000	0.000
IFRS 2	-0.0012	0.0000	2	20	0.000	0.000
IFRS 3	0.0143	0.0041	65	1	0.000	0.000
All	0.0159	0.0093	70	7	0.000	0.000

Test 1: Probability of sign statistics.

Test 2: Probability of Wilcoxon signed rank statistics.

Table 5. Differences between return on equity (ROE) ratios calculated under IFRS and FAS.

Standard	Mean	Median	Pos.	Neg.	Test 1	Test 2
Panel A: Numerator						
IAS 19	0.0073	0.0000	40	5	0.000	0.000
IFRS 2	-0.0019	0.0000	2	20	0.000	0.001
IFRS 3	0.0237	0.0126	64	1	0.000	0.000
Panel B: Denominator						
IAS 19	0.0006	0.0000	43	12	0.000	0.001
IFRS 2	0.0002	0.0000	4	5	1.000	0.734
IFRS 3	-0.0034	0.0000	14	43	0.000	0.001
IAS 16	0.0007	0.0000	19	2	0.000	0.000
IAS 32	0.0177	0.0000	24	9	0.014	0.035
Panel C: Numerator and denominator						
IAS 19	0.0080	0.0012	52	5	0.000	0.000
IFRS 2	-0.0017	-0.0000	2	22	0.059	0.009
IFRS 3	0.0209	0.0114	10	7	0.000	0.000
All	0.0484	0.0242	71	15	0.000	0.000

Test 1: Probability of sign statistics.

Test 2: Probability of Wilcoxon signed rank statistics.

Table 6. Differences between return on invested capital ratios (ROIC) calculated under IFRS and FAS.

Standard	Mean	Median	Pos.	Neg.	Test 1	Test 2
Panel A: Numerator						
IAS 2	-0.0002	0.0000	7	16	0.210	0.312
IAS 17	0.0004	0.0000	12	20	0.215	0.812
IAS 19	0.0051	0.0000	40	5	0.000	0.000
IFRS 2	-0.0010	0.0000	2	20	0.000	0.001
IFRS 3	0.0135	0.0076	65	1	0.000	0.000
Panel B: Denominator						
IAS 2	-0.0007	0.0000	3	22	0.001	0.000
IAS 17	-0.0019	0.0000	15	38	0.002	0.000
IAS 19	0.0005	0.0000	42	13	0.000	0.001
IFRS 2	0.0000	0.0000	4	5	1.000	0.820
IFRS 3	-0.0001	0.0000	13	44	0.000	0.001
IAS 16	0.0004	0.0000	19	2	0.000	0.000
IAS 32	-0.0001	0.0000	21	9	0.043	0.022
IAS 40	-0.0004	0.0000	1	7	0.070	0.016
Panel C: Numerator and denominator						
IAS 2	-0.0010	-0.0000	8	20	0.035	0.021
IAS 17	-0.0016	-0.0000	16	39	0.015	0.000
IAS 19	0.0057	0.0004	51	6	0.000	0.000
IFRS 2	-0.0010	-0.0000	2	22	0.004	0.000
IFRS 3	0.0134	0.0075	66	5	0.000	0.000
All	0.0151	0.0097	67	20	0.000	0.000

Test 1: Probability of sign statistics.

Test 2: Probability of Wilcoxon signed rank statistics.

Table 7. Differences between gearing ratios (GR) calculated under IFRS and FAS.

Standard	Mean	Median	Pos.	Neg.	Test 1	Test 2
Panel A: Numerator						
IAS 11, 18	0.0039	0.0000	2	0	0.500	0.500
IAS 17	0.0478	0.0000	37	0	0.000	0.000
IAS 19	-0.0028	0.0000	0	4	0.125	0.125
IAS 32 & 39	0.1094	0.0000	14	5	0.064	0.008
Panel B: Denominator						
IAS 11, 18	-0.0530	0.0000	11	4	0.119	0.135
IAS 17	-0.0325	0.0000	18	12	0.362	0.061
IAS 19	0.0130	0.0000	29	13	0.020	0.001
IAS 32 & 39	-0.3112	0.0000	34	15	0.009	0.031
IAS 2	-0.0036	0.0000	5	18	0.011	0.005
IAS 40	-0.0094	0.0000	0	6	0.031	0.031
IFRS 3	0.0124	0.0000	15	35	0.003	0.000
Panel C: Numerator and denominator						
IAS 11, 18	-0.0490	0.0000	12	4	0.059	0.010
IAS 17	0.0485	0.0000	42	4	0.000	0.000
IAS 19	0.0103	0.0000	28	15	0.000	0.000
IAS 32 & 39	-0.0690	0.0000	38	17	0.000	0.001
All	0.0809	0.0059	54	29	0.001	0.008

Test 1: Probability of sign statistics.

Test 2: Probability of Wilcoxon signed rank statistics.

Table 8. Differences between equity ratios (ER) calculated under IFRS and FAS.

Standard	Mean	Median	Pos.	Neg.	Test 1	Test 2
Panel A: Numerator						
IAS 2	0.0028	0.0000	20	3	0.001	0.000
IAS 17	-0.0021	0.0000	8	22	0.016	0.002
IAS 19	-0.0026	0.0000	7	35	0.000	0.001
IAS 36	-0.0047	0.0000	0	15	0.000	0.000
IAS 38	0.0030	0.0000	12	2	0.013	0.001
IFRS 3	0.0058	0.0023	49	1	0.000	0.000
IAS 16	-0.0015	0.0000	3	15	0.008	0.005
IAS 12	0.0015	0.0000	33	31	0.901	0.937
IAS 32	-0.0297	0.0000	1	26	0.000	0.000
Panel B: Denominator						
IAS 2	-0.0012	0.0000	3	20	0.001	0.000
IAS 17	-0.0054	0.0000	5	42	0.000	0.000
IAS 19	-0.0012	0.0000	15	27	0.088	0.031
IAS 36	0.0025	0.0000	15	0	0.000	0.000
IAS 38	-0.0014	0.0000	2	12	0.013	0.001
IFRS 3	-0.0027	-0.0012	1	49	0.000	0.000
IAS 16	0.0009	0.0000	15	4	0.020	0.007
IAS 12	-0.0038	-0.0008	13	63	0.000	0.000
IAS 32	0.0032	0.0000	22	6	0.004	0.001
Panel C: Numerator and denominator						
IAS 2	0.0015	0.0000	20	3	0.001	0.000
IAS 17	-0.0073	0.0000	4	43	0.000	0.000
IAS 19	-0.0039	0.0000	7	43	0.000	0.000
IAS 36	-0.0027	0.0000	0	15	0.000	0.000
IAS 38	0.0014	0.0000	12	2	0.013	0.002
IFRS 3	0.0026	0.0005	49	1	0.000	0.000
IAS 16	-0.0007	0.0000	3	16	0.004	0.004
IAS 12	-0.0026	-0.0009	26	53	0.003	0.001
IAS 32	-0.0331	0.0000	2	27	0.000	0.000
All	-0.0437	-0.0047	23	66	0.000	0.000

Test 1: Probability of sign statistics.

Test 2: Probability of Wilcoxon signed rank statistics.

Table 9. Differences between quick ratios (QR) calculated under IFRS and FAS.

Standard	Mean	Median	Pos.	Neg.	Test 1	Test 2
Panel A: Numerator						
IAS 17	0.0003	0.0000	2	1	1.000	0.500
Panel B: Denominator						
IAS 17	-0.0089	0.0000	0	32	0.000	0.000
IAS 39	-0.0043	0.0000	0	6	0.016	0.016
Panel C: Numerator and denominator						
IAS 17	-0.0086	0.0000	1	31	0.093	0.000
All	-0.0128	0.0000	1	34	0.035	0.000

Test 1: Probability of sign statistics.

Test 2: Probability of Wilcoxon signed rank statistics.

Table 10. Differences between current ratios (CR) calculated under IFRS and FAS.

Standard	Mean	Median	Pos.	Neg.	Test 1	Test 2
Panel A: Numerator						
IAS 2	0.0108	0.0000	24	5	0.001	0.000
IAS 17	0.0003	0.0000	2	2	1.000	0.625
Panel B: Denominator						
IAS 12	-3.8534	0.0000	0	4	0.031	0.031
IAS 17	-0.0114	0.0000	0	32	0.000	0.000
IAS 39	-0.0077	0.0000	0	6	0.008	0.008
Panel C: Numerator and denominator						
IAS 17	-0.0111	0.0000	1	31	0.006	0.000
All	-0.0186	0.0000	0	35	0.002	0.000

Test 1: Probability of sign statistics.

Test 2: Probability of Wilcoxon signed rank statistics.

Table 11. Differences between price to earnings (PE) ratios calculated under IFRS and FAS

Denominator						
Standard	Mean	Median	Pos.	Neg.	Test 1	Test 2
IAS 17	-0.1674	0.0000	20	12	0.019	0.088
IAS 19	-4.5731	0.0000	5	39	0.002	0.000
IFRS 2	0.3844	0.0000	20	2	0.014	0.001
IFRS 3	-0.5969	-0.8997	1	64	0.000	0.000
All	-1.9959	-1.4067	11	69	0.000	0.000

Test 1: Probability of sign statistics.

Test 2: Probability of Wilcoxon signed rank statistics.