Financial reporting standards: Global or international?

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Abstract
Purpose – This paper studies quantitative, monetary information about differences between IFRS and US GAAP in the three principal financial statements.

Design/methods/approach – Comparative data from the same company are compared. The explanations of differences are found in lengthy footnotes. The sample is from civil law countries with reputations for high integrity, reducing possible confounding effects of legal systems or earnings management. Sample countries are highly economically developed, reducing distortions that would result from different fair value conditions.

Findings – A few key standards account for most of the monetary differences between the accounting standards. In some cases large differences in one direction offset large differences in the other direction, reducing the insights from comparing only income.

Research limitations/implications – The window of data availability for single company reporting under both standards was narrow. However, because of convergence activities, these differences are likely slowly to decline.

Originality/value – The only paper to examine the footnote disclosure in sufficient detail to accurately measure differences. The only paper to analyze the cash flow statement. It is valuable for financial analysts, and to academic researchers who study accounting quality and make international comparisons.

Keywords: IFRS, US GAAP, financial analysis, comparability, global accounting

JEL classifications M4, M41

I. INTRODUCTION

The world of corporate governance was radically changed when the European Union, Australia and New Zealand adopted IFRS, applicable to financial reports from 2005. EU adoption created a massive economic bloc that used a common "language" to report financial results. For the first time, those countries spoke the same "language" and reports from their companies were comparable with each other and with many other IFRS countries throughout the world. It is largely agreed that IFRS is a set of high quality accounting standards, replacing local standards of varying quality. Thus, these countries joined the US in using uniformly high quality accounting. An important question is, "Are these two sets of high quality standards comparable with each other?" While IFRS had some of its origins in US standards, it is not clear how similar are final IFRS to US standards.

This paper addresses that question. If US and IFRS are similar, it can be said that standards are "global"; that financial reporting is comparable around the world. The comparability of reporting would be increased if the US were to adopt IFRS. The US Securities and Exchange Commission is studying whether to adopt IFRS as the US standard (SEC 2012). The likelihood of this depends on the similarity of the two sets of standards.

Motivated by these two crucial questions—the global character of accounting standards and the likelihood of future uniformity, this study offers evidence on the quantitative differences at the time of IFRS adoption, based on information available around the time of the change.

Convergence—increasing similarity—of accounting standards is an expressed goal ("Norwalk Agreement" in 2002). However progress has been slow since the choice of accounting standards involves legal, economic, political, and cultural factors. This paper addresses the core issue: do IFRS and US GAAP provide similar accounting figures for the same firm? We analyze this issue from the perspectives of (1) investors, (2) financial analysts, and (3) academic researchers who investigate the quality of financial reporting.

We show the degree of similarity in these data, which are the raw material for these three groups of users. Since the needs for these three constituencies are not the same, we treat them separately.

We know from many sources (e.g., KPMG, 2014; Baudot, 2014) that the standards say different things. We know much less about whether in practice these differences occur often and when they do occur, if they lead to material differences in monetary amounts. Our contribution is to measure, rather than verbally describe, differences between IFRS and US GAAP.

There is vigorous debate among academics (Albrecht, 2008; Dye and Sunder, 2001; Sunder, 2009), practitioners (Selling 2008), standard setters and regulators (Niemeier, 2008) about the relative strengths of US GAAP and IFRS. For example, some argue that IFRS is the stronger set because it is "principles-based" (Tweedie, 2007). Others argue that US GAAP is equally "principles-based" (Kershaw, 2005) or that GAAP is better because it has more "bright line" rules that limit earnings management (Bratton and Cunningham 2009). Furthermore, accounting research shows that IFRS is better than GAAP (e.g., Ashbaugh and Olsson, 2002), and also shows that GAAP is better than IFRS (e.g., Bradshaw and Miller 2008). Much of the disagreement comes from the imprecision in "better." Some base it on smaller analyst forecast errors, some on "value relevance" and some on "accounting quality" metrics (Dechow et al., 2010).

Perhaps this debate has not reached consensus because the participants in the debates have too little data; mainly they have verbal descriptions of differences. In this context, this research asks whether the representations based upon IFRS and US GAAP deliver the same mapping of economic events onto financial reports.

Contributions

The first contribution shows the degree of difference using actual reported data. Investors often use numbers standing alone: "Has net income increased?" We look at reported data from all three primary financial statements, the income statement, the

balance sheet and the statement of cash flows. We use the best information available, financial statements for the period 2004 to 2006 that reconcile the two sets of numbers. (The last year that the SEC required reconciliation was 2006.)

Secondly we contribute to financial analysis. Users often use numbers in combination, e.g., as ratios, to assess profitability, liquidity and risk. One can reach one conclusion based on analysis of the primary numbers but a different conclusion from ratios. There are an infinite number of ratios that could be computed. We choose from standard textbooks a few important, widely used ratios to analyze differences between the standards.

We make a third contribution. Studies of "accounting quality" draw judgments about the adequacy of standards. Much research analyzes international quality differences. This research is built on the premise that the properties of the accounting numbers in different countries can reveal underlying country differences in quality. It is important to know if the premise is warranted, because this literature is often cited to support quality differences between IFRS and GAAP (Hail et al., 2010; Kothari et al., 2009). We contribute to the research on international accounting differences by giving empirical evidence on the comparability of data that researchers commonly use.

We do not judge which standards are better, or conclude on the merits of harmonization. We offer new quantitative information that will help others reach those conclusions.

Modes of analyses

In this section we explain the three modes of analysis that constitute our research approach.

Reported data

This section addresses the reported data. It is important in debating whether IFRS is better than GAAP to understand detailed, written descriptions of differences

(e.g., KPMG 2014). It is equally important to see quantitative evidence about the importance of the different data in practice.

Hail et al. (2010), considering the choice of IFRS vs. GAAP, state "proponents argue that … the remaining differences are small" (p.368). However, this is based on qualitative differences and convergence activities; they do not cite numbers. Our study analyzes the remaining differences from a quantitative viewpoint. We analyze the reported data resulting from the two sets of accounting standards for the same companies, one set prepared under IFRS and one under US GAAP.

We analyze the data reported in the <u>three</u> main financial statements, including the cash flow statement. Cash flow reporting under the two systems must be understood; it is one of the primary financial statements. We first analyze the primary results such as net income; second we analyze the data line by line. As we show, reading only the line item labels in the reconciliation leads to misinterpretation of the underlying accounting differences. Third, we choose a sample of countries where there is a tradition of high quality accounting (as described below), and where economic conditions are similar. In this way we hope to avoid differences in accounting that may result from different traditions of accounting quality (Bozzollan et al., 2009; Cascino and Gassen, 2015) and different economic conditions that can affect, for example, fair value accounting.

Financial analysis

The reason to compare financial ratios based upon alternative sets of accounting standards is that while the reported data are important in themselves, they are often interpreted in relation to other data in the financial statements. For instance, it is important to know net income, but it is also important to know what resources were used to generate that income; that is, "return on equity" tell users more than just earnings: the former, how management used the assets entrusted to it and the latter, how effectively financial management engaged leverage.

Investment decisions are based on financial analyses applied across firms. To interpret the results correctly, one must know whether differences in the computed results reflect different economic performance or differences due to accounting rules. Lev and Thiagarajan (1993) show that fundamental information analysis, which rests heavily on financial statement numbers, can have a substantial role in explaining excess returns. We measure some differences that arise through the standards, which can be isolated from financial performance because our comparison is intra-company. This gives insight into the importance of the rule differences.

Many financial ratios assess profitability using net income (Wahlen et al., 2011), so valid comparisons require that the net income numbers be comparable. In this paper we compare income, computed according to IFRS and US GAAP. Since other ratios use line items (e.g., sales and inventory to detect sales decreases or obsolete inventory), we analyze the line items that lead to differences in net income. Further, we compare shareholders' equity (another measure common in financial analysis) and cash flow (often an element of ratio analysis). It is indisputable that different standards generate different numbers. Our question is "How big?"

Accounting research studies

The third reason to compare the accounting numbers generated by alternative sets of accounting standards is that accounting research often uses reported data that are created according to different sets to assess which countries' financial reporting environments are better. The studies use reported data to compare countries using different approaches such as "value relevance" and "earnings quality."

What are the potential pitfalls in these studies that stem from the reported data? Researchers have increasingly conducted studies in the area of international accounting using financial reports from many countries (e.g., Barth et al., 2008; Ball et al., 2000; Brüggmann et al., 2012; DeFond and Hung, 2007; Hail, 2007; Leuz et al., 2003; Pope et al., 2011; Wysocki, 2005). In conducting studies of accounting quality, there

should be a clear understanding of the role of the reported data. When one studies quality in different countries, one should not compare the level of accruals as a measure of "earnings management" without understanding that different accounting standards almost surely use different accrual methods. Without making an adjustment for the different methods, the researcher would attribute differences to "earnings management" when in fact what he or she might have observed were different accounting methods.

We find that studies often implicitly assume that differences between systems are small enough that they do not require adjustments. Our study shows that many of the differences are not small. Researchers may consider whether empirical validity can be achieved if the differences are ignored.

Our analysis may be useful in (a) assessing the strength of conclusions drawn from past studies, and (b) designing future tests that may better measure quality.[1]

Some researchers have noted that there was a reconciliation requirement, and then there wasn't (e.g., Tang et al., 2012; Kim et al., 2012). They investigate changes from the "before" to the "after" period. They could make much better interpretation of the results if they knew more than just that the reconciliation disappeared, and knew in addition exactly what information—items and amounts—ceased with the reconciliation.

Because researchers often pool cross-sectional with time series data, there is a potential pitfall to using numbers from transition years and treating them as if they were from a "steady state" application of different accounting standards. Our study, done year by year, shows the extent of this distortion.

II. LITERATURE REVIEW

In this section we consider papers that analyze IFRS-GAAP differences. Only a few studies have examined whether there are significant IFRS vs. US GAAP differences

that might result in non-comparable measurements and interpretations of data from the separate accounting regimes.[2]

Ucieda Blanco and García Osma (2004) examined SEC filings and found a number of material differences between IAS and US GAAP.[3] They used data from 1995-2001, so their findings are stale in light of the IOSCO project (Flower 2004, chap. 7), recent changes in IAS and the process of convergence since Norwalk Agreement.

Street et al. (2000) analyze violations of IFRS. This was informative about how indiscriminately (IFRS" was used among issuers. Many companies that stated that their reports were in accordance with IFRS did not follow those standards. Adherence to standards was problematic during an earlier period and today´s standards are much changed. To answer questions about size and magnitude, one cannot rely too much on studies that used earlier data.

Henry et al (2009) describe differences between US GAAP and IFRS net income and shareholders´ equity. They access the first three years (2004-2006) of EU adoption data from the European companies that file Forms 20-F. The basis for their sample (n=75) is that their firms are at a "comparable stage of economic development to the United States" (p. 122). This is a desirable attribute for the study design, though it seems a stretch to say that Hungary (a country in their sample) is at a stage comparable with the US or that the level of accounting integrity is the same.[4] Their sample is heterogeneous, drawn from northern and southern European countries, and even from eastern Europe.

They classify line items by the label they find in the 20-F "rather than the more in-depth, typically multi-page footnoted explanations" (p. 133). They present the line items on a before-tax basis and classify "tax" on the reconciling item list as a separate adjustment, when in fact it is the tax effect of all the other reconciling items.[5]

They find higher net income under IFRS and lower shareholders´ equity. They analyse net income and stockholders´ equity, but not cash flow. They find marginally significant evidence that net income differences between 2004 and 2006 decrease, which they take as evidence of convergence. Two data points are not strong evidence of convergence, especially since they do not find a significant decrease between 2004 and 2005, or between 2005 and 2006. They also find that shareholders´ equity is getting closer between 2004 and 2006, citing this as further evidence of convergence. It is in fact the same evidence. Equity becomes closer when retained earnings become closer; that is, converging net income automatically converges the equity accounts in the long run, assuming clean surplus equation. IFRS allows "first time adoption" provisions. It is not really possible to judge whether a measured difference between net income between 2004 and 2006 is convergence in the underlying standards, or the one-time effect of first-time adoption amounts.

Plumlee and Plumlee (2008) describe 100 IFRS-GAAP reconciliations, measuring frequency and size of the individual line item categories and the overall effects on profits and book value of equity. The sample is a "random" (method not described) selection. They group the line items into 22 classes of their own construction. They do industry analysis and find differences in the reconciling items, as one would expect; for example firms in finance businesses have reconciling items related to hedging more often than firms doing manufacture.

Gray et al. (2009) compare net income and shareholders' equity for 2004-2006 and find IFRS income higher than GAAP and equity lower.

Gordon et al. (2013) use 156 Forms 20-F that reconcile IFRS and GAAP for three years, 2004-2006. They evaluate accounting quality and value relevance. They conclude that GAAP still differs from IFRS, showing "incremental informativeness" over and above the IFRS numbers. They also state that GAAP has higher "cash persistence" and value relevance. They use cash flow measures, but do not adjust for differences in reporting

between GAAP and IFRS. They establish that differences exist, and in that sense complements the first of our three research contributions.

In sum, while all these studies contribute to proving that differences exist between IFRS and US GAAP, our work explores how and why the differences exist.

III. SAMPLE

We measure the dollar differences between GAAP and IFRS, uncontaminated by differences in national implementations of IFRS. To achieve that, we use a sample of countries where there is a tradition of sophisticated accounting, good enforcement and similar conditions of development (Belgium, Denmark, Finland, Germany Luxembourg, the Netherlands, Sweden and Switzerland). Dissimilar conditions would result in non-comparable numbers even with complete compliance. Fair value accounting requires the use (when available) of similar assets traded in active markets. But markets for traded assets vary around the world, so "level 1" may be chosen in one country while "level 2" might be appropriate elsewhere. Even if level 1 is feasible in both countries, different market conditions might give different values.

To find countries with high quality accounting, one possibility would be to rely on studies of "accounting quality." However, many of these studies are plagued by problem that they assume, without checking, that data from different accounting standards are directly comparable. The point of our paper is that it is necessary to validate that assumption before drawing conclusions. It would be possible to rely on direct ratings of accounting, but these are very old and are based on different regimes (e.g., CIFAR (1995) is based on 1993 data).

By limiting the number of sample countries, we have the resources to analyze every word of the reconciliation notes, which sometimes exceed 20 pages. We nevertheless have a sample large enough for reliable statistical inference. Our design emphasizes depth rather than breadth.

We study all the U.S.-listed companies from our sample countries covering years 2004 though 2006. Table 1 supports the quality criterion. Table 2 shows countries and sample size.

Table 1. Ranking of business integrity: proxies for accounting excellence

Rank[4]	Corruptions Perception Index[1]	Global Competitiveness Report[2] ("ethical behavior of firms")	World Competitiveness Yearbook[3] ("management practices: ethical practices")
Belgium	20	21	17
Denmark	4	1	5
Finland	1	3	3
Germany	16	15	17
Luxembourg	11	11	12
The Netherlands	9	16	11
Sweden	6	18	9
Switzerland	7	10	13
Total countries in rating	163	117	117

Notes:
1. Corruptions Perceptions Index (Transparency International, 2006; McAdam and Rummel, 2004)
2. Global Competitiveness Report (Ochel and Röhn, 2006; Lopez-Claros et al., 2005)
3. World Competitiveness Yearbook (Garelli, 2004, p. 593)
4. Lower numbers are higher ratings.

Table 2. Sample description

Country	Number of firms
Belgium	1
Denmark	3
Finland	4
Germany	8
Luxembourg	4
The Netherlands	8
Sweden	8
Switzerland	6
Total firms in sample	42

Notes:
1. The sample consists of all companies from the sample countries that report on SEC Form 20-F.
2. Because of de-listings and mergers, year 2006 has 31 firms.

IV. RESEARCH METHODS

Our research method compares net income, shareholder equity, and cash flow prepared under IFRS that also show reconciliation to US GAAP. We compare absolute money amounts and relative figures between IFRS and US GAAP. We also test the statistical significance of the differences.

We collect data from SEC Form 20-F on every firm in our sample countries that reconciles IFRS to US GAAP, 2004 to 2006. The SEC requires this of all foreign private issuers, which either trade their shares in the U.S., or have certain types of American Depositary Receipts. Form 20-F includes, as a note to the financial statements, the differences between net income and shareholders' equity under IFRS and under U.S. GAAP. The presentation starts with IFRS income (or equity), then shows the reconciling amounts, and arrives at net income (or equity) under GAAP. The reconciling amounts are also explained in written text, which is key to understanding the differences.

One problem with relying on the label to the reconciling item, as done in other studies, is that some line items include more than one difference. Deutsche Telekom lists "Mobil Communications Licenses." Without reading the associated note, one cannot know that this includes two IFRS-GAAP differences, one for recording impairment and one for recording capitalized interest cost. In the same report is a line item called "Fixed Assets." This item includes both a capitalized interest difference, and an exception allowed by IFRS 1 for "deemed cost" of the assets.

Another factor that requires reading is that some items are labeled as "other." In sum, labels are not enough; to find the standards that differ and by how much requires thorough analysis of the disclosure.

We report the net income difference, and disaggregate it into its line item components, both the relative and absolute importance of each. We use the five largest items for each company. In cases where there are fewer than five major items, we use them all. Nevertheless, in any case we exclude an item less than ½% of IFRS net income. This captures all reconciling items that are at least 1% of net income.

No prior research has compared cash flow statements. Cash flow from operations (CFO) is a fundamental disclosure in financial reporting (e.g., Fama and French, 1995). It is used in ratio analysis (e.g., Wahlen et al., 2011, chapter 5), and in studies of IFRS value relevance (e.g., Gordon et al., 2013; Banker et al., 2009). CFO is subject to classification differences between US GAAP and IFRS (Stolowy et al., 2013). We measure these differences to see whether CFO under GAAP is close enough to CFO under IFRS that differences can be ignored.

V. RESULTS

We report first on whether there are material monetary differences between IFRS and US GAAP. We take several approaches to measuring the differences.

Reported data

Net income

Because many managers and analysts use earnings as a measure of financial performance, we examine the income statement for differences between IFRS and US GAAP.

  Panel A of table 3 reports the aggregate dollar effects of adjusting from IFRS to GAAP. In 2005 the mean is $2,180 million and the median is $521 million.[6] The incomes for 2004 are smaller and for 2006 are larger under IFRS.   Net income is positively skewed for the sample under both accounting regimes.

Table 3. Income effects of reconciling items, IFRS to U.S. GAAP

Panel A: Statistics compiled for whole sample

(in $ millions)	2006				2005				2004			
	Mean	%	med.	%	mean[3]	%	med.	%	mean[3]	%	med.	%
Net income, IFRS	2,971	100%	969	100%	2,180	100%	521	100%	1,628	100%	477	100%
Net income, US GAAP	2,664	89.7%	797	82%	1,983	91.0%	513	98.6%	1,635	100.4%	454	88.3%
Total of all reconciling items[2] (difference in rows above)	-307	-10.3%			-196	-9.0%			6.5	-0.0%		
Total of 5 largest reconciling items[1]	-123	-4.1%			-127	-5.8%			-55.7	-3.4%		
Total of absolute mean value of 5 largest reconciling items[5]	310	10.4			237	10.9%			308	19%		

Panel B: US GAAP divided by IFRS net income, compiled firm-by-firm

	2006	2005	2004
Average among firms, US GAAP / IFRS	98.6%	106%[4]	105%
Standard error	34%	24%[4]	38%
Median	98%	94%	97%
First quartile	88%	84%	92%
Third quartile	98%	99%	115%

Sample size[4]: 31, 42 and 42 for years 2006, 2005, and 2004.

Notes: This table shows the differences between net incomes compiled under IFRS and US GAAP. Panel A shows the statistics for all firms in the sample combined. Panel B computes the statistics for each firm, then shows the average across firms. Panel B removes the possibility that one or two very large firms might be "driving" the results. It shows that the reconciling items are pervasive throughout the sample.

1. The "5 largest reconciling items" refers to the five largest items for the individual firm, not the five most frequent ones overall. For every sample firm these five (or less) items include all reconciling items that are at least 1% of net income.
2. The reconciling items are "after tax" numbers, directly comparable with net income. The amount reported on Form 20-F is multiplied by (1-statutory tax rate). The differences in net incomes under the two standards arise from the net effect of the individual reconciling items.
3. The Mann-Whitney-Wilcoxin t-test rejects equality of IFRS and GAAP distributions at a p-value less than 0.01 for the 2005 and 2006 samples, but does not reject equality at the 0.10 level for 2004.
4. One firm is removed because a "small denominator" distorts the overall pattern. This firm had net income close to zero. If that firm were included, the mean would be 265% and standard error 102%.
5. The absolute value is computed by taking the algebraic mean of all firms for a particular line item, then transforming that to an absolute value. It is *not* taking the absolute value at the firm level, then averaging. The average value *for a firm* of the five largest reconciling items as a percentage of IFRS income are 29% for 2004, 45% for 2005, and 16% for 2006.

For the sample as a whole, we find that GAAP net income is lower by 9.0% in 2005.[7]

IFRS and GAAP mean earnings are statistically different in 2005 and 2006 (p<.01), but the null of equality is not rejected for 2004.

On the basis that the null of equality is not rejected, one might be tempted to think that for 2004, IFRS and GAAP are so close that, regardless of what the underlying standards say, the differences in application have no economic significance. This is true only on average, and only when looking at the "bottom line." Table 3 shows the *absolute* value of the five largest differences. The averages (e.g., 0.4% in net income for 2004) hide big positive adjustments that are offset by big negative adjustments. The

absolute values of the adjustments are about 19% of net income in 2004 and 10-11% in 2005 and 2006.

Averages hide differences in line items, and they also hide differences among firms. Figure 1 shows large variation among individual firms.

Figure 1. Distribution of differences in net income between IFRS and US GAAP (year 2005)
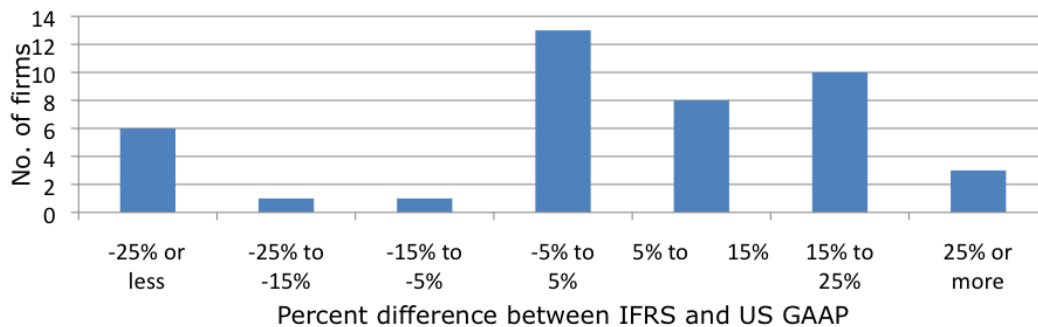
This analysis shows that the different accounting rules under GAAP and IFRS create substantial differences in financial reports. Those who argue about which system is better are addressing a relevant question, since the amounts differ substantially.

Frequency of income statement adjustments

"The reliability of an aggregated number, such as net income, is likely to be a complicated function of the separate reliability of each of its components" (Schipper, 2007, p.316). There are many possible causes for line item differences, as found in the written comparisons of IFRS and GAAP (e.g., KPMG, 2014). Table 4 shows where the most common differences occur in practice. A handful of differences accounts for almost the entire amount of earnings differences.

Table 4. Frequency of occurrence of reconciling items among the sample firms

2006		2005		2004	
Pensions	17	Pensions	22	Goodwill	24
Goodwill	17	Financial instruments	22	Financial instruments	20
Financial instruments	13	Goodwill	18	Pensions	19
Impairments	11	Revenue recognition	16	Share-based compensation	16
Revenue recognition	8	Share-based compensation	12	Revenue recognition	13
Share-based compensation	8	Restructuring	10	Restructuring	12
Restructuring	5	Impairments	10	Intangible assets[1]	11
Debt	5	Intangible assets (note 3)	9	Impairments	8
Fixed assets	5	Fixed assets	6	Deferred taxes	5
Interest capitalization	5	Debt	6	Acquisitions	5
Intangible assets (note 3)	4	Acquisitions	5	Debt	5
Acquisitions	4	Interest capitalization	4	Development costs	4
Totals	102		140		142

Sample size 31, 42 and 42 respectively in 2006, 2005, and 2004. Because of de-listings and mergers, year 2006 has 31 firms.
Notes:
1. All reconciling items that occur for at least 10% of the sample are reported here.
2. The table is compiled from the largest five reconciling items for each sample firm. Every reconciling item for every firm is included if it is at least 1% of net income.
3. "Intangible assets" does not include accounting for development costs, a separate category for which we observed four reconciling items in 2005 and, as shown, five in 2004.

Pension, financial instruments, and goodwill accounting are the most common reconciling items, recorded by around half the firms. Many of the items appear in all years.

Table 4 also reveals: (a) The top three or four items are all common (no dominant adjustment); and (b) the same items appear in roughly the same order of frequency in all three years, not surprising since they are the same companies. The rank

correlations for the items that appear in both years are 0.93 for 2004-2005, and 0.90 for 2005-2006.

Dollar amounts of income statement adjustments

It is important to know not just frequency of differences, but their magnitudes. Even if the differences are common, they do not matter if they are small.

Tables 4 and 5 show that the frequency of items is not highly correlated with the dollar amount. For example, for an individual firm the pension adjustment is either the biggest or second biggest in 14 of the 24 firms that made the reconciliation in 2005. By contrast, although share-based compensation is ranked #5 in frequency in 2005, for only one firm is it the largest.

Pensions, the most frequent item in 2005, have large dollar effects: almost 1% of net income in 2005. But other items do not follow the same pattern. Goodwill, for example, is the most frequent item in 2004, but the magnitude is only 40% of what it is in 2005, when the frequency rank drops to 3rd. These are sign reversals; the process that generates accounting numbers for similar accounts in consecutive years is not a stationary process.

Table 5. Largest reconciling items, as a percentage of IFRS net income

2006		2005		2004	
Derivatives and hedging	-2.7%	Goodwill	-2.2%	Impairments	-2.3%
Intangible assets[1]	1.5%	Derivatives and hedging	2.0%	Pensions	-1.7%
Impairments	-1.3%	Financial instruments	-1.0%	Goodwill	0.9%
Pensions	-1.2%	Pensions	-0.9%	Intangible assets[1]	-0.9%
Deferred taxes	0.5%	Intangible assets[1]	-0.8%	Restructuring	0.6%
		Share-based compensation	0.6%	Deferred taxes	0.6%
		Interest capitalization	0.5%	Debt	-0.5%
				Foreign currency	-0.5%

Sample size 31, 42 and 42 respectively in 2006, 2005 and 2004

Notes:
1. The table is compiled from the largest five reconciling items for each sample firm. Every reconciling item for every firm is included if it is at least 1% of net income.
2. The minus number indicates that the item is reduced under U.S. GAAP relative to IFRS.
3. All adjustments equal to at least 0.1% of IFRS net income are shown.
4. The reconciling items are "after tax" numbers, directly comparable with net income. The amount reported on Form 20-F is multiplied by (1-statutory tax rate).

Some items may occur rarely, and are not big on the average, but may be very significant for individual firms. Comparability, an objective of the framework, is a firm-to-firm characteristic, not an average result.

Firm differences

As shown in table 3, there was a 9.0% mean reduction and 1.4% median reduction going from IFRS to GAAP in 2005. This does not show how large the

adjustments were for *individual firms*. In both 2005 and 2004, two different firms had reductions going from IFRS to GAAP income of 50% or more.

Interest costs incurred in construction are an example. While for the 42 firms, the effect is small, only 0.3% of earnings, for those firms that experience borrowing in connection with large scale construction, the average effect is +4.6%.

Equity values

The book value of equity accumulates all current and previous income differences. It is the net of the assets and liabilities and may also include adjustments that do not pass through the income statement.

If net income differs, then retained earnings differ. These are early years of IFRS use, so there has not been time for IFRS-GAAP differences to have become a large effect. Another difference can be IFRS No. 1. This standard permits, under some conditions, "deemed costs" of assets, which are not the same as costs that would normally be applied under IFRS. Goodwill accounting under IFRS and US GAAP has been different. Any adjustment of the asset accounts affects the equity accounts. Impairment of goodwill affects asset balances for years or decades. Those differences cumulate over years, so balances can become quite far apart.

As table 6 shows there are major differences in equity values under the two sets of standards.

Table 6. Book Values of Shareholders' Equity[1]

	2006		2005		2004	
	US GAAP	IFRS	US GAAP	IFRS	US GAAP	IFRS
Average ($ million)[2]	16,739	15,936	12,970	11,825	11,913	10,263
Median ($ million)	5,001	5,175	4,364	4,269	3,624	3,838
Average ratio (GAAP to IFRS)	1.11		1.10		1.15	
Median	1.00		1.02		1.05	
1st quartile	0.97		0.97		1.00	
3rd quartile	1.09		1.13		1.19	
Sample size	31		42		42	

Notes:
1. Source of information is the reconciliation reported on Forms 20-F.
2. The Mann-Whitney-Wilcoxin t-test for equality of the IFRS and GAAP distributions is rejected at the p=0.01 level for all samples.

We show that in equity, as well as earnings, there are considerable differences, both at the firm and at the aggregate level. This is one more reason why the choice between IFRS and GAAP matters, and invites attention to the underlying reasons

Cash flow

The last element of the study is the classification of cash flows. SEC policy did not require that IFRS cash flow reporting be reconciled to GAAP. We take cash flow data from annual reports.

IFRS and GAAP differ in the allowable classifications, specifically for interest paid and received, dividends paid and received, and taxes paid (Stolowy et al., 2013). IFRS, but not GAAP, allows alternatives.

Although the average effect is small, the averages mask substantial effects for individual firms. More than 15% of firms in our sample use an IFRS classification that does not match GAAP. The effect reported in table 7 is understated since not every firm reports these adjustable items separately, so they are not always identifiable.

In this section we have reported on differences in all three primary income statements, and we have done a "by firm" analysis. The differences in the aggregate and at the firm level show that the choice between IFRS and GAAP is meaningful.

Financial analysis

This section discusses our second analysis: whether the choice of GAAP or IFRS makes a difference for financial analysis. If the choice does create differences, then a considering which set of standards is more reliable is important.

Net income

Net income is an element of most financial analysis. Measures such as return on assets, return on equity, and return on sales are primary measures of performance. We have shown that these amounts vary considerably, so the use of IFRS or GAAP may influence performance evaluation.

Frequency and dollar amounts of income statement adjustments

Large line item differences between IFRS and GAAP may offset each other. For example ROA for a particular firm may be very nearly the same under either set of standards. This does not imply that the question of "which is better" is moot. The "DuPont" formula points to different elements having different significance.[8] Return on sales multiplied by asset utilization equals ROA. If revenue recognition rules give higher revenue from IFRS at the same time that fair value rules give a higher asset base, then ROA might be close under the two standards. But the two components could differ, and lead to different conclusions about "product profitability" (return on sales). Thus a careful consideration of which system gives the better analytical result can rest on

individual line items. Table 4 shows that the differences caused by revenue recognition principles are common, and are large for some firms.

Financial analysis is done at the firm, not the aggregate level. Variation of the individual items, not the average, matters in analyzing firms.

Shareholders' equity adjustments

As is the case of income, this measure is used in performance evaluation. In some cases, the differences in net income and equity might even accentuate the need for close evaluation of which set of standards is better. For instance, net income (x) may be higher under one standard but equity (y) is lower. The percentage differences in ROE measures (x/y) exceeds the percentage differences of both x and y.

To see whether this is just conjecture or whether it is observed, we compute the difference. Figure 2 shows a substantial difference in this performance ratio. Note that only about 20% of the firms are within 5% of each other, and a quarter differ by more than 15%.

Figure 2. Distribution of differences in return on equity ratio between IFRS and US GAAP (year 2005)
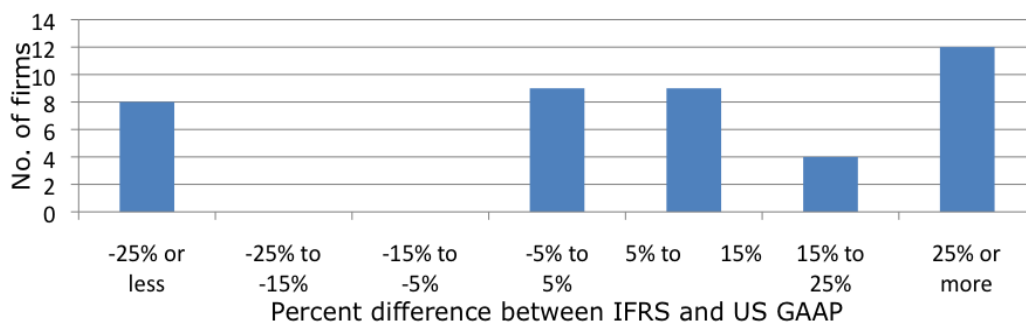
Another common use of equity in financial analysis is in leverage characteristics (Lantto and Sahlström, 2009). Having shown how widely equity varies under IFRS in comparison

with GAAP, it is probable that IFRS and GAAP do not deliver comparable leverage measures.

Cash flow

Cash flow is used in financial analysis (e.g., Lev and Thiagarajan, 1993); for example, a measure like how many times cash flow covers interest obligations approximates the risk of default on debt. It seems a reasonable question to ask, for example, whether it is better to classify dividends paid as operational or financing. We add to that the evidence that the classifications <u>are</u> empirically different (table 7), and that they are significant for some firms.

Academic research

Net income

Measures of "earnings management" are used in a large area of accounting (Dechow et al., 2010). A favorite measure is accruals, on the belief that higher the correlation between a firm's cash flows and its income, the less use is being made of accruals as a means to manage earnings.

Since accruals <u>are</u> the difference between income under IFRS and GAAP, in measuring earnings quality with accruals, one must recognize that the level of accruals is a matter of <u>both</u> discretionary adjustments to manage earnings, <u>and</u> different accounting standards. Unless this is understood the researcher may mistake different accrual standards for deliberate actions to mislead investors.

### Frequency and dollar amounts of income statement adjustments

Many accounting studies make use of line items to test their "value relevance." One research question might be whether the IFRS values are more value relevant than the GAAP numbers. This study has been done for income (Gordon et al., 2013), but not

for line items. The value relevance of items can differ only if the accounting numbers differ. Table 5 indicates which items it might be candidates for value relevance tests.

Shareholders' equity adjustments

Accounting researchers believe that the ratio of book value of equity to market value of equity measures future growth opportunities (Collins et al., 1989; Kothari, 2001; Roychowdhury and Watts, 2007). If a study combines firms that use IFRS with firms that use GAAP, the ratio will be affected by (a) different growth opportunities and (b) different accounting standards. So once again the question is whether the equity figures differ enough so that (b), which is not controlled for, will distort conclusions about (a)?

Figure 3. Distribution of differences in book to market ratio between IFRS and US GAAP (year 2005)
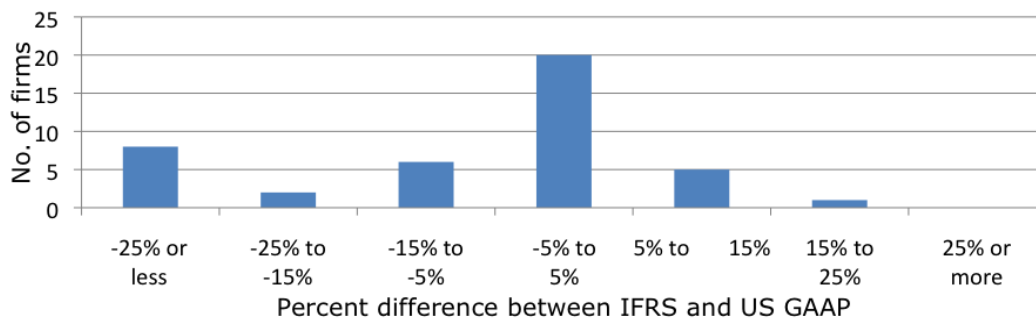
We present book to market ratio under the two sets of standards. As shown in figure 3 they are not likely even to be close.[9] The researcher is confronted with a dilemma. "Market" is the same in both cases, so if the book-to-market ratio really does measure growth opportunities, then either "book value" under IFRS or else "book value" under GAAP captures this growth element better. For a large segment of firms the book-to-

market is larger under IFRS, and for another large segment it is smaller. It supports the debate about which is better.

Cash flow

McGinnis and Collins (2011) study the role of analysts' cash flow forecasts in curbing earnings management. This study is entirely US data, but it would be natural to test the same thing using international data. IFRS (but not GAAP) allows discretionary choices for classification of some cash flow items (table 7). In an international comparison, the question may be: "What are analysts forecasting? Do they use the companies' conventions or do they use uniform classification?" For this purpose, it is arguable that "GAAP is better" since it excludes discretion and gives comparability in large data set studies where hand-collecting is not done. Our evidence shows considerable differences among firms. That fact should be addressed in designing research.

Table 7. Cash Flow from Operations, IFRS compared with US GAAP

	2006	2005	2004
Mean Ratio: US GAAP / IFRS	.973	.967	.995
Range: Low	.694	.750	.804
High	1.08	1.00	1.20
Number of observations	39	42	42
With differences	7	7	7

Note: Three of the original firms in the sample merged in 2006.

Some research studies make use of cash flow from operations (CFO) as an input to measuring "accounting quality." As Gordon et al. (2013) show (using Dechow and Dichev, 2002), discretionary accruals, a principal input to the earnings quality measure, are calculated by subtracting CFO from net income. Clearly, if cash flow from operations differs between IFRS and GAAP, then different conclusions are possible. They are more likely, the farther apart are the CFO measures. Gordon et al. perform an international

"accounting quality" study, comparing earnings management results based on the IFRS vs. GAAP viewpoint. They take the necessary step of basing the accrual computation on two methods, one using net income from IFRS and one using net income from GAAP. But they do not account for different rules for measuring CFO.

Banker et al. (2009) measure the association of cash flows with pay-for-performance and value relevance.[10] An interesting extension would be to investigate whether the same associations are detected outside the US. Since compensation policies in the US tend to differ from those in Europe (e.g., more US use of stock options), the relation might be expected to differ. But in an international comparison the conclusions could be robust only if CFO were measured on a consistent basis.

CFO has an important role in financial analysis, so it is important to know that the measures can differ, as table 7 shows.

VI. SUMMARY AND CONCLUSIONS

We summarize the three concerns that motivated this study. First, we contribute to the policy debate over whether the U.S. should change to international standards. The farther apart the standards are, the more important is this choice. If harmonization and convergence have reached their goal, then the benefits from the US changing are small since GAAP largely replicates IFRS. But the standards are still far apart so the decision is more complex. The comparability from a single set of standards is an advantage, but if the quality is lower, then the higher costs to investors is a disadvantage. This study does not attempt to assess which standards are better, only to show that they are not very comparable yet.

The detail shows that a handful of accounting principles drive a significant difference in income and net assets. That handful causes large differences, on average. The differences are even more significant when considered firm-by-firm. This is

important since it is not an "aggregate" but firm level comparability that is the goal of accounting convergence.

Second, we consider the GAAP-IFRS differences from the viewpoint of the financial analyst, who does analysis on a firm-by-firm basis. Even where there are small average differences (e.g., in net income) those small averages often hide a wide variability among firms. The goal of financial reporting is to provide information for investors. Investors examine results at the firm level. GAAP-IFRS differences have significant effects, at the firm level, on indicators of financial performance and position such as shareholder equity, net income, return on equity, and book to market ratio.

Academic research is often cited in policy deliberations (e.g., Niemeier, 2008). Research studies often involve items where there can be large differences—income, line items, equity and cash flows. In summary, the line item differences can be large and occur frequently, but there are not very many of these line items. For any one firm, five or fewer of the differences explain almost the whole GAAP-IFRS reconciliation.

Since only a few standards cause most of the differences, then only a few standards must be harmonized for the average numbers to become comparable (though there may be other standards with big effects only on a few firms).

Researchers can look at a few, known differences, and adjust them. Even if making the appropriate adjustment is not feasible, at least the direction of the bias in the results can be addressed. This study allows the researcher to understand the most important differences in financial reporting and representation. For example, a test of the hypothesis that European companies invest less in product development would be biased against rejecting the null. The future investigator must be aware that changes in standards will reduce the longitudinal consistency of the numbers. Users of data from these years should be mindful that a non-stationary process generated these data, and the time series is unstable (Box and Jenkins, 1976).

[1] We use the term "accounting quality" as a blanket to cover studies of "earnings management," "earnings quality," "information content," "conservatism," and "timely recognition."

[2] Because of the small number of foreign private issuers that used IFRS before 2005, there are many more studies that compare US GAAP with local GAAP.

[3] Foreign private issuers reconcile on SEC Form 20-F the accounting results in accordance with the basis of preparation (e.g., IFRS) with what the corresponding accounting results would have been under US GAAP. The SEC required this for net income and shareholders' equity until November 2007.

[4] In 2005, GDF per capita in the US was $44,308. In Hungary it was $11,092 (World Bank, 2013).

[5] "[T]axes, which require adjustment for nearly all sample countries" (134).

[6] We convert everything to dollars at the rates prevailing in October 2006.

[7] Net income is after tax, and we have tax-adjusted each line item. For companies with net losses, we do not apply any tax adjustment.

[8] Soliman (2008) shows that this is an important tool in financial analysis.

[9] A test of means rejects the null of equality of book values at the p=0.003 level.

[10] They use earnings as well as cash flows, so the points raised here also apply to the "net income" section, above.

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