

An Exploration of the Attributes of International Harmonisation Indices Using the T-Index

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Abstract

This study analyses the degree of harmony of four key accounting policy choices - depreciation policies, type of goodwill treatment, fixed asset valuation and inventory measurement - in 442 companies in five Asia-Pacific countries. The T-Index finds goodwill harmony percentages were only nine percent if non-disclosing companies were considered to be not comparable, 25 percent if excluded and 71 percent if considered comparable to all. Similarly, different assumptions about partial comparability of accounting policy choices resulted in varying scores from 36-61 percent for inventory. The analysis shows that in the Asia-Pacific region there remains a large level of different accounting policies chosen by countries. Concerns about comparability of data for financial statement users thus remain. Closer scrutiny of implicit assumptions contained within harmony indices and consideration of more detailed analysis are also advocated by this study.

Introduction

This paper quantitatively investigates to what extent regional accounting harmonisation/harmony process has been successful and to what degree the harmonisation indices used in the accounting literature provide appropriate results. Evidence is derived from five Asia-Pacific countries. It is analysed by using a new T-Index created by Taplin (2004).

Street (2002) believes that investors are increasingly making capital allocation decisions based on global opportunities. This trend causes the role of accounting and financial reporting, in providing comparable information in financial statements across national boundaries, to become more important. To assist the world's economies in facing these growing cash flows across the national boundaries, the major constituents of the world's capital market gave a strong mandate to the International Accounting Standard Board (IASB) to develop a single set of high-quality accounting standards. The result of this effort shows that convergence is coming. The majority of the countries surveyed by the largest public accounting firms (Generally Accepted Accounting Principles [GAAP] 2001) have formally stated their intention to converge with International Accounting Standards/International Financial Reporting Standards (IAS/IFRS). For example, Australia and the European Union are moving towards full adoption of IAS/IFRS from 1 January 2005 for all reporting entities in Australia and for listed companies in Europe.

Convergence with IFRS will improve the reporting practices comparability. However, GAAP still allows alternative treatments of measurement practices in some levels. This situation can still lead the preparers of financial statements to select accounting methods based on their favourable situations since management's choice of accounting policies has economic consequences (Watts & Zimmerman, 1986). This research study addresses two important issues: to what extent accounting measurement and valuation harmonisation/harmony exist in the Asia-Pacific region; and how these concepts should be measured?

Taplin's (2004) new T-Index, published in *Accounting and Business Research* and entitled 'Unified Approach to the Measurement of International Accounting Harmony', is employed in this study to examine the harmony of accounting policy choices in listed companies in the Asia-Pacific region including Australia, Hong Kong, Indonesia, Malaysia and Singapore. The four key accounting policies examined were depreciation method, goodwill treatment, fixed assets valuation and inventory measurement, which were chosen because they have a direct impact on accounting numbers. Australia, Hong Kong and Singapore are considered developed markets while Malaysia and Indonesia are emerging markets (Saudagaran & Diga, 1997) and all have British colonial heritage except for Indonesia's past Dutch influence. The five countries included in this study, chosen because they are moving towards the IFRS, embody a variety of languages, cultures and geographical locations and were specifically selected in order to provide diversity for the sample.

This study is important for several reasons. First, this research provides evidence regarding the accounting practices in companies listed in stock exchanges in the Asia-Pacific; an under-researched region for accounting research. Second, this research assists financial statement users to better understand the extent to which accounting numbers are comparable. Third, this study acknowledges that preparers of financial statements can still select certain accounting policies based on their preferences under GAAP. The comparability of the financial statements amongst companies cannot be assured even though they technically comply with the IFRS. Hence, the results of this research project aim to provide insights and precautions to the investors, regulators and other users of financial statements with regard to the degree to which they can utilise reported

accounting numbers without making any adjustments or, if needed, what amount of adjustment.

Fourth, this study is the first of its kind to truly operationalise the flexible options of the new T-Index, thus allowing for more focused analysis. Finally, this study is important because the process of harmonisation results in a potential reduction in the level of diversity in financial reports thus leading to enhanced information comparability and understandability (Sharpe, 1996). Research into the process of harmonisation and the state of harmony between a country's regulations and practices is, therefore, seen to be crucial due to a well-articulated demand for more comparable information by a wide range of organisations and user groups on an international scale (Radebaugh & Gray, 1997). The results of this study will provide a basis for future research.

Following on from this Introduction, the second section of this study outlines prior research and a review of the literature. The third section describes the research approach and section four presents the findings of the study. Finally, implications are presented in section five and suggestions for future research follows.

Background Research and Review of Literature

Within the international business community, there is now a growing expectation that financial accounting rules and reporting practices, as the information provider to business and a part of the international business infrastructure, should converge (Purvis, Gernon & Diamond, 1991; GAAP, 2000, 2001) as attempts at reconciling the differences between actual financial reports are relatively difficult and costly activities (Choi & Levich, 1991). Rahman, Perera and Ganesh (2002) suggest that accounting practice harmony is affected by accounting regulation harmony. Figure 1 provides an overview of the accounting regulatory structure applicable to the companies in the five Asia-Pacific countries examined in this study.

Table 1 shows that the 'rule-makers' for each of the Asia-Pacific countries resides within the country's political regulatory system. In the years 2000/2001, each country has historically shown different levels of autonomy. For instance, Singapore prides itself on prompt adoption of international rules whereas Australia has tended to be more individualistic. Over the last few years, however, each of these countries in the Asia-Pacific region has pledged their commitment to the IFRS rules.

Several scholars, such as Van der Tas (1988) and Tay and Parker (1990), have suggested that accounting harmonisation is essential for improving international comparability in financial statements. In the accounting harmonisation literature, Van der Tas (1988) classified harmonisation into two key categories: accounting regulation harmonisation and accounting practice harmonisation. The first is called formal harmonisation and the latter is called material harmonisation and hence the association between accounting regulation harmony and accounting practice harmony. Formal harmonisation focuses on the accounting regulation (*de jure*) in a jurisdiction and material harmonisation focuses on actual accounting practice (*de facto*) harmonisation. Within this main theme, both *de jure* and *de facto* studies can be further subdivided into either harmonisation or harmony studies (Rahman, Perera & Ganesh, 1996). Harmonisation

studies examine evidence over a longitudinal time period, whereas 'harmony' or 'state of harmony' is the level of comparability/diversity at one point in time. Figure 1 summarises these four distinct concepts.

Table 1: Existing National Accounting Rules in Asia-Pacific Countries 2000/2001

Country	National Accounting Requirements
Australia	Australian requirements are based mainly on the <i>Corporations Act</i> and standards of the Australian Accounting Standards Board and Abstract of the Urgent Issues Groups.
Hong Kong	Hong Kong requirements are based on the Companies Ordinance, standards and interpretations issued by the Hong Kong Society of Accountants and Listing Rules of the Stock Exchange.
Indonesia	Indonesian requirements are based on accounting standards issued by the Indonesian Institute of Accountants. For listed companies, there are additional disclosure requirements imposed by the Capital Market Supervisory Board (Bapepam).
Malaysia	Malaysian requirements are based on the <i>Companies Act 1965</i> and on the standards of the Malaysian Accounting Standard Board. The Malaysian Accounting Standard Board uses IAS as the basis for developing its accounting standards.
Singapore	Singapore requirements are mainly based on the <i>Companies Act</i> and standards issued by the Institute of Certified Public Accountants of Singapore (ICPAS).

Source: GAAP, 2000.

This study examines *de facto* harmony by focusing on Quadrant III of Figure 1. It provides a comparison of companies in five Asia-Pacific countries at one point in time; a focus on harmony of actual accounting practices.

Figure 1: The Different Harmonisation and Harmony Concepts

I De Jure Harmony Studies - comparison of regulations in two or more countries at a point in time	II De Jure Harmonisation Studies - comparison of states of relative harmony of different countries' regulations at different points in time
III De Facto Harmony Studies - comparison of companies' practices in two or more countries at a point in time	IV De Facto Harmonisation Studies - comparison of companies' practices in two or more countries at different points in time

Research Approach

This study examines how harmony is measured via various indices and applies the T-Index to Asia-Pacific region evidence. The data is randomly gathered from companies'

annual reports for the year 2000/2001 of 442 listed companies from the five countries of Australia, Hong Kong, Indonesia, Malaysia and Singapore with the number of companies being 83, 102, 84, 93 and 80 from each country respectively.

With regard to measuring harmonisation/harmony, the literature originally focused on the Herfindahl H-index, the I-index and the original (overall) C-Index by Van der Tas (1988). This study extends the analysis via application of the more powerful T-Index. Table 2 shows the main attributes of each of the harmonisation indices.

As shown in Table 2, each index has key underlying assumptions. The H-Index, now rarely used, quantifies national harmony within a country (thus country is ignored), weighs each company equally, samples with replacement and removes non-disclosing companies from the sample. The more widely used I-Index, with its explicit international focus, is country weighted and again excludes non-disclosing companies.

Table 2: Harmonisation Indices Key Attributes and Assumptions

Attribute /Index	H Index	I Index	C Index (total)	C Index (within)	C Index (between)	T Index
<i>Summary</i>	Measures probability that two randomly selected (with replacement) companies from the sample use the same accounting method.	Measures probability that two randomly selected companies (one from each country) use the same accounting method.	Measures probability that two companies selected randomly (without replacement) from the sample have accounts that are comparable.	Measures probability that two companies selected randomly (without replacement) have accounts that are comparable if the two companies are from the same country.	Measures probability that two companies selected randomly (without replacement) have accounts that are comparable if the two companies are <i>not</i> from the same country.	Allows greater flexibility than all other indices. Measures harmony by allowing different assumptions of unit weighting, international focus, multiple reporting and non-disclosure.
<i>Comment</i>	Can be modified to account for multiple reporting.	Focuses on comparisons between companies in different countries. ¹ Cannot correct for proportions close to zero.	Allows for multiple reporting.	Allows for multiple reporting.	Allows for multiple reporting.	Allows for multiple reporting.
<i>Usage</i>	Rarely used.	Widely used.	Some usage.	Some usage.	Widely used.	New approach.
<i>Weights</i>	Company weighted.	Country weighted.	Company weighted.	Company weighted within a country.	Company weighted comparison across countries.	Any combination (such as country, company, size etc).
<i>International</i>	Yes.	Yes.	Yes.	No. Within	Yes. Between	Overall, within

<i>focus</i>				country focus.	country focus.	country and between countries allowed.
<i>Multiple accounting policy</i>	No.	No.	Yes.	Yes.	Yes.	Yes.
<i>Non-disclosure</i>	Non-disclosure companies removed from analysis.	Non-disclosure companies removed from analysis. ²	Some variety in practice (see Archer <i>et al.</i> , 1995).	Some variety in practice (see Archer <i>et al.</i> , 1995).	Some variety in practice (see Archer <i>et al.</i> , 1995).	Allows all assumptions (exclusion, all comparable, non-comparable, partially comparable).
<i>Sampling</i>	With replacement	Does not matter as same company cannot be selected. This is because under this approach only one company can be selected within a country.	Without replacement	Without replacement	Does not matter as same company cannot be selected because only one company can be selected within a country.	With replacement. This means that the same value for the T-Index will be obtained no matter what the sample size is.
<i>Combinations allowed</i>	Not for the original index but it can be modified.	No	Partially. Different C Index variants allow for different weighting on companies and countries.	Partially. Different C Index variants allow for different weighting on companies and countries.	Partially. Different C Index variants allow for different weighting on companies and countries.	Yes, allows combination of desired properties.

Source: Adapted from Taplin, 2004.

The C-Index has three variants. The most widely used is the between C-Index, which gives a company weighted comparison across countries. The other C indices - the overall C-Index and the within C-Index - focus on company weighting and company weighting within a country respectively. The C-Index is a measure of the total number of feasible pair-wise comparisons expressed as a proportion of the maximum possible number of comparisons that could be made in the event that all companies were to choose the same accounting method. Archer, Delvaile and McLeay (1995) decomposed the C-Index into two sub-indices in order to: calculate a within-country comparability index and a between-country comparability index. All types of C indices provide the opportunity for some degree of further analysis of multiple reporting, multiple accounting policies and non-disclosure issues/assumptions. As shown in Figure 2, however, the C indices allow no flexibility with company/country weightings nor do they allow for partial comparability.

This study calculates harmony scores using the assumptions of the H-, C- and I-Index as well as providing alternate measures by varying the underlying assumptions (weightings, partial comparability and non-disclosure) through the application of the T-Index.

Tools of Analysis

The level of harmony for each of the four accounting policies using the T-Index introduced by Taplin (2004) will now be summarised. Each case begins with simple options equivalent to using the H or C indices (Taplin, 2003). More appropriate options of the T-Index are then considered for each accounting policy. These choices include weighting the countries according to their importance in the region, exploring the effect of the interpretation of non-disclosure by companies and allowing for partial comparability of accounting policy choices. For instance, this study uses the number of listed companies of each country as a proxy for the 'importance of the country' weighting. These figures are presented in Appendix 1.

By exploring these options for the T-Index, it is possible to develop specialised indices for each accounting policy that is appropriate for that particular policy. This provides a superior summary of the level of harmony for each accounting policy than would be available from a simple index such as the H- or C-Index. It also allows a better understanding of how sensitive the level of harmony is to decisions concerning the suitable properties chosen for the T-Index. The calculations are then used to explore the most used assumptions built into the various extant indices. It also allows greater detail to explore important alternate assumptions. The calculations are based on various sets of assumptions, listed below:

- T1: Calculation using the assumptions of the overall C-Index which is overall comparability, with companies weighted equally and excluding non-disclosure companies.
- T2: Assumption that companies are weighted equally but between country focused and excluding non-disclosure.
- T3: Assumption that weighting be via country by using the number of listed companies in each country of study, with a between country C focus, and excluding non-disclosure. Furthermore, a range of scores is provided to show how the T-Index would change if non-disclosure is assumed to be comparable to nothing and everything.
- T4: An alpha matrix measuring is added to provide further analysis. The main change is the inclusion of alternate weightings; this allows for the analysis of partial comparability of accounting policy choices.

Data and Results

This section presents the data and main findings of the research. The discussion in this section concerns the four specified accounting policies in the context of five countries in the Asia-Pacific region. As mentioned previously, the four accounting policies examined in this study are depreciation policies, goodwill treatments, fixed assets valuation and inventory measurements.

The data gathered and the main findings of each accounting policy are presented in the following sections. Each section examines an additional aspect of harmony calculation using the T-Index. The layering of the analysis is in the following order:

- An analysis of **Depreciation** policies illustrates the basic tenets of the indices (T1-T4)
- **Goodwill** illustrates the importance of the assumptions of non-disclosure on the calculation of the indices
- **Fixed Assets Valuation** illustrates the importance consideration of partial comparability
- **Inventory** illustrates the effects of non-disclosure and partial comparability on the harmony calculations.

Depreciation Policies

Table 3 presents the distribution of depreciation policies across countries (Panel A) and the level of harmony based on the four assumptions (Panel B). There are three methods of depreciation used by listed companies in the Asia-Pacific region. These are accelerated method, straight-line method and a combination of these two methods.

Table 3: Depreciation Policies

A. Policy Choices						
Policies	<i>Australia</i>	<i>Hong Kong</i>	<i>Indonesia</i>	<i>Malaysia</i>	<i>Singapore</i>	<i>Total</i>
Straight-line	68 (82%)	87 (85%)	69 (82%)	90 (97%)	64 (80%)	378 (86%)
Combination	11 (13%)	7 (7%)	14 (17%)	1 (1%)	2 (2%)	35 (8%)
Accelerated	3 (4%)	8 (8%)	1 (1%)	2 (2%)	14 (18%)	28 (6%)
Non-disclosure	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0%)
Total Companies	83 (100%)	102 (100%)	84 (100%)	93 (100%)	80 (100%)	442 (100%)

B. The Levels of Harmony
T1. 75% for the overall C-Index that is overall comparability that companies are weighted equally and exclude non-disclosure.
T2. 74% if companies are weighted equally, between countries and exclude non-disclosure.
T3. 74% (73-74%) if countries are weighted according to number of listed companies in each country, between countries and exclude non-disclosure. Furthermore, a range is provided to also analyse if non-disclosure is treated as comparable to nothing and comparable to everything (see later discussion in the Goodwill section).
T4. Not shown (see later discussion in the Fixed Assets and Inventory sections).

Table 3 (Panel A) shows that a significant majority of companies (86%) use the straight-line method whereas only six percent of overall companies use the accelerated method. Table 3 (Panel B) shows that the level of harmony of the depreciation policy is relatively high. The conventional C-Index (T1 set of assumptions) gives the level of harmony at 75 percent. Virtually the same score is noted (74%) when the T2 set of assumptions, companies weighted equally between countries, are used. This is because the same showed a very even distribution overall between companies using straight-line depreciation, except Malaysia. There are 82 percent, 85 percent, 82 percent and 80 percent of companies in Australia, Hong Kong, Indonesia and Singapore using straight-line depreciation respectively.

The T3 assumptions explores the weighting of the countries according to the number of listed companies in the region (see Appendix 1) and the changing effect regarding the interpretation of non-disclosure. The T-Index (using the T3 assumptions) is again 74 percent (73-74%). The lack of variance is due to the consistent treatment of depreciation across the countries and the virtual absence of non-disclosure. For example, of the overall 442 companies, there is only one company that does not disclose the specific depreciation method used.

The overall level of harmony is high with a median value of 74 percent. Users of financial statements are likely to find accounting for depreciation straightforward. The depreciation example shows that the various assumptions explored in the T-Index³ make little difference here. The scores are virtually identical. The high level of uniformity of accounting means the other methods, such as the C-Index, lead to proper conclusions. The following section highlights the problematic nature of non-disclosure of accounting policy choice using goodwill as an example.

Goodwill and the Treatment of Non-Disclosure

Purchased goodwill might be capitalised and carried in the balance sheet. In this case, goodwill should normally be written off within a maximum period of time. Another treatment of goodwill is immediate write-off. Goodwill might be immediately written off either against reserves or the profit and loss statement, thus avoiding amortisation. Based on stated accounting policies of the sample companies in the year of study, the policies regarding goodwill treatments are classified into five categories. These are:

- written off immediately to reserve in the balance sheet
- amortised for 20 years or more
- amortised for 10 to 19 years
- amortised for less than 10 years
- written off to income statement immediately.

Even though Table 4 (Panel A) shows that, overall, there is seemingly a fairly even split between companies amortising their goodwill (33%) and writing it off to reserve (27%), highly diverse goodwill treatment is being used across countries. Eighty percent of companies in Hong Kong⁴ are writing off their goodwill to reserve while none of the companies in Indonesia and Australia use that treatment. Overall, the level of harmony is low. It is calculated respectively at 34 percent (T1 assumptions), 25 percent (T2 assumptions) and 25 percent (T3 assumption excluding non-disclosing companies). These scores suggest that overall harmony is low, especially between countries, as companies in some countries tend to use 'immediate' write-off to balance sheet reserves whilst others tend to use 20-year amortisation.

Past indices, especially the H and I, tend to exclude non-disclosing companies from their calculations (with past C indices studies addressing the issue at times). The picture for goodwill harmony is, however, completely different when the assumption of non-disclosure is examined in more depth. The possibilities range from the:

- original assumption that non-disclosing companies should be excluded, resulting in a T-Index score of 25 percent
- assumption that non-disclosing companies are completely not comparable, resulting in a goodwill harmony score of nine percent
- assumption that non-disclosing companies are completely comparable, leading to a much higher harmony score of 71 percent.

There is, therefore, a wide range of harmony scores given different assumptions. Stakeholders may have vastly different assumptions about the comparability of companies with goodwill. Are the accounting treatments similar? Can the financial statement ratios provided useful comparisons?

Table 4: Goodwill Policies

A. Policy Choices						
Treatments	<i>Australia</i>	<i>Hong Kong</i>	<i>Indonesia</i>	<i>Malaysia</i>	<i>Singapore</i>	<i>Total</i>
Written off to reserve	0 (0%)	80 (78%)	0 (0%)	12 (13%)	25 (31%)	117(27%)
Amortise: ≥20 years	43 (52%)	3 (3%)	10 (12%)	24 (26%)	16 (20%)	96 (22%)
Amortise: 10-19 years	5 (6%)	2 (2%)	1 (1%)	5 (5%)	0 (0%)	13 (3%)
Amortise: < 10 years	7 (8%)	3 (3%)	5 (6%)	5 (5%)	17 (21%)	37(8%)
Written-off to P/L	0 (0%)	0 (0%)	1(1%)	3 (3%)	2 (3%)	6 (1%)
Non-disclosure	28 (34%)	14 (14%)	67 (80%)	44 (48%)	20 (25%)	173 (39%)
Total Companies	83 (100%)	102 (100%)	84 (100%)	93 (100%)	80 (100%)	442 100%)

B. The Levels of Harmony

T1. 34% for the overall C-Index. This is overall comparability that treats companies as weighted equally and excludes non-disclosure.

T2. 25% if companies are weighted equally, between countries and exclude non-disclosure.

T3. 25% (9-71%) if countries are weighted according to number of listed companies in each country, between countries and exclude non-disclosure. Furthermore, a range is provided to also analyse if non-disclosure is treated as comparable to nothing and comparable to everything.

T4. Score is not shown as the issue of non-disclosure dominates the harmony scores (see the later discussion of partial comparability in the Fixed Assets and Inventory sections).

The key issue highlighted in this analysis is how assumptions of non-disclosure can result in a vastly different range of harmony scores. The treatment of non-disclosure is clearly so crucial to the final level of harmony for goodwill that the main conclusion is arguably that stakeholders have very little idea about the true level of harmony.

Fixed Assets Valuations and Partial Comparability

Fixed assets valuation choices include historical cost valuation base and revaluation base. Based on the stated accounting policies of the reporting companies, however, many companies use a combination of those two valuation bases. Therefore, for the purposes of this study, the fixed assets valuation bases are classified into six categories that are:

- Cost, for companies that purely use historical cost.

- Mix1, for companies that use a combination between historical cost and revaluation base in which the revaluation is less than 33.33%.
- Mix2, for companies that use a combination between historical cost and revaluation base in which the revaluation is 33.34% to 66.76%.
- Mix3, for companies that use a combination between historical cost and revaluation base in which the revaluation is 66.77% to 99.9%.
- Mix4, for companies that use a combination between historical cost and revaluation base but they do not disclose the revaluation details.
- Revaluation, for companies that use purely revaluation on a periodic basis.

Table 5 (Panel A) shows that 442 companies disclose their policy of fixed assets valuations and only three companies use purely revaluation for their fixed assets. This table reveals that of all companies, more than half (55%) use historical cost valuation base for their fixed assets and 44 percent use mixed valuation, while only one percent of overall companies use the purely revaluation base.

Table 5: Fixed Assets Valuations

A. Policy Choices						
Valuations	<i>Australia</i>	<i>Hong Kong</i>	<i>Indonesia</i>	<i>Malaysia</i>	<i>Singapore</i>	<i>Total</i>
Cost	43 (52%)	53 (52%)	59 (70%)	36 (39%)	54 (68%)	245 (55%)
Mix1	23 (27%)	29 (28%)	0 (0%)	50 (54%)	19 (24%)	121 (27%)
Mix2	8 (10%)	9 (9%)	0 (0%)	7 (7%)	5 (6%)	29 (7%)
Mix3	9 (11%)	9 (9%)	0 (0%)	0 (0%)	2 (2%)	20 (5%)
Mix4	0 (0%)	0 (0%)	24 (29%)	0 (0%)	0 (0%)	24 (5%)
Revaluation	0 (0%)	2 (2%)	1 (1%)	0 (0%)	0 (0%)	3 (1%)
Total Companies	83 (100%)	102 (100%)	84 (100%)	93 (100%)	80 (100%)	442 (100%)
B. The Levels of Harmony						
T1. 39% for the overall C-Index which is overall comparability that companies are weighted equally and exclude non-disclosure.						
T2. 38% if companies are weighted equally, between countries and exclude non-disclosure.						
T3. 38% (38-38%) if countries are weighted according to number of listed companies in each country, between countries and exclude non-disclosure. Furthermore, a range is provided to also analyse if non-disclosure is treated as comparable to nothing and comparable to everything.						
T4. 76% (73-76%) if an alpha matrix measuring is added to provide further analysis of partial comparability and alternate weightings.						

Table 5 (Panel B) shows that the level of harmony of the fixed assets valuation is 38-39 percent based on the T1-T3 assumptions. All companies in the sample disclosed their asset valuation base policy, therefore non-disclosure is not an issue. These scores show a low level of harmony scores which generates concern about the comparability of data across companies and countries.

Three analyses of the level of harmony, ranging from a simplistic analysis using simple indices to a more sensible analysis only possible using the partial comparability of

the T-Index, will now be discussed. The story vividly changes when the issue of partial comparability of accounting policies is considered (T4 assumptions). The T-Index increases dramatically (to 76%) when the calculation considers partial comparability amongst the six choices.

The value of the T-Index is calculated using the six categories above (where the mixed method is subdivided into four methods) allowing for partial comparability between methods. This improves the value of the T-Index as a summary of the level of harmony because it allows us to take into account the fact that the accounts of two companies will be more comparable if they use a similar proportion of revaluation.

The key for understanding partial comparability is an extensive examination of the underlying assumptions. Past studies (the T1 and T2 panels) have always assumed 100 percent comparability within a classification (e.g., Mix1) and zero percent comparability across classifications (e.g., Mix1 to Mix2). This simplistic approach is arguably far too extreme and it is argued that comparability within a classification would often be less than 100 percent (especially when mixed methods are used) and comparability across classifications would rarely be as low as zero. The T4 assumption (using an alpha matrix) generates a harmony score that includes built-in partial comparability probabilities into the calculation of this index.

Appendix 2 explicitly shows the comparability assumptions (between and across classifications) for fixed asset valuations to derive the T4 index score. The two basic methods, historical cost and revaluation, are considered completely comparable with themselves and completely non-comparable with each other. These are the entries in the four corners of Appendix 2.

The other comparability values is calculated using the assumption that the proportion of revaluation used is randomly distributed within the range specified by the type of mixed method. It is also assumed that the items re-valued is random. Using this assumption, the comparability between the historical cost method and the Mix4 (unspecified method) is $1/2$ because, on average, it is expected that half the valuation in the Mix4 be performed using the historical cost method (comparability with historical cost equal to one) and half performed with revaluation (comparability with historical cost equal to zero). Indeed, it can be shown that if one company is using either the Mix2 or Mix4 method then, on average, half the valuation is performed with historical cost and half with revaluation and so the comparability with another company using any of the methods will be $1/2$.

The comparability between two companies using the Mix1 method is $25/36$ (the expected proportion where both companies use historical cost is $5/6$ times $5/6$) plus $1/36$ (the expected proportion where both companies use revaluation is $1/6$ times $1/6$) since the proportion where one company uses historical cost and one used revaluation contributes zero to the comparability. Similarly, the comparability between the Mix1 and Mix3 methods is $10/36$ (twice $1/6$ times $5/6$ since one company uses historical cost for an expected proportion of $1/6$ and the other for an expected proportion of $5/6$).

Several sensible trends are evident from Appendix 2. Firstly, while historical cost and revaluation have a comparability coefficient of zero to each other and one with themselves, the comparability between either of these methods and one of the other methods is only partially related. For example, Mix1, which is mainly historical cost but with up to 1/3 revaluation, is relatively more comparable with historical costs (coefficient: 5/6) than revaluation (coefficient: 1/6). Secondly, the comparability between any two companies using the same mixture method is less than one because these companies are generally not using these mixtures in the same way. Thirdly, while the comparability between two companies using different mixture methods is typically around 1/2 some of the mixtures do impart information concerning comparability through proportions of the mixture.

The use of a between country comparison with countries weighted according to number of listed companies and the partial comparability described by Appendix 2 (Panel A) gives a T-Index level of harmony of 76 percent (T4 assumptions). This is considerably higher than the value of 39 percent using the same options but not allowing for partial comparability. Thus, rather than incorrectly concluding that the level of harmony for fixed assets valuation is relatively low (39%), we find that the level of harmony is relatively high (76%). Furthermore, this high level of harmony holds for other options of company/country weightings and international focus. For example, if countries are weighted equally, instead of based on the number of listed companies, then the T4 index is 76 percent.

The relatively high level of harmony using the partial comparability values in Appendix 2 (Panel A) is not surprising as not allowing for partial comparability is equivalent to using an alpha table with values of one on the diagonal and values of zero off the diagonal. Appendix 2 (Panel A) data between two different methods generally gives comparability values substantially greater than zero. For example, it is believed that the comparability between the methods of historical cost and Mix4 should be about 1/2 rather than a score of zero that implies completely non-comparable accounts. The diagonal entries in Appendix 2 (Panel A), however, are also less than one because we do not believe that two companies both using one of the mixed methods (such as Mix4) should be considered completely comparable. This is because it is unlikely that they used the same mix of historical cost and revalue and even if they did this information is unlikely to be disclosed. Not only could the fraction of revaluation used by the two companies differ, but the types of assets re-valued could also differ. These lower values on the diagonal of Appendix 2 decrease the level of harmony summarised by the T-Index. It is argued that the T-Index provides better information by explicitly disclosing full and partial comparability scores.

Inventory Measurements and Issues of Partial Comparability and Non-Disclosure

Based on the stated accounting policies of the sampled companies, the applicable inventory measurement used include average method, First-In-First-Out (FIFO) and unit of production or output method. This study found, however, that many Asia-Pacific companies used a combination of two measurement methods for their inventory. For the

purpose of study, therefore, the policy choices of inventory methods are classified into five categories. These are:

- average
- average and other methods (combination of average method and other methods other than FIFO)
- average and FIFO (combination of average and FIFO),
- FIFO and other methods (combination of FIFO and other methods other than average)
- FIFO.

There are 40 companies that do not disclose their specific inventory measurement policy. Therefore, this example allows for the examination of non-disclosure and partial comparability.

Table 6: Inventory Measurements

A. Policy Choices						
Measurements	<i>Australia</i>	<i>Hong Kong</i>	<i>Indonesia</i>	<i>Malaysia</i>	<i>Singapore</i>	<i>Total</i>
FIFO	28 (34%)	44 (43%)	18 (22%)	37 (40%)	47 (59%)	174 (39%)
Mix1*	3 (4%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)	4 (1%)
Mix2**	7 (8%)	6 (6%)	23 (27%)	14 (15%)	6 (7%)	56 (13%)
Mix3***	2 (2%)	1 (1%)	5 (6%)	1 (1%)	0 (0%)	9 (2%)
Average	22 (27%)	36 (35%)	37 (44%)	41 (44%)	23 (29%)	159 (36%)
Non-disclosure	21 (25%)	15 (15%)	1 (1%)	0 (0%)	3 (4%)	40 (9%)
Total Companies	83 (100%)	102 (100%)	84 (100%)	93 (100%)	80 (100%)	442 (100%)
B. The Levels of Harmony						
T1. 36% for the overall C-Index that is overall comparability that companies are weighted equally and exclude non-disclosure.						
T2. 36% if companies are weighted equally between countries and exclude non-disclosure.						
T3. 37% (28%-52%) if countries are weighted according to number of listed companies in each country, between countries and exclude non-disclosure. Furthermore, a range is provided to also analyse if non-disclosure is treated as comparable to nothing and comparable to everything.						
T4. 48% (37-61%) alpha matrix scores are added to provide further analysis of partial comparability (the first score) and alternate assumptions of non-disclosure (the range of scores).						

Legend: Mix1*- combination of average method and other methods other than FIFO; Mix2** - combination of average and FIFO; and Mix3*** - combination of FIFO and other methods other than average.

Table 6 presents the distributions of inventory policies across countries (Panel A) and the level of harmony based on the six assumptions (Panel B). The table (Panel A) shows that average method is used by 36 percent of overall companies while FIFO is used by 39 percent of overall companies. It seems that these two methods have a balanced following. The companies that mixed methods usually used the combination between average method and FIFO. More companies in Indonesia (27%) use a combination

method of the average method and FIFO than in other countries. No companies in Hong Kong, Indonesia nor Malaysia use a combined method of FIFO and another method other than average method. The only country that has a majority of companies using FIFO is Singapore.

This pattern of accounting policy choices regarding inventory measurement in the five countries results in the level of harmony presented in Table 6 (Panel B). The T1 and T2 assumptions lead to the same 36 percent T-Index score. This reveals a low level of harmony of inventory policies. The implications are that users will find it difficult to make optimal economic decisions if they are given non-comparable data.

The treatment of non-disclosure is clearly important when quantifying the level of harmony because nine percent (40/442) of the companies did not disclose a method. The T3 first assumption of removal of non-disclosing companies again results in a 37 percent score. A wider range (28-52%) is revealed if non-disclosing companies are considered completely non-comparable or completely comparable respectively.

A partial comparability alpha matrix is presented in Appendix 2 (Panel B) for T4 assumptions. This matrix has two characteristics. First, the comparability of the accounts of two companies using the same mixed method is just 1/2 because they are only expected to share the same accounting procedure for approximately half of the inventory. Second, the comparability between a mixed method and FIFO (or average cost) is 1/2 when this mixed method consists of approximately one half FIFO (or average cost).

An additional issue is the combination effect of non-disclosure and partial comparability upon the T-Index scores. Table 6 shows this generates a T-Index score range of 37-61 percent. The combination effect of non-disclosure is clearly important when quantifying the level of harmony because nine percent of the companies did not disclose a method and most of these non-disclosing companies were in Australia with the highest company weighting based on the number of listed companies. Partial comparability suggests a higher level of harmony ($T=48\%$ ranging from 37% to 61% depending on treatment of non-disclosure). This higher range occurs because most (56/69 = 81%) of the companies using a mixed method use a mixture of FIFO and average cost, and it is not unreasonable that this should be partially comparable with either of these two methods and certainly more comparable than the method FIFO with the method average cost.

The analysis of inventory thus highlights the diversity of accounting choices. The T-Index scores are low using the basic T1 and T2 assumptions but rise when issues of non-disclosure and partial comparability are considered. This final example demonstrates the power of using a tool such as the T-Index and the importance of closely scrutinising the underlying assumptions of harmony scores.

Implications

Saudagaran and Diga (1998) suggest that regional accounting harmonisation is important since corporate information is an important component to maintaining regional competitiveness. The findings of this paper are that total comparability of accounting

practice is still a long way off in the Asia-Pacific region. Table 7 shows the varying degrees of harmony.

Table 7: Results Summary for Values of the Harmony Index T Varying Key Assumptions

Accounting policies	T1	T2	T3	T4
Depreciation	75%	74%	74% (73, 74%)	Not shown
Goodwill treatment	34%	25%	25% (9-71%)	Not shown
Fixed assets valuation	39%	38%	38% (38-38%)	6% (73-76%)
Inventory	36%	36%	37% (28-52%)	48% (37-61%)

Source: Original table. Note: T1 is the overall C-Index; T2 is the T-Index calculated if companies are weighted equally, between countries and exclude non-disclosure; T3 is if countries are weighted according to the number of listed companies in each country, between country and exclude non-disclosure. A range is also provided showing the T-Index with non-disclosure treated as comparable to nothing and everything. T4 uses an alpha matrix with alternate weightings and partial comparability between accounting policy choices. Note issues of non-disclosure, partial comparability and the interrelationship of the two are shown in goodwill, fixed assets and inventory respectively. In other words, this table demonstrates the power of the alpha matrix (T4 assumptions) to evolve more accurate harmony scores.

The main implications of the Table 7 results are that:

- Harmony of depreciation policies is far higher than the other three policies examined.
- Harmony scores for goodwill, fixed assets and inventory are below 40 percent, leading to concerns about the comparability of company data.
- These scores are virtually the same if non-disclosing companies are removed from the sample. However, the range of the scores can be very large when non-disclosed companies are included. In instances like goodwill disclosures, it may be impossible to generate one accurate score.
- Past indices assume 100 percent comparability within a classification and zero percent comparability across classifications. This study considers these to be heroic assumptions. Explicit consideration of partial comparability and disclosure of assumptions is recommended. Table 7 shows that different partial comparability assumptions can change harmony index scores and related conclusions of the likelihood of harmony.
- An examination of interrelationships between assumptions is recommended, such as the combination effect of non-disclosure and partial comparability.

- Support for use of harmony scores such as the T-Index is an explicit theme of this paper. Such indices allow for deeper analysis of comparability of accounting policy choices.

The disclosure of partial comparability scores is particularly important when there is a mixture of several differing accounting policies used, such as with fixed assets valuation and inventory policies in this paper. A simple analysis may place all companies using any sort of mixture into the same accounting policy choice for the purposes of calculating a harmony index. This is unreasonable because, first, not all companies will use the same mixture and therefore should not be considered completely comparable and, second, a company that primarily uses revaluation in a mixture should be highly comparable with a company that uses revaluation even though they are classified as using different accounting methods. While the precise value of the partial comparability values may be somewhat subjective, reasonable partial comparability values are likely to result in a superior harmony index rather than forcing the comparability between different methods to be zero or one.

Overall, the empirical findings show large levels of disharmony which is at odds with the global movement towards convergence of accounting standards and related company practices. The evidence in this Asia-Pacific study show that companies in these countries may be lagging behind international expectations. Therefore, the complete comparability of company financial data in the Asia-Pacific region remains problematic. Market inefficiencies are likely to result; the cost of capital for such companies may be too high and user decision-making will be less than optimal.

Further research is recommended on this topic. First, the cross-sectional nature of the evidence is a limitation. For instance, since this sample evidence was taken, major changes have occurred in the accounting for goodwill. The Hong Kong Government has since explicitly ruled out the immediate write-off of goodwill against reserves. Moreover, the worldwide movement towards use of the asset impairment for goodwill could result in vastly different levels of harmony. Second, the evolution of better databases in the Asia-Pacific region will better allow for an evaluation of harmonisation (over time). This could be especially interesting for jurisdictions such as Australia, the European Union and New Zealand, who have explicitly stated an intention to harmonise by 2005 or 2007. Third, other accounting policies such as foreign currency translation and financial instruments could also be examined to enrich the analysis.

Finally, an important aspect of this study is the additional analysis used for key assumptions. These issues are worthy of further exploration. How should companies/countries be weighted? What assumptions are most appropriate for non-disclosure? To what degree should partial comparability of issues both within and across classifications be considered? How should such scores be evolved? To what degree should the interaction of all such issues be addressed?

Overall, this study provides important insights into the lack of harmony of four key accounting policy choices in the Asia-Pacific region. It also provides deeper analysis, via the T-Index, of key assumptions. This further analysis shows the calculation of such

indices is complex and the level of harmony may well be situated in a far wider range reliant on the underlying assumptions made.

Appendix 1: Number of Listed Companies in Each Country

Country	Number of listed companies 31 December 2001
Australia	1,410
Hong Kong	746
Indonesia*	290
Malaysia	529
Singapore	386
Total	3,361

* Number of companies for Indonesian companies is based on 31 December 2000 figures

Source: Original table.

Appendix 2: Partial Comparability Alpha Metric

Panel A: Coefficients of the comparability for Fixed Assets Valuation						
Valuations	Cost	Mix 1	Mix2	Mix 3	Mix 4	Revaluation
Cost*	1	5/6	1/2	1/6	1/2	0
Mix 1*	5/6	26/36	1/2	10/36	1/2	1/6
Mix 2*	1/2	1/2	1/2	1/2	1/2	1/2
Mix 3*	1/6	10/36	1/2	26/36	1/2	5/6
Mix 4*	1/2	1/2	1/2	1/2	1/2	1/2
Revaluation	0	1/6	1/2	5/6	1/2	1

Panel B: Coefficients of the comparability for Inventory Policies					
Measurement	FIFO	Mix 1	Mix 2	Mix 3	Average
FIFO	1	0.5	0.5	0	0
Mix 1*)	0.5	0.5	0.5	0	0
Mix 2*)	0.5	0.5	0.5	0.5	0.5
Mix 3*)	0	0	0.5	0.5	0.5
Average	0	0	0.5	0.5	1

Source: Original table. Legend: * - refer to Table 5; *) - refer to Table 6.

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Notes

¹ This is the I-Index for two countries. Van der Tas (1988) suggested that it could also be applied to three or more countries. Taplin (2004) has highlighted the flaws in interpretability and simplicity in application of the I-Index for more than two countries.

² Morris and Parker (1998) modified the I-index with the assumption that non-disclosure was comparable.

³ The T4 set of assumptions relates to issues of partial comparability. These issues are discussed in the Fixed Assets and Inventory sections. The specific assumptions for depreciation are shown in Appendix 2. T4 scores for goodwill, although not shown, also result in a wide range of harmony scores.

⁴ It is important to note that Hong Kong Statements of Standard Accounting Practice (SSAP) 30: Business Combination that comes into effect on financial reporting for period starting 1 January 2001 no longer allows a such treatment.

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