11-1998

Measuring the Degree of International Harmony in Selected Accounting Measurement Practices

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Abstract: The I-index developed by Van der Tas and chi square tests suggested by Tay and Parker are used to quantify and assess the degree of harmony in selected accounting measurement practices of large companies from France, Germany, Japan, the UK, and the US. The results indicate significant differences in accounting for inventory, fixed assets, and investments among the countries. The 3 sub-topics that exhibited a high degree of harmony were the treatment of gains or losses on the disposal of fixed assets, short-term investments and long-term investments, a reflection of the preference of regulators and companies in the different countries for taking disposal gains and losses to income as they occur. Depreciation and inventory costing methods had the lowest I-index scores respectively, suggesting that the level of international harmony in these 2 basic accounting measurement practices is fairly low. It was found that the disclosure of information on accounting policies, even on fundamental accounting measurement methods such as inventory costing methods, tends to be quite low.

This research assesses empirically the extent to which selected accounting measurement practices of companies from France, Germany, Japan, the UK and the US are harmonised in the context of major international efforts to enhance the comparability of company financial statements. The findings suggest that significant differences continue in accounting measurement practices between companies originating in each of these countries. The results of the study have important implications for international standard-setters, investors, creditors and those interested in international accounting.

Support for international harmonisation of accounting standards has grown steadily in recent years with a number of initiatives at the regional and international levels. The European Uniony, with its broad objective of a unified economic market, has emerged as the leading model for regional harmonisation, while the International Accounting Standards Committee (IASC), with the support and encouragement of the International Organization of Securities Commissions (IOSCO), is the pre-eminent global organisation.

Much has been written about the problems and current prospects of international harmonisation (Rivera 1989, Chandler 1992). Some observers have suggested that it may be unnecessary, pointing to the growth of the international capital markets despite the lack of internationally accepted accounting standards (Goeltz 1992). Others have even suggested that it may be harmful (Hoarau 1995). Despite these arguments, the international harmonisation movement has moved forward.

Considering the substantial resources that the EC and IASC have committed to the pursuit of harmonisation, it is surprising that researchers have only now begun to develop approaches to quantitative measurement of the degree of harmony in accounting regulations and practices. These measures will facilitate the identification of potential targets for harmonisation initiatives. Additionally,

before-and-after measurement of the degree of harmony in a targeted regulation or practice would indicate the success of a specific harmonisation initiative (Van der Tas 1988).

This study uses new approaches suggested in the literature to quantify the degree of accounting harmony between countries. A related objective is to compare certain accounting measurement practices of large companies in France, Germany, Japan, the UK and the US in the light of international harmonisation efforts.

DEFINITIONS AND RELEVANT LITERATURE REVIEW

Harmonisation (a process) seeks to increase the compatibility between two or more subjects by narrowing their differences. Harmony (a state) reflects the degree of compatibility that exists between two or more subjects at one particular time (Tay and Parker 1990).1 In the accounting context, the subjects can be companies' financial reporting practices or financial reporting standards (Van der Tas 1988). Material harmonisation refers to the harmony of financial reports of companies. Formal harmonisation concerns financial reporting standards, regulations or guidelines.

Material or formal harmonisation can focus either on measurement issues (recognition, valuation and estimation) or on disclosure issues (the extent of information provided by different entities). This study focuses on the material measurement practices of companies as reflected in annual reports.

Research on harmonisation issues prior to 1988 (Nair and Frank 1981, Evans and Taylor 1982, Doupnik and Taylor 1985) has been criticised by Tay and Parker (1990) for lack of conceptual clarity and shortcomings in the data sources. Our review uses more recent studies that seek to develop and apply new quantitative measures of harmonisation.

Van der Tas (1988) suggested two main approaches (C-index and I-index) to quantify the concepts of harmony and harmonisation. These measurement approaches were derived and adapted from the Hirschman-Herfindahl index (H-index), a measure of industrial concentration. Van der Tas developed the C-index to measure harmony in a national context; the I-index was developed to measure the degree of harmony in an international setting.

Tay and Parker (1990) isolated key challenges in the measurement of international harmonisation: operationalisation of concepts, data sources and statistical methods. They found Van der Tas's (1988) approach of using concentration indexes to measure harmony to have potential but concluded that the lack of statistical testing was a shortcoming. They suggested an alternative method incorporating statistical testing.

Emenyonu and Gray (1992), using the Van der Tas approach but incorporating the suggestions of Tay and Parker, assessed the extent to which accounting measurement practices in France, Germany and the UK are harmonised in the context of the EU initiatives. Using a sample of annual reports of large companies from the three countries, they used the Van der Tas I-index complemented by chi-square

tests to quantify the level of accounting harmony across the three countries. Their results indicated significant differences, with a wide and relatively low range of harmony.

Van der Tas (1992), building on his earlier work and also responding to some of the criticisms of Tay and Parker, examined the deferred taxation policies of European companies for a 10-year period (19781988). He used a sample of 154 European listed companies from nine EU countries to assess the degree of harmony, the extent of harmonisation and the effect of the EU harmonisation efforts. The study examined individual and consolidated financial statements and took into account not only the accounting policy used but also the information provided in the notes that may enable the reader to reconcile one method with another. The results of the study indicated that there were differences in the degree of harmony depending on whether separate or consolidated accounts were examined and that the reconciliation data also affected the measurement of harmony

Archer et al (1995) separated the C-index introduced by Van der Tas (1988) into two components to measure "within-country" and "between-country" effects of harmonisation. They used the resulting index to measure the degree of harmony in the treatment of goodwill and deferred taxation for a sample of European companies. Their results indicated that in these areas, little progress in harmonisation occurred between 1986/87 and 1990/91.

Herrmann and Thomas (1995), building on the work of Emenyonu and Gray (1992), used a sample of 217 companies from eight EU countries to assess the degree of harmony in nine specific accounting measurement practices. Their results were mixed, indicating a high degree of harmony for accounting for foreign currency translation of assets and liabilities, treatment of translation differences and inventory valuation, while reporting a lower degree of harmony for accounting for fixed-asset valuation, depreciation, goodwill, research and development costs, inventory costing and foreign-currency translation of revenues and expenses.

Despite the contribution of the above studies, research into international harmonisation measurement is still exploratory. The studies reviewed have examined the issue in the context of the EU harmonisation efforts. Archer et al (1995) include some non-- EU countries (Sweden and Switzerland) in their sample, but both countries were members of the European Free Trade Association and recent changes in their accounting systems have been patterned on the EU accounting directives.2 There is some concern that EU harmonisation initiatives may conflict with the international harmonisation movement (Thorelli and Whittington 1994).

PURPOSE AND SCOPE OF STUDY

This study uses the I-index developed by Van der Tas (1988) and chi square tests suggested by Tay and Parker (1990) to quantify and assess the degree of harmony in selected accounting measurement practices of large companies from France, Germany, Japan, the UK and the US. These countries were

selected because France, Germany, and the UK are the leading economic powers in the EU and Japan and the US are non-EU countries that have the strongest economies in the world. The five countries selected for this study - France, Germany, Japan, the UK and the US - have demonstrated a strong commitment to the goal of international harmonisation of accounting standards. All five countries were founding members of the IASC and are members of the IASC board. The sample is therefore more international than those in earlier studies.3 ;;tt Further, the five countries boast strong although disparate accounting traditions, making them interesting subjects for a study of harmony.

The measurement practices investigated in this study accounting for inventories, accounting for fixed assets and accounting for investments - were chosen because they generally have an important effect on profit measurement and asset valuation. Further, they are germane to most companies, thus reducing the potential for non-disclosure in our survey.

Research design

The survey was of 413 relatively large companies from the five countries: France 70, Germany 73, Japan 90, UK 90, US 90. Companies included in the sample had sales revenue of at least $US250 million for the 1990/91 financial year.4 The study was restricted to large companies because in many countries, including EU countries, medium and small companies are exempt from certain reporting requirements. Additionally, larger companies are more likely than smaller ones to attract international investment - an often-cited justification for international harmonisation of accounting (Emenyonu and Gray 1992).

Financial institutions were excluded from the sample because they usually have different reporting practices from companies in other sectors. While the study did not specifically control for industry effects, the sample was broadly representative of the industrial segments in each of the countries. This should reduce the distortion caused by industry differences. Statistical tools of analysis

Two major statistical tools of analysis were employed. The chi-square test (RI) was used to ascertain whether significant differences existed in profit measurement practices by large companies in France, Germany, Japan, the UK and the US. The I-index, a variant of the Hirschman-Herfindahl concentration measure, was used to compute the degree of harmony in the financial reporting practices included in the study.

The non-parametric chi-square test was chosen for this study since the data is nominal. According to Conover (1971, p. 67): "Most of the usual parametric statistical methods require an interval (or stronger) scale of measurement. Most non-parametric methods assume either the nominal scale or the ordinal scale to be appropriate." The tests were conducted at the 1% level of significance. Results obtained at that level were considered to be significant.

The I-index developed by Van der Tas (1988) is able to incorporate differences in accounting methods between countries. It measures international harmony by multiplying the relative frequencies of use of a particular accounting method across countries and adding up the results for all alternative accounting methods. The index ranges from 0 to 1 and increases when more companies across countries use the same methods from the set of available accounting choices. Although the I-index provides a measure of the degree of international harmony, no statistical tests have been developed to evaluate the significance of the variations that may be observed in index values. In the absence of benchmarks, therefore, the researcher has to assess subjectively whether a particular value of the index represents an acceptable degree of harmony (Emenyonu and Gray 1992).5

The statistical tests (chi-square and the I-index) were conducted for each selected accounting measurement practice for the five countries and a partitioned sample of the EU countries only (France, Germany and the UK). This was to determine whether there were differences in the degree of harmony between the full (global) and the EU (regional) sample, given the formal accounting harmonisation program of the EU. Additionally, previous studies have provided some benchmarks to anchor the results obtained in this study, at least, for the EU partitioned sample.6

On the different measurement issues examined, the number of companies whose accounting practices were tested was not always equal to the total sample of 413 because where companies failed to disclose an accounting policy for any reason, they were omitted from the results. RESULTS Accounting for inventories

Three accounting measurement practices related to inventories were examined: inventory costing methods, inventory valuation basis, and definition of market value. Table 1 shows the results for the three practices. For the total sample, chi-squares reported in Table 1 indicate significant differences between the five countries in inventory costing methods (Panel A); inventory valuation basis (Panel B); and the definition of market value (Panel C). Panel A also shows that apart from the companies using a combination of inventory costing methods, the most popular basis for determination of inventory cost was the average cost method, used by 36.7% of responding companies. The lower of cost or market alternative, used by 81.2% of companies, was the most widely used valuation basis for inventory (Panel B), and the net realisable value (NRV), used by 86.9%, is most often used as the definition of market value (Panel C).

The higher consensus reported for the valuation basis for inventory and for the definition of market value was also reflected in the higher I-index values, 0.7564 and 0.6690 respectively for the two, while the Iindex for inventory costing methods was only 0.2825. Therefore, of the three inventory measurement methods examined, inventory costing methods exhibit the lowest degree of harmony among the five countries.

The results for the partitioned EC sample were generally consistent with the overall sample. For the valuation basis for inventory and the definition of market value (Panels B and C), the I-index was higher for the EU sample than the overall sample, indicating a higher degree of harmony among the EU countries for the two inventory measurement methods. However, the I-index for inventory costing methods was lower for the EU sample than for the overall sample. The low degree of harmony obtained for inventory costing methods is consistent with the results reported by Herrmann and Thomas (1995). In an examination of 1992 annual reports of companies from eight EC countries, they obtained a relatively low value of 0.2295 for the I-index for inventory costing methods.7 The low degree of harmony in inventory costing methods reflects the flexibility provided in the EU fourth directive.

Accounting for fixed assets

Table 2 reports the results for three measurement issues related to fixed assets: fixed assets valuation (Panel A); recognition of gains or losses on disposal of fixed assets (Panel B); and depreciation methods (Panel C).

Significant differences were evident between the countries in practices related to fixed assets valuation (Panel A) as well as in depreciation methods (Panel C). Panel A shows that although most companies (85.5%) used original cost to value fixed assets, the significant result for this measurement practice was driven by the 57 companies (52 UK, 5 France) that use modified historical cost valuation methods. This is largely reflective of the practice of revaluation of fixed assets that is quite common in the UK and conditionally allowed under French regulations (see Appendix 1).

Panel C indicates that there was great diversity in accounting for depreciation both within and across the five countries. This is reflected in the relative low I-index of 0.2295, the lowest I-index for any of the accounting measurement topics considered in this study. This suggests a low degree of harmony in depreciation methods among the five countries. Differences in treatment of gains and losses on disposal of fixed assets were insignificant for the total sample, shown by the high I-index of 0.9777, suggesting a high degree of harmony among the five countries.

For the partitioned EU sample, the results were largely consistent with those for the total sample. For fixed asset valuation and depreciation methods, differences also were significant for the EU sample; however, the degree of harmony as reflected in the Iindex was lower for the EU sample than for the total sample. The EU sample results for depreciation methods were also consistent with those of Emenyonu and Gray (1992), who obtained an I-index of 0.0076 compared with 0.1113 for this study.8 This raises some questions about the effectiveness of the accounting harmonisation initiative of the EU, especially with respect to these accounting measurements.

Accounting for investments

The measurement issues considered in this study were valuation methods and the treatment of gains/losses for both short-term and long-term investments. Table 3 reports the results.

For the total sample, the results in Table 3 suggest that there were significant differences among the five countries in valuation methods related to both short-- term (Panel A) and long-term investments (Panel C). While the lower of cost or market method was the most commonly used (by 83.7% of companies) for valuing short-term investments, cost was used by most (65.1%) of the companies to value long-term investments.

On the treatment of gains and losses on disposal, however, there was a high degree of harmony for both short-term and long-term investments. For short-term investments, the I-index was 0.9914 (Panel B) while for long-term investments the I-index was 0.9889 (Panel D). The high index values for these measurement practices suggest near-uniformity in practice.

The results for the partitioned EU sample were largely consistent with those for the total sample. The degree of harmony for valuation methods for both short-term and long-term investments was, however lower for the EU sample than for the total sample. The I-index values for the EU sample were 0.6680 and 0.4607 for the valuation of short-term and long-term investments respectively, compared with 0.7662 and 0.6088 for the total sample.

CONCLUSIONS

The results of the study indicate significant differences in accounting for inventory, fixed assets, and investments among the five countries examined. The I-index, the measure of the degree of harmony, ranged from a low of 0.2295 for depreciation methods to a high of 0.9914 for treatment of gain/loss on disposal of current investments. The three sub-topics that exhibited a high degree of harmony were the treatment of gains or losses on the disposal of fixed assets, short-term investments and long-term investments and long-term investments, a reflection of the preference of regulators and companies in the different countries for taking disposal gains and losses to income as they occur.

Depreciation (0.2295) and inventory costing (0.2825) methods had the lowest I-index scores respectively, suggesting that the level of international harmony in these two basic accounting measurement practices is fairly low. This is partly a consequence of the many accounting options allowed in national accounting regulations and international accounting standards. Since these two accounting measurement practices have a significant impact on asset and profit measurements, especially for capital-intensive companies, this has important implications for international financial statement analysis. Given the low degree of harmony, financial analysts need to make adjustments for differences relating to depreciation and inventory costing methods.

Some have suggested that there is no need for material measurement harmonisation provided companies make additional disclosures enabling the reader of the financial statements to reconcile

from one measurement method to another. In this study, we found that the disclosure of information on accounting policies, even on fundamental accounting measurement methods such as inventory costing methods, tends to be quite low. For example, only 68% of the companies in our sample disclosed the inventory costing method that they had used. Thus, in an international setting, companies are not disclosing information to the extent that it could serve as a substitute for harmonisation of accounting measurement practices.

The results also indicate that on many topics the degree of harmony observed for the EU sample was even lower than for the total sample. This applied to important measurement issues such as inventory costing methods, fixed asset valuation, depreciation methods, and valuation of short-term and long-term investments, practices which have a significant impact on profit and asset measurements for companies. These results tend to confirm the view that despite the legal authority of the EU accounting harmonisation program, it has been only partly successful because of the flexibility inherent in the EU accounting directives. Much remains to be done in achieving harmonised asset and profit measurement practices in the EU and in the international arena. There is scope for additional research.

Harmonisation is a moving target. Every time a new accounting standard is adopted in a country, there is potential for a change in the level of harmony among countries on the measurement issues affected by the standard. Longitudinal studies would help us assess the impact of national and supranational accounting initiatives and sharpen our understanding of the fluctuations in the level of harmony over time. The examination of larger samples, different sets of countries, and other accounting measurement issues are all potential avenues of research.

Footnote

1. Choi and Mueller (1984) also introduce a distinction between harmonisation and standardisation. Both are processes of change; however, harmonisation is a movement away from diversity while standardisation moves towards uniformity. Under harmonisation, different accounting rules and practices can exist as long as they do not conflict with each other. Standardisation, on the other hand, implies uniformity; a single rule or practice is applied to all situations. Standardisation can therefore be viewed as a limiting case of harmonisation. 2. In 1995, Sweden also became a member of the European Union.

3. Emenyonu and Gray (1992), using a similar methodology, investigated the degree of harmony in accounting measurement practices for a sample of French, German and UK companies. Our study 30 AUSTRALIAN ACCOUNTING REVIEW

extends their study by including two non-EU countries, Japan and the US, and by using a bigger and more recent sample of companies.

4. The sample sizes for France and Germany are 70 and 73 respectively because of data limitations. 5. The rankings given by the I-index computations should not always be expected to be consistent with the results from the chi-square tests. For instance, it is possible that on a particular item the chi-square test might indicate that there are no significant differences between the practices of the companies in the sample, whereas a relatively low score may be reported for the I-index. The reason is that both tools measure different concepts of harmonisation. The chi-square test measures the extent to which the preferences of some independent groups are matched; that is, whether companies from different countries use the different alternative accounting methods proportionately. The I-index, on the other hand, measures the extent to which the accounting practices of the companies are concentrated around one or more alternatives. No such case was, however, detected in this study.

6. Comparisons with other studies that have measured the degree of harmony in accounting measurement practices in the EU context should be made with caution due to differences in the countries included in the sample, sample size, and the time-frame evaluated.

Herrmann and Thomas (1995) also examined the measurement basis for recording inventory. For this inventory measurement issue, they reported an I-index of 0.7943 compared with 0.8701 for our study and while their chi square test, contrary to our results, was insignificant, it was just so at the .01 level with a p value of 0.0127. The differences in the results are partly attributable to our inclusion of only two alternative measurement methods (cost and lower of cost or market) for this inventory measurement category, while Herrmann and Thomas include a third choice, market value. They include this additional method because their sample includes the Netherlands, which is the only EU country where some companies report their inventory at market value.

While not directly comparable, because of differences in the countries included in the sample and the sample size, the results for accounting for fixed assets were also generally consistent with those obtained by Herrmann and Thomas (1995). For fixed asset valuation, they reported an I-index of 0.2852 compared with 0.6251 for our study. However, if only France, Germany, and the UK, the three EU countries in the sample of this study, are used, their recomputed I-index is 0.4889. Similarly, for depreciation methods, they obtained an I-index of 0.6245. When applied to the three countries common to the two studies, the recomputed I

index is 0.2417 compared with 0.1113 for this study.

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