

**A CROSS-COUNTRY STUDY ON THE QUALITY,  
ACCEPTABILITY, AND ENFORCEABILITY OF  
ACCOUNTING STANDARDS AND THE VALUE RELEVANCE  
OF ACCOUNTING EARNINGS**

Etty R. Wulandari  
Badan Pengawas Pasar Modal (BAPEPAM) or  
Indonesian Capital Market Supervisory Agency

and

Asheq R. Rahman  
Nanyang Business School  
Nanyang Technological University  
Singapore

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**Contact Authors:** Etty Wulandari, [etty@pmail.ntu.edu.sg](mailto:etty@pmail.ntu.edu.sg); [etty@bapepam.go.id](mailto:etty@bapepam.go.id); Asheq Rahman, Room B1B-62, NBS, NTU, Singapore 639798; [aarahman@ntu.edu.sg](mailto:aarahman@ntu.edu.sg).

**Notes:**

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## **1. Introduction**

International accounting organizations, such as the International Accounting Standards Board (IASB), the Financial Accounting Standards Board (FASB) and the Federation des Experts Comptables Europeens (FEE), have called for more value relevant accounting standards to improve the quality of accounting information and to promote convergence towards global accounting standards (FEE, 2000; GAAP, 2000; 2001). These institutions expect that value relevant, harmonious accounting standards will help create a credible common accounting framework for a globalized capital market.

However, value relevant, harmonious accounting standards alone are not sufficient to improve the financial reporting environment. Accounting standards should be of good quality, and be acceptable and enforceable. We demonstrate that these qualities would have a direct effect on the value relevance of accounting earnings and complement each other in enhancing the value relevance of earnings. Therefore, the purpose of this study is to examine the effects of the three regulatory arrangements (accounting standards quality, acceptability of accounting standards and enforceability of accounting standards) and the overall accounting regulatory environment (a combination of the three parameters) on the value relevance of earnings.

We examine value relevance at the country level using firm level data (24,462 firm-years for the period 1996-2001) from thirty-five countries covering Africa, Asia, Australasia, Europe and North America. Our results provide support for the value relevance of quality of accounting standards, acceptability of the standards and punitive enforcement of the standards. We also find that the composite variable, accounting regulatory environment, is associated with value relevance of accounting earnings. The accounting regulatory environment also has stronger positive association with the value relevance of accounting earnings than the legal environment has. This, we argue, is due to the proximity of the accounting regulatory infrastructure to the financial statement preparation process.

We also find that the association between accounting regulatory environment and the value relevance of accounting earnings is stronger for code law and emerging market countries than for common law developed countries. This suggests that improvement of the accounting regulatory environment will be more beneficial in code law and emerging market countries.

The remainder of the paper is organized as follows. Section 2 provides a background on the value relevance of accounting standards quality, acceptability and enforceability, and describes hypotheses development. Section 3 discusses the research method. Section 4 describes and analyzes the results. Section 5 concludes the paper.

## **2. Hypotheses Development**

### **2.1. Quality of Accounting Standards**

Accounting standards are important regulatory devices of accounting. They serve as a template contract among parties who participate in a firm, such as management, creditors, and shareholders (Sunder, 2002). Financial reporting standards provide guidance on how accounting information should be recorded, reported, and interpreted. Differences in quality of accounting standards, specifically, play a role in differences in value relevance of accounting numbers (Graham and King, 2000; Babalyan, 2001; Bartov, Goldberg, and Kim, 2002). Accounting standards determine how the accounting earnings information should be calculated and reported. High quality of standards influences the users' perception of quality of financial information. A better perception of the standards would lead to the standards being used creating accounting information that are more readily used by the information users that eventually enhance the value relevance of accounting information. High quality accounting standards are perceived to provide consistent, comparable, relevant and reliable financial information to the investors for making informed investment decisions.

To assess the quality of the accounting standards, SEC (2000) emphasizes that the accounting standards must result in a consistent application, provide for transparency and full disclosure<sup>1</sup>. The aim is that the standards produce relevant and reliable information that is useful for investors to make well-informed decisions. Accounting standards that fulfill such quality measures create high quality accounting information, specifically information regarding firms' earnings. Ball et al. (2000a) provide evidence that accounting earnings in enhanced common-law accounting standards countries are substantially more timely and conservative than code law countries', particularly in incorporating losses. Ashbaugh and Pincus (2001) demonstrate that differences in countries' accounting standards relative to IAS and earning forecast errors of analysts are positively related. This means that the smaller the difference of national accounting standards with IAS, the smaller the earnings forecast errors. Additionally, they also found improvement in analyst forecast accuracy after firms adopt IAS. This suggests that firms' financial accounting information become more predictable following adoption of IAS. In general, both studies provide evidence that accounting standards directly contribute to the computation and quality of earnings.

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<sup>1</sup> SEC in "SEC Concept Release: International Accounting Standards" (2000) discusses a number of issues related to the infrastructure for high quality financial reporting.

Graham and King (2000) found that differences in accounting procedures, namely accounting for goodwill, asset revaluations, leases, research and development expenditures, and equity method of accounting for affiliated companies, are related to differences in value relevance of earnings. In single country studies, the evidence from German (Bartov et al., 2002) and Swiss companies (Babalyan, 2001) show that accounting earnings prepared under US GAAP demonstrate greater value relevance than earnings prepared under either IAS or German or Swiss accounting standards. The results imply that US GAAP has higher quality compared to IASs, German or Swiss accounting standards. Leuz (2003), holding other institutional factors such as listing requirements and enforcement of accounting standards constant, suggests that US GAAP and IASs reduce information asymmetry in capital markets. In brief, the above studies show that quality of accounting standards affect investors' perception regarding quality of financial reporting, especially earnings information.

One common ground from the above arguments is that high quality accounting standards reduce analyst forecast errors and information asymmetry between preparers and users of financial reports. Better quality financial information, as a result, will mitigate the agency problem between contracting parties. The above arguments lead to the following hypothesis, which is an extension of the extant studies to a cross-country setting using country-level data.

H1: The value relevance of accounting earnings is positively associated with the quality of accounting standards.

## **2.2. Acceptability of Accounting Standards**

There are several factors beyond accounting standards that contribute to the credibility of financial reports (Dyckman, 1988). One important factor is how the accounting standards are set. Solomon (1986) highlighted the importance of acceptability of the accounting standards as a way to achieve the purpose of comparability and preserving the credibility of financial reports. Greater approval from the financial community is necessary for accounting standards to allow proper implementation (Horngren, 1973). Specifically, Gerboth (1973) argued that *'.., the fundamental concern of accounting inquiry can no longer be with the verity of the accounting rules that result from a decision-making process; it most rather be with the acceptability of the process itself'* (p.479).

Openness of the standard setting process is instrumental to the enhancement of the acceptability of the standard (Zeff, 1988; Rahman, 1991). Openness of standard setting is synonymous to the notion of "due process" in lawmaking (Zeff, 1988). In the 'due process' of setting accounting standards, ideas from interested parties are openly sought not only during new standards agenda

building but also at the final stage through public hearing of the standards (Rahman, 1991). An extensive user participation in accounting standard setting increases the public support for the standards and it can lead to improvement in the credibility of the financial statements prepared based on the standards.

Ali and Hwang (2000) and Ball et al. (2000a) provide evidence that heavy involvement of private sector bodies in the standard setting process relates to higher value relevance of accounting earnings. Private sector standard setting bodies are more likely to address the needs of investors than to satisfy the government needs; therefore, such standards are more acceptable by the users of financial reports and make them more value relevant. Therefore, it is posited that:

H2: The value relevance of accounting earnings is positively associated with the acceptability of accounting standards.

### **2.3. The Enforcement Mechanism for Accounting Standards**

To improve comparability of financial accounting information and to boost the quality of financial reporting worldwide through harmonization of accounting standard, the FASB and IASB have agreed to develop high quality, compatible accounting standards for both domestic and cross-border financial reporting (Street, 2002a). These well-respected accounting standard setters have put high priority to remove differences between IAS and US GAAP. The convergence of global accounting standards, however, does not guarantee the convergence of accounting practice. Chen et al. (2002) showed that harmonization of accounting standards with IAS in China was not sufficient to harmonize accounting practice. They indicate the lack of effective financial reporting infrastructure as a main contributor for the earnings gap between Chinese GAAP and IAS.

Kothari (2000), Ball (2001), and Benston (2003) have argued that accounting standards on their own are ineffective mechanism of regulation. They argue that infrastructural arrangements for implementing and enforcing standards are also important in giving accounting standards the capability to make accounting information relevant for capital markets. High quality financial reporting regulatory infrastructure, according to these recent studies, will make investors perceive financial reports as truthfully reflecting the firm's fundamentals. The perception of truthful reporting, according to these authors, will increase the value relevance of financial accounting information of the companies of that country.

Hope (2003) demonstrates that higher forecast accuracy is related to strong enforcement of accounting and related rules. He suggests that enforcement encourages managers to follow prescribed accounting rules, thereby reduces analysts' uncertainty about future earnings.

Saudagaran and Diga (2000) classified enforcement mechanism into preventive and punitive enforcement mechanisms and defined them as ex-ante and ex-post enforcement methods. Realizing that for enforcement action to take place requires mechanisms of enforcement of standards, we define preventive arrangements as mechanisms that encourage and facilitate compliance, and punitive arrangements as mechanisms that force compliance or lead to penalties for non-compliance. In this regard, preventive methods relate to regulations concerning the authorities, responsibilities, and activities of the auditor and supervisory body to prevent unlawful accounting activities in the capital markets and provide favorable conditions to create high quality financial reporting. Punitive methods relate to the mechanisms for enforcing the standards and enforcement actions taken by the professional accounting body and supervisory body against the management of the company, the company itself and its auditors for not complying with the accounting standards or related rules.

Numerous studies provide evidence regarding the importance of preventive accounting rules for the credibility of accounting information. These studies examine preventive arrangements such as the role of auditor and audit committee. Choi and Jeter (1992) provide evidence of the significant decline in the market's responsiveness to earnings announcement after the issuance of qualified audit reports. Klein (2002) shows the effect of independence of audit committee members on earnings management. The evidence indicates the negative association between abnormal accrual (proxy for earnings management) and the percent of outside directors on the audit committee. Chen et al. (2002) contended that weak enforcement of accounting standards as manifested in the quality of audit and professional requirements for auditors lead to low quality accounting practice regardless of the quality of the standards. Sivakumar and Waymire (2003) provide evidence that enforceable accounting rules lower income smoothness and increased conservatism. The rules they investigated were preventive in nature and were intended to protect investors. Thus, preventive regulations can enhance the relevance and reliability of accounting information and thereby improve the credibility of accounting information. Therefore, it is hypothesized that:

H3a: The value relevance of accounting earnings is positively associated with effective preventive enforcement mechanisms for accounting standards.

Prior studies also provide evidence that punitive enforcement of accounting regulation have significant impact on the credibility of financial accounting information. Feroz et al. (1991) examined the impact of US SEC enforcement actions on companies and found that the market reacts negatively to the investigation news even when there was prior public disclosure of the violation. This is due to changed expectations of targets' future earnings as mirrored in financial analysts' reduced earnings estimated after the disclosure. Nourayi (1994) demonstrated that the stock price response to litigation releases is directly associated with the severity of the enforcement actions. The negative equity price response may be due to a signaling effect of future legal costs of litigation.

Threat of an investigation represents a viable sanction that can make companies and auditors maintain the credibility of financial statements (Rollins and Bremser, 1997). Thus, effective punitive enforcement will increase the confidence of investors on the credibility of financial reports since any violation of standards would be punished accordingly. Punitive enforcement also mitigates the agency problem between preparers and users of accounting information by reducing the uncertainty in the implementation of accounting-based agency contract. Therefore, it is hypothesized that:

H3b: The value relevance of accounting earnings is positively associated with effective punitive enforcement mechanism for accounting standards.

#### **2.4. Accounting Regulatory Environment**

In order to have a sound financial system, high quality generally acceptable accounting standards and effective enforcement mechanism have to be present concurrently (Kothari, 2000; Ball, 2001; Benston et al, 2003). High quality accounting standards with widely acceptance and effective enforcement mechanism are necessary to create a conducive environment for investors to make well-informed decisions (World Bank, 2000; ADB, 2001; FEE, 2000; 2001). Acceptability and enforceability of accounting standards are important for compliance of standards (Zeff, 1988). Kothari (2000) and Rahman (2000) argued that the quality of accounting information is a function of both the quality of accounting standards and the enforcement of those standards. Benston et al. (2003) regarded accounting standards and the mechanism to implement and enforce the standards as components of an accounting regulatory environment.

Zeff (1995) suggests collaboration between a private-sector standard setting body and a government regulatory body within a regulatory system for financial reporting. Ball (2001) argues that an economically efficient system of public financial reporting requires many institutional features, namely professional and independent auditors, an independent standard

setting body, and an effective and an independent regulatory enforcement body. These features collectively resolve information asymmetry problems between the users and preparers of financial statements. In other words, such features contribute to the quality, acceptability and enforcement of the accounting standards (SEC, 2000). Eventually, the effectiveness of the accounting environment is derived from the effective contribution of these infrastructural elements (Figure 1).

In a country with a high quality accounting regulatory environment, the investors who evaluate financial reports of firms from that country will perceive the reports as truly reflecting the firm's fundamental conditions and this will be reflected in the equity prices. Therefore, it is posited that:

H4: The value relevance of accounting earnings is positively associated with the quality of accounting regulatory environment.

## **2.5. Accounting Regulatory Environment and Legal Environment**

La Porta et al. (1997; 1998) contended that the legal rules and enforcement vary systematically by legal origins: English (common law), French, German, or Scandinavian (all are code laws). The common law tradition tends to protect investors more than code law. According to La Porta et al. (1998), law enforcement plays a significant role in influencing the ability of firms to raise external finance.

Recent empirical studies in accounting have employed La Porta's legal framework to examine the impact of the legal environment on the properties and quality of financial reporting (Ball et al., 2000a; 2000b; Jaggi and Low, 2000; Hung, 2001; Hope, 2003). Some of them, particularly, employ legal system dichotomy, code law versus common law, to examine the association of legal systems with financial disclosure, return-earnings relations, and economic activities (Ball et al., 2000a; 2000b; Jaggi and Low, 2000; Guenther and Young, 2000). Most of them confirm the usefulness of such legal frameworks in explaining the phenomena they examined. However, Ball et al. (2000b) found irregularities with respect to four Asian common law countries. Accounting in these countries, they found, resembled code law countries.

More recent papers focus on the enforcement aspect of the rules (Klapper and Love, 2002; Hope, 2003; Leuz et al., 2003). These studies employ La Porta's broad measures of legal enforcement, such as efficiency of the judicial system, rule of law, corruption, risk of expropriation, likelihood of contract repudiation by the government and CIFAR index of



accounting disclosure. They provide evidence regarding the important role of legal enforcement on forecast accuracy and earnings management (Hope, 2003; Leuz et al., 2003).

In comparison to the legal environment, the accounting regulatory environment directly deals with the quality of financial accounting information. Accounting regulatory environment consist of quality, acceptability, and enforceability of accounting standards. Quality of accounting standards mirrors the quality of published information. Openness of standard setting process and involvement of stakeholders in the process leads to the wide acceptance of the standards. Enforceability of standards ensures proper implementation of the standards. Thus, high quality generally accepted accounting standards that are properly implemented will results in high quality accounting information. Given the closeness of accounting regulatory infrastructure with the quality of accounting information, it is likely, that a good accounting regulatory environment would have more direct influence on the relevance of country information than legal environment would. Therefore, it is hypothesized that:

H5: Accounting regulatory environment has a stronger positive association with the value relevance of accounting earnings than legal environment has.

### **3. Research Method**

#### **3.1. Independent Variables Measurement**

##### **3.1.1. Accounting Standards**

Since this is a cross-country study, the quality of accounting standards of a country is assessed through a comparison of the quality of accounting standards across different countries. GAAP 2000 and GAAP 2001 and other studies (Street, 2000b; Schipper, 2000; Ashbaugh and Pincus, 2001; Chen et al, 2002; Garrido, et al., 2002) suggest that International Accounting Standards (IAS) are good benchmarks for this comparison. IASs/International Financial Reporting Standards (IFRS) are a set of accounting standards promulgated by International Accounting Standards Committee/International Accounting Standards Board<sup>2</sup>. The IASB *Framework for the Preparation and Presentation of Financial Statements* sets out the concepts that underlie the preparation and presentation of financial statements for external users. The focus of the IASB standards is convergence of worldwide accounting practices. IOSCO (International Organization of Securities Commissions), the European Commission and International Forum on

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<sup>2</sup> Effective 1 April 2001, the IASB assumed accounting standard setting responsibilities from its predecessor body, the IASC. Standards issued by the IASC carry the global name: IAS, while the product of IASB is referred to as IFRS. Since we use the standards in 2000 & 2001, the standards are referred to as IASs.

Accountancy Development (IFAD) are promoting the use of IASs as a single set of global accounting standards that the investors can trust and issuers can use to conduct cross-border trading in securities (FEE, 2000). A common worldwide approach increases comparability and transparency of accounting information across national borders.

We use GAAP 2000 and GAAP 2001 to prepare an index of quality of accounting standards. GAAP 2000 and GAAP 2001 contain summary comparisons of national accounting standards with IASs, therefore, it allows for easy comparison against a single benchmark of accounting standards. GAAP 2000 and 2001 are surveys based on the responses of partners of the seven largest accounting firms in 53 and 62 countries, respectively. They cover standards in force for the financial reporting period ending December 31, 2000, and December 31, 2001. These partners' made an assessment of how local accounting standards in their countries compared with IAS on approximately 60 and 80 key accounting measures in GAAP 2000 and GAAP 2001, respectively.

### **3.1.2. Acceptability and Enforceability of Accounting Standards**

We develop three indexes to measure how accounting regulation is adopted and enforced in a country. The first index related to the process of adoption of accounting standards (ACCEPT) consists of five items. The second and third indexes measured the preventive (PRE\_ENF) and punitive enforcement (PUN\_ENF) arrangements for accounting standards consist of 16 and 12 items, respectively<sup>3</sup>. The main sources for the items for these indexes was an index of enforcement methods developed by Saudagaran and Diga (2000), elements of financial reporting structure as described by SEC (2000), assessment of accounting standard setting and enforcement mechanism in Europe (FEE, 2000; 2001), and a questionnaire for assessing accounting and auditing environment from World Bank (2000)<sup>4</sup>.

We used a binary measure to identify the existence of each of the 33 arrangements of the indexes in a country (see Table 1). If an arrangement existed in a country, a "1" was assigned to the arrangement for that country, otherwise a "0" was assigned. The scores for all arrangements in an index were then added to determine the level of acceptability and enforceability of accounting standards in that country.

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<sup>3</sup> The Cronbach Alpha of all the items of the three indexes was 0.55. It is acceptable as the items are binary and broad measures of the identified indicators of acceptability and enforcement of accounting standards.

<sup>4</sup> This questionnaire is a diagnostic tool to support the review of observance with accounting and auditing standards in a number of countries, which is part of the Reports on the Observance of Standards and Codes (ROSC). The review assesses the comparability of national accounting and auditing standards with IAS and International Standards on Auditing (ISA), respectively; and the degree to which corporate entities adhere to the extant accounting and auditing standards in the country. ([http://www.worldbank.org/ifa/rosca\\_aa.html](http://www.worldbank.org/ifa/rosca_aa.html))

To operationalize the indexes, this study obtained support from three Big-4 accounting firms, PricewaterhouseCoopers, Ernst and Young and Deloitte Touche Tohmatsu. These accounting firms distributed the indexes to their network firms around the world to obtain a first-hand assessment of accounting enforcement in the sample countries. The response received from these firms was used as a starting point for developing the indexes. The data received for the indexes were further checked with published information. Such published information included assessment of accounting enforcement performed by FEE, World Bank, ADB and websites of a country's accounting and auditing standard setters, professional accounting bodies, supervisory body, and the stock exchange. Where possible, research journals and contacts with the source firms were employed to refine the information.

(Place Table 1 here)

### **3.1.3. Accounting Regulatory Environment (ARE)**

The measures of quality (STD\_QUAL), acceptability (ACCEPT) and enforceability (PRE\_ENF and PUN\_ENF) were factorized into a single composite variable called accounting regulatory environment (ARE).

### **3.1.4. Control Variables**

In addition to accounting standards quality, acceptability, and enforceability of standards, there are many aspects of the capital market that influence the valuation of firms by investors. We use a control variable to control for such omitted variables. One variable, classification of country as a developed or emerging market country, is used to control for omitted variables at the country level.

The classification of a country as a developed or emerging market country reflects the country's level of economic development. The classification is based on whether the country's average Gross National Income (GNP) per capita in year 2000 and 2001 is above or below the World Bank's threshold for "high income countries" (US\$ 9,206 in 2001) <sup>5</sup>. Prior studies employing similar market classification explain that the level of national income allow countries to afford the establishment and enforcement of extensive disclosure regulation (Salter, 1998). La Porta et al. (2000) support this argument and demonstrate that the quality of legal enforcement is higher in more developed countries. This suggests that more developed countries tend to have higher quality enforcement of laws, which could make financial reporting more credible and reliable (Hope, 2003).

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<sup>5</sup> Based on "2002 and 2003 World Development Indicators".

### **3.2. Measurement of Dependent Variable**

We employ the hedge-portfolio return approach to measure the value relevance of earnings. This method is based on the approach used by Alford et al (1993), Francis and Schipper (1999), Ali and Hwang (2000), and Hung (2001). This approach measures the value relevance as the total return that could be earned from a portfolio based on perfect foresight of earnings. Following Alford et al. (1993), Francis and Schipper (1999), Ali and Hwang (2000) and Hung (2001), the procedure to calculate value relevance is as follow: First, companies are ranked each year in each country sample based on change in earnings and market adjusted return (*AdjRet*). The earnings (NI) are the reported earnings before extraordinary items deflated by the beginning-of-year market value. Next, the market adjusted return is computed for earnings portfolio and *AdjRet* portfolio. Market-adjusted return refers to the stock return for the period spanning 9 months before the fiscal year-end of the company and 3 months after minus the return on the equally weighted market portfolio in the company's country. Earnings portfolio refers to the equally weighted hedge portfolio formed on the basis of change in earnings that is long positions in stocks with the highest of 40% of earnings changes in the given country sample, and short positions in the lowest 40% of each year. *AdjRet* portfolio refers to the equally weighted hedge portfolio formed on the basis of *AdjRet* that is long positions in stocks with the highest of 40% of earnings changes in the given country sample, and short positions in the lowest 40%. Finally, value relevance of earnings is measured as the market-adjusted return for the earnings portfolio scaled by the market-adjusted return for the *AdjRet* portfolio. In other words, the value relevance of earnings measures the proportion of earnings information impounded in the stock price.

### **3.3. Sample Selection**

Similar to Alford et al. (1993), Ali and Hwang (2000), and Hung (2001), we examine value relevance at the country level using firm level data. Our initial country sample comprised of 52 countries surveyed in GAAP 2000. These 52 countries were also surveyed in GAAP 2001.

The total number of responses received from three Big-4 accounting firms' network was 51 from 34 countries, which means some countries had more than one response. We included 9 more countries from the GAAP 2000 countries to increase the sample size. We conducted this by assessing the acceptability and enforcement mechanisms of accounting standards in those countries using published information.

Therefore, the sample was selected as follows:

Number of country in GAAP 2000	= <u>52 countries</u>
Number of responses from 3 Big-4 accounting firms (51 responses)	= 34 countries
Add: Assessment of the acceptability and enforceability index	= <u>9 countries</u>
Total number of countries identified	43 countries
Less: Country with small number of companies in Global Vantage	= <u>8 countries</u>
Total number of sample country	= <u>35 countries</u>

We obtained the earnings and returns data for value relevance from Global Vantage. The period covered was 1996-2001. Observations after 2001 were not available at the time of this study. Observations before 1996 were too remote from the average score of GAAP for 2000 and 2001 and the enforcement scores that were representative of the enforcement conditions around 2000 and 2001. Although most recent data would be more applicable to the period for which GAAP and enforcement data were used, use of about six years data was necessary to reduce the biases pertaining to each year.

## 4. Empirical Results

### 4.1. Descriptive Statistics

Table 2 provides statistics for quality of accounting standards, acceptability and enforcement of accounting standards, legal system and classification of countries as developed or emerging market. It shows the ranks for the main variables, namely STD\_QUAL, ACCEPT, PRE\_ENF, PUN\_ENF, ARE, LEGALSYS, and D\_DEV. For accounting standards, the highest rank of 35 is attained by South Africa. It is followed by Mexico and Ireland. This indicates that these three countries have the highest quality accounting standards relative to the IAS. The bottom three countries, relative to the IAS, are Switzerland, Poland and Greece.

There are ten countries that share the highest rank (30.5) for ACCEPT. These include the US, the UK, and Australia. The lowest rank of 1.5 is shared by Austria and Poland. For PRE\_ENF, eleven countries, namely the US, the UK, Hong Kong and Singapore scored the highest (30) and Philippines the lowest (1). For PUN\_ENF, the USA, Australia, and Thailand shared the first position, while Austria was at the bottom of the table with the last position. Finally, for ARE the highest rank is obtained by the US, followed by the UK and Australia. Austria has the lowest rank for ARE, followed by Greece and Portugal. A high ARE means that overall the quality of a country's accounting regulatory environment is more effective than the ones with low ARE. It is noteworthy that most countries that have low ranks for ARE are code law countries; suggesting that code law countries have weak accounting regulatory environments.

(Place Table 2 here)

Table 2 also provides the value relevance of earnings (VAL\_NI) measures for the sample countries during the period 1996 to 2001. New Zealand had the highest value relevance (60%) and Poland the least (-8.3%).

#### **4.2. Bivariate correlations**

Table 5 provides the bivariate Pearson and Spearman correlation coefficients for the dependent and independent variables. The results provide a strong support for hypotheses 1, 2, 3b and 4, that value relevance of earnings is positively associated with the quality and acceptability of accounting standards and effective punitive enforcement mechanism for accounting standards as well as with accounting regulatory environment. Table 5 also shows strong positive correlation between components of ARE (STD\_QUAL, ACCEPT, PRE\_ENF, and PUN\_ENF) and ARE. This signifies that these components of ARE are well represented by ARE.

Other noticeable correlations are those between STD\_QUAL and PUN\_ENF. It suggests that countries with good quality accounting standards generally tend to have better levels of punitive enforcement.

(Place Table 3 here)

#### **4.3. Multivariate Test Results**

Table 4 provides the ordinary least square (OLS) regression results for the hypotheses formulated earlier. The following subsections discuss the regression results for each hypothesis.

(Place Table 4 here)

Model 1 demonstrates that STD\_QUAL is significantly and positively associated with the VAL\_NI and D\_DEV as the controlling variable ( $p < 0.01$ ), which support Hypothesis 1. This is in line with the argument that high quality accounting standards provide better protection to investors by providing tools to analyze firm performance as well as providing reliable financial information. This, in turn, minimizes the potential agency conflict between management and investors. The results in fact support and elaborate the findings of prior single country studies (Babalyan, 2001; Bartov et al., 2002) in a cross-country context.

Model 2 provides results for Hypothesis 2. The results show that, consistent with the bivariate correlation results, ACCEPT is positively associated with VAL\_NI ( $p < 0.05$ ). Controlling for level of economic development, the results provide evidence for the argument that value relevance of earnings is positively associated with the acceptability of accounting standards. In

addition, by comparing the  $R^2$ s of Model 2 (adjusted  $R^2 = 0.350$ ) with Model 1 (adjusted  $R^2 = 0.247$ ), we construe that the acceptability of accounting standards do enhance the value relevance of accounting earnings. To further examine whether the model including ACCEPT (Model 2) is better than the model without ACCEPT (Model 1), we employ a partial F test (Neter et al., 1996). The results provide evidence that the model with ACCEPT is the more robust of the two models ( $p < 0.05$ ). This means that the market perceives that strong acceptance of accounting standards leads to better financial reports, i.e., the financial reports better reflect the economic conditions of the firm. The results also suggest that a wider acceptance of standards results in more credible accounting standard, that in turn leads to more reliable and relevant financial accounting information.

Model 3a provides evidence for testing Hypothesis 3a. Consistent with the bivariate correlation, the regression results show that PRE\_ENF was not significantly related to the VAL\_NI. In addition, a partial F test was conducted to investigate whether the model including PRE\_ENF (Model 3a) is better than the model without PRE\_ENF (Model 2) (Neter et al., 1996). By comparing the  $R^2$ s of Model 3a (adjusted  $R^2 = 0.351$ ) with Model 2 (adjusted  $R^2 = 0.350$ ), the results reveal that there was no sufficient evidence that model with PRE\_ENF (Model 3a) is better than model without PRE\_ENF (Model 2).

Overall, the findings did not support Hypothesis 3a, i.e., the hypothesis that the value relevance of earnings is positively related to preventive enforcement mechanism for accounting standards. Most of the preventive rules, such as requirement for audit fee, mandatory rotation of auditors, resulted from piecemeal reactions to certain conditions by professional and supervisory bodies. Implementation of such requirements, without considering the existing regulatory arrangements, may not lead to a quality regulatory arrangement. Consequently, such preventive rules do not improve the value relevance of accounting information.

Model 3b presents OLS results for Hypothesis 3b. The regression shows that VAL\_NI is significantly and positively associated with PUN\_ENF ( $p < 0.05$ ), consistent with the bivariate correlation result. To further investigate whether or not punitive arrangements enhance the value relevance of earnings, we perform a partial F test. The model having PUN\_ENF (Model 3b) was compared to the model without PUN\_ENF (Model 3a). The results show that the model with PUN\_ENF (Model 3b) is the more robust of the two models ( $p < 0.05$ ). Overall, the findings support the Hypothesis 3b that the value relevance of earnings is positively associated with effective punitive enforcement mechanisms for accounting standards.

The findings highlight the importance of punitive enforcement of accounting standards. In this regard, a focus on the real enforcement actions is considered to have greater influence on the investors' perception regarding the credibility of accounting information than just implementing more preventive accounting measures.

In Table 4 Model 4, ARE is regressed against VAL\_NI; and the results show that its coefficient is positive and significant ( $p < 0.01$ ). The result is consistent with the positive and significant bivariate correlation coefficients. Thus, the results provide strong support for Hypothesis 4, i.e., the argument that the value relevance of accounting earnings is positively associated with the overall accounting regulatory environment variable. This suggests that high quality and acceptability of accounting standards, and effective enforcement mechanism complement each other in enhancing the value relevance of accounting earnings.

Table 4 Model 5a and 5b show the results for testing Hypothesis 5. Model 5a reveals that the coefficient of ARE is positive and significant ( $p < 0.01$ ), while coefficient of LEGALSYS is also positive but not significant. This suggests that ARE has stronger positive relation to the VAL\_NI compared to measure of LEGALSYS has to VAL\_NI, which support Hypothesis 5. Comparing Model 5a and Model 4 and use the partial F test to investigate also confirms that there is no sufficient evidence that Model 5a is better than Model 4 (Neter et al., 1996).

Realizing that there is colinearity between ARE and LEGALSYS ( $p < 0.01$ ; see Table 3), additional tests were conducted to examine whether LEGALSYS itself has a positive and significant association with VAL\_NI, as suggested by prior literature (Ball et al., 2000a; 2000b; Jaggi and Low, 2000; Hung, 2001) (Model 5b, Table). As expected and akin to prior studies, LEGALSYS has a significant influence ( $p < 0.01$ ) on VAL\_NI that is consistent with bivariate correlation results. Particularly, common law countries have higher value relevance of earnings than code law countries.

However, by comparing Model 5b with Model 4, the regression between ARE and VAL\_NI, we find that ARE plays a more significant role than LEGALSYS in positively influencing VAL\_NI. The regression model with ARE has a higher adjusted  $R^2$  (0.367) compared to the model with LEGALSYS ( $R^2 = 0.218$ ), and the significance level of ARE (0.000) is better than LEGALSYS (0.009). A partial F test conducted on the statistics of the regressions validated that Model 5a was stronger than Model 5b. However, the strong regression result for LEGALSYS ( $p < 0.01$ ) suggests that it is also a strong determinants of VAL\_NI, albeit an indirect one.

LEGALSYS represents the origin of the law in a country (La Porta et al., 1997, 1998), while ARE reflects the financial reporting infrastructure in a country. It evolves gradually to adjust to



different changes in business climate and financial reporting environment. Therefore, the measure of ARE better reflects the environment of accounting information preparation than LEGALSYS. Consequently, it is not surprising that ARE has stronger impact on the properties of financial information.<sup>6</sup>

In brief, our results suggest that a country with better accounting regulatory environment has accounting information that better mitigates the information asymmetry problem.

#### **4.4. Sensitivity Analyses**

##### **4.4.1. Factor Analysis of Acceptability and Enforceability of Accounting Standards**

A factor analysis was conducted to form a better understanding of how the 33 items of the acceptability and enforceability indexes differentiated the 35 sample countries. The strongest factor that dealt with openness of accounting standard setting and enforcement arrangements was found to be closely associated with value relevance of earning. Open standard setting and enforcement processes are important ingredients of an effective accounting regulatory environment (Zeff, 2002; Rahman, 1991).

##### **4.4.2. Analyses by Country Subsamples**

We further investigated the relation between VAL\_NI and ARE by country sub-samples (Table 5). First, we differentiated between code law and common law countries. We found that for code law countries ARE was significantly positively associated with VAL\_NI. However, the same association was not significant for common law countries.

Second, we divide the sample countries into emerging market and developed countries. The results show that ARE in emerging market countries is more positively associated with VAL\_NI than in developed countries.

Third, we divide the sample into code law and emerging common law countries, and developed common law countries. The results show that, ARE is significantly and positively associated with VAL\_NI in code law and emerging common law countries, while ARE is not significantly related to VAL\_NI in developed common law countries.

(Place Table 5 here)

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<sup>6</sup> Klapper and Love (2002), Hope (2003) and Leuz et al (2003) employ legal enforcement proxies taken from LaPorta et al. (1997; 1998) to investigate the impact of legal environment on information asymmetry, forecast accuracy and firm performance across countries. We conducted additional tests using these proxies and variants thereof. Once again, ARE proved to be a stronger variable than the legal enforcement variables.

Panel B of Table 5 suggests that the mean of ARE and VAL\_NI for common law countries is significantly higher than that for code law countries, and the standard deviation of ARE and VAL\_NI for common law countries is significantly lower than that for code law countries. This suggests that the common law countries have high AREs and VAL\_NIs, generally, but these variables do not vary much between countries. Whereas, the code law countries have low AREs and VAL\_NIs, but they vary between countries. These features and the significant association between ARE and VAL\_NI for code law countries suggest that ARE has more significant impact on the VAL\_NI in code law than in common law countries. Similar findings (albeit mixed) exist for the emerging market and developed countries' comparison. Finally, the significant association between ARE and VAL\_NI for code law and emerging market countries group, in comparison to the low association for developed common law countries suggests that the former group can benefit more from good quality ARE.

## **5. Conclusions**

This study finds that value relevance of accounting earnings is positively associated with the quality of accounting standards. It means that high quality accounting standards can provide better protection to investors through reliable financial reports. The value relevance of accounting earnings is also associated with acceptability of accounting standards, suggesting that investors perceive the strong acceptance of the standards lead to credible financial reports. The value relevance of earnings and preventive enforcement arrangements are not significantly associated. This may be because preventive accounting rules are outcomes of reactive piecemeal action to corporate reporting crises without considering the impact of the regulatory arrangements on the value relevance of accounting numbers or are employed for direct intervention by shareholders to protect their interests. Thus, it does not necessarily improve the value relevance of accounting data. The value relevance of earnings, however, is positively associated with effective punitive enforcement of accounting standards. This suggests that the market perceives that effective punitive enforcement results in financial reports reflecting the true economic condition of the firm. In other words, the investors' interests are better protected in a country with effective punitive enforcement, since it sends strong signals to the market that departure from accounting standards is not tolerated.

A composite variable comprising of accounting standards quality, acceptability and enforcement arrangements, and signifying the overall accounting regulatory environment in the sample countries, was also positively associated with value relevance of earnings. This is in line with the argument that the element of high quality, acceptability and effective enforcement of

accounting standards are complementary variables, and put together they better enhance the value relevance of earnings. We also found that the same variable was more associated with value relevance of earnings than the broad legal variables that were adopted in prior studies (Ball et al., 2000a; 2000b; Jaggi and Low, 2000; Hung, 2001; Klapper and Love, 2002; Hope, 2003; Leuz 2003). It suggests that the proxies used in this study that are more adaptable to changes in financial reporting environment and more closely linked to the accounting practice are more closely associated with value relevance of earnings than the broad legal variables that were adopted in prior studies.

Finally, our results indicate the association between value relevance of earnings and accounting regulatory environment is stronger for code law and emerging market countries than for developed common law countries. This suggests that the former group can benefit more from good quality accounting regulatory environments. Furthermore, this means that international accounting organization that are interested in improving the credibility of accounting information worldwide should focus more on the code law and emerging market countries to obtain better results for their efforts.

This study contributes to our understanding of how the accounting regulatory environment influences the relevance of accounting numbers. Empirically tested, the proxy for accounting regulatory arrangement developed in this study has stronger association with the value relevance of earnings than the legal arrangement proxy. The robustness of the proxy used suggests that a measure more closely linked to the accounting practice can capture more recent changes in the financial reporting environment and, therefore, is more dominant in enhancing the value relevance of earnings than the broad legal variables. This study, therefore, extends prior studies that mostly employ measures of La Porta et al. (1997, 1998)'s legal framework to investigate its impact on the returns-earnings relations, financial disclosure, transparency, forecast accuracy, and earnings management across countries (e.g. Ball et al., 2000a; 2000b; Jaggi and Low, 2000; Hung, 2001; Hope, 2003; Leuz et al., 2003). The study also shows that the impact of the variations in the accounting regulatory environment varies between the countries of the two legal systems. This has a major policy implication, in the sense that countries of different legal systems may require different accounting policy prescriptions for improving the value relevance of accounting earnings. Therefore, this study provides useful evidence to international standards setters, regulatory bodies, stock exchanges and other institutional organizations about the effectiveness of institutional arrangements that support a transparent and high quality financial reporting environment worldwide.

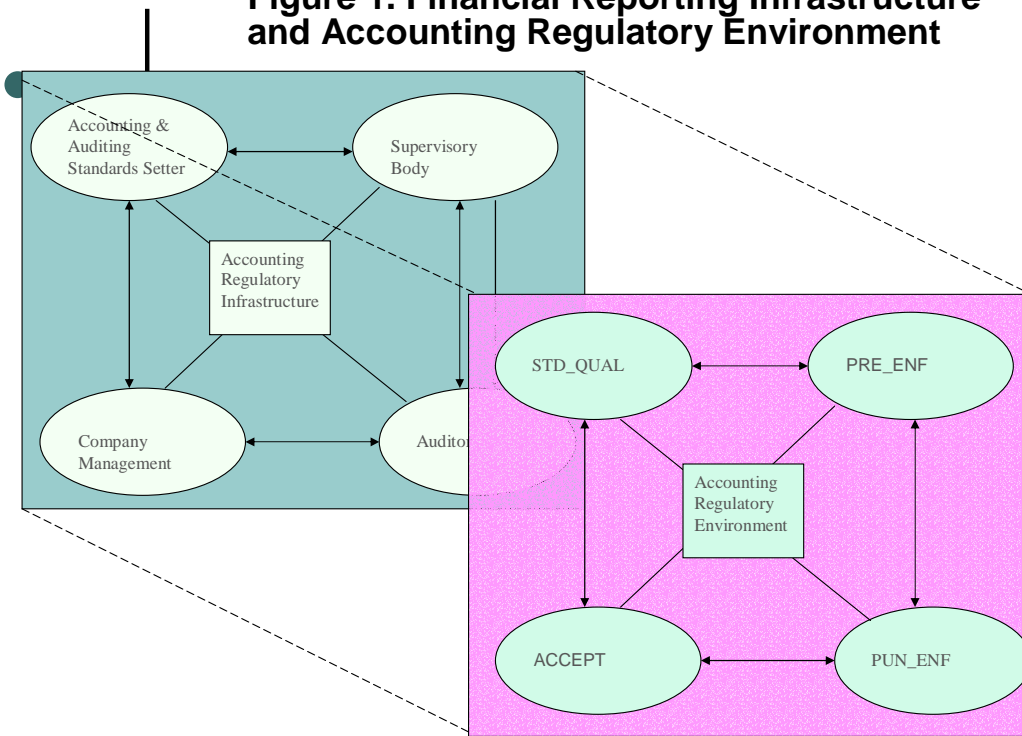
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**Figure 1. Financial Reporting Infrastructure and Accounting Regulatory Environment**



**Table 1 Indexes of Acceptability and Enforceability of Accounting Rules 2000/2001.**

<b>I. ACCEPTABILITY</b>	
1	An independent accounting standards setting body (from government)
2	An independent accounting standards setting body (from professional accounting body)
3	Independently funded organization (from professional accounting body)
4	Openness in standard setting process
5	Interpretation guidelines produced by standards setter or supervisory body
<b>II. ENFORCEABILITY</b>	
<b>A. PREVENTIVE</b>	
<b>1) AUDITING</b>	
1	Requirement of audited financial statements by law
2	Practical training requirement for obtaining a license as auditor
3	Continuing professional education requirements
4	Mandatory rotation of auditors
5	Restrictions on non-audit service
6	Disclosure of audit fee
7	Disclosure of non-audit fee
8	Requirement for an audit committee
9	An independent auditing standards setting body (from professional accounting body)
10	External quality review performed at regular period.
<b>2) SUPERVISION</b>	
1	Existence of institutional oversight mechanism for financial statements
2	Authority of supervisory body to issue regulation regarding financial reporting
3	Proactive approach to enforcement of standards
4	Require publication of financial statements in newspapers
5	Require submission of annual and quarterly financial reports
6	Requirement for continuous disclosure obligation
<b>B. PUNITIVE</b>	
<b>Mechanism for enforcement of the standards</b>	
1	Responsibility of company directors for the financial statements as stated in the law
2	Authority of standards setter or professional accounting body to enforce the standards
3	Legal backing of accounting & auditing standards
4	Authority of supervisory body to enforce accounting & auditing standards
5	Mechanism in supervisory body for imposing sanctions on violators
<b>Enforcement actions against Officers, Directors, or Company</b>	
1	Prosecution of company officers, directors, or company
2	Suspension or delisting of company from the stock exchange
3	Publication of company's name by supervisory body
<b>Enforcement actions against Auditors</b>	
1	Prosecution of auditors by professional accounting body
2	Prosecution of auditors by supervisory body
3	Publication of auditor's name by professional accounting body
4	Publication of auditor's name by supervisory body



**Table 2. Descriptive Statistics**

No.	Country	STD_QUAL	ACCEPT	PRE_ENF	PUN_ENF	R_ARE	LEGALSYS	D_DEV	VAL_NI
1	Argentina	4.5	3	7.5	25.5	8	0	0	0.134
2	Australia	18	30.5	21.5	34	33	1	1	0.503
3	Austria	6	1.5	21.5	1	1	0	1	0.233
4	Belgium	13	9.5	15	5	7	0	1	0.227
5	Canada	25	9.5	15	25.5	18	1	1	0.302
6	China	17	20.5	15	25.5	19	0	0	0.235
7	Denmark	19	9.5	15	2.5	9	0	1	0.364
8	Finland	7	20.5	7.5	5	6	0	1	0.213
9	France	10	20.5	15	9	12	0	1	0.418
10	Germany	8	30.5	21.5	9	13	0	1	0.214
11	Greece	3	9.5	7.5	13.5	2	0	1	0.197
12	Hong Kong	20	9.5	30	17.5	16	1	1	0.364
13	Indonesia	24	20.5	7.5	25.5	23	0	0	0.442
14	Ireland	33	30.5	2.5	9	20	1	1	0.553
15	Israel	30	9.5	30	17.5	24	1	1	0.353
16	Italy	11	9.5	30	5	10	0	1	0.310
17	Japan	16	20.5	21.5	25.5	22	0	1	0.301
18	Korea	29	20.5	21.5	25.5	30	0	0	0.319
19	Malaysia	12	30.5	30	25.5	27	1	0	0.330
20	Mexico	34	20.5	15	25.5	31	0	0	0.400
21	Netherlands	23	30.5	7.5	17.5	21	0	1	0.329
22	New Zealand	22	30.5	15	25.5	28	1	1	0.600
23	Norway	31	30.5	30	13.5	32	0	1	0.315
24	Philippine	15	9.5	1	9	4	0	0	0.060
25	Poland	2	1.5	30	13.5	5	0	0	-0.083
26	Portugal	9	9.5	7.5	9	3	0	1	0.277
27	Singapore	27	9.5	30	32	29	1	1	0.418
28	South Africa	35	9.5	7.5	17.5	17	1	0	0.218
29	Spain	4.5	20.5	21.5	25.5	15	0	1	0.329
30	Sweden	21	20.5	30	2.5	14	0	1	0.036
31	Switzerland	1	30.5	2.5	13.5	11	0	1	0.345
32	Thailand	26	9.5	7.5	34	25	1	0	0.303
33	Turkey	14	20.5	30	25.5	26	0	0	0.340
34	UK	32	30.5	30	25.5	34	1	1	0.358
35	USA	28	30.5	30	34	35	1	1	0.327

Mean	18	18	18	18	-6.3E-17	18	0.34	0.69
Median	18	20.50	15	17.50	0.25	18	0	1
Std. Dev	10.25	9.79	9.96	10	1	10.25	0.48	0.47
Skewness	0.00	0.00	-0.08	-0.09	-0.08	0	0.69	-0.84
Kurtosis	-1.20	-1.35	-1.41	-1.21	-1.00	-1.2	-1.62	-1.38

**Definitions:**

VAL\_NI: Value relevance of earnings is the market-adjusted return for the  $\Delta$  NI portfolio scaled by the market-adjusted return for the *AdjRet* portfolio.  
 STD\_QUAL: Quality of accounting regulation in a country is the rank of average differences between national accounting standards and IAS in year 2000 and 2001. To compute the average difference we measured the difference of a country's GAAP from the IAS GAAP for each of the two years, 2000 and 2001. Then we averaged the two years' differences. We ranked the countries by these average differences. For the final regression, the ranks were mean centered.

ACCEPT: indicates the level of acceptability of accounting rules in a country during 2000-2001. The countries in the sample were ranked and then mean centered.

PRE\_ENF: indicates the level of preventive enforcement in a country based on the index of accounting enforcement. The countries in the sample were ranked and then mean centered.

PUN\_ENF: indicates the level of punitive enforcement in a country based on the index of accounting enforcement. The countries in the sample were ranked and then mean centered.

LEGALSYS: indicates the legal system of a country, either as a common law or code law country; it takes 1 for common law, 0 otherwise.

D\_DEV: The classification of a country as a developed or emerging country based on GNP per capita in year 2000; it takes 1 for developed country, 0 for others.

Table 3. Correlation between variables with Pearson (Spearman) correlation coefficients in the upper (lower triangle)

	2-tailed p-values in parentheses								
	VAL_NI	STD_QUAL	ACCEPT	PRE_ENF	PUN_ENF	ARE	LEGAL_SYS	D_DEV	LISTED
VAL_NI	1	0.428* (0.010)	0.503** (0.002)	-0.028 (0.871)	0.368* (0.030)	0.541** (0.001)	0.451** (0.007)	0.290 (0.091)	0.313 (0.067)
STD_QUAL	0.430** (0.010)	1	0.252 (0.143)	0.126 (0.469)	0.363* (0.032)	0.736** (0.000)	0.548** (0.001)	-0.088 (0.614)	0.209 (0.229)
ACCEPT	0.455** (0.006)	0.252 (0.143)	1	0.065 (0.712)	0.257 (0.137)	0.621** (0.000)	0.150 (0.391)	0.204 (0.240)	-0.045 (0.796)
PRE_ENF	0.106 (0.543)	0.126 (0.469)	0.065 (0.712)	1	0.165 (0.343)	0.395* (0.019)	0.202 (0.244)	0.160 (0.359)	0.389* (0.021)
PUN_ENF	0.372* (0.028)	0.363* (0.032)	0.257 (0.137)	0.165 (0.343)	1	0.754** (0.000)	0.496** (0.002)	-0.340* (0.046)	0.124 (0.478)
ARE	0.602** (0.000)	0.724** (0.000)	0.603** (0.000)	0.404* (0.016)	0.745** (0.000)	1	0.576** (0.000)	-0.080 (0.649)	0.226 (0.192)
LEGALSYS	0.435** (0.009)	0.548** (0.001)	0.150 (0.391)	0.202 (0.244)	0.498** (0.002)	0.536** (0.001)	1	0.100 (0.568)	0.523** (0.001)
D_DEV	0.195 (0.262)	-0.088 (0.614)	0.204 (0.240)	0.160 (0.359)	-0.340* (0.046)	-0.104 (0.554)	0.100 (0.568)	1	0.446** (0.007)
LISTED	0.370* (0.029)	0.158 (0.366)	0.182 (0.295)	0.292 (0.088)	-0.009 (0.957)	0.206 (0.235)	0.465** (0.005)	0.628** (0.000)	1

\* Correlation at 0.05(2-tailed):...

\*\* Correlation at 0.01(2-tailed):...

**Definitions:**

VAL\_NI: Value relevance of earnings is the market-adjusted return for the  $\Delta$  NI portfolio scaled by the market-adjusted return for the *AdjRet* portfolio.  
 STD\_QUAL: Quality of accounting regulation in a country is the rank of average differences between national accounting standards and IAS in year 2000 and 2001. To compute the average difference we measured the difference of a country's GAAP from the IAS GAAP for each of the two years, 2000 and 2001. Then we averaged the two years' differences. We ranked the countries by these average differences. For the final regression, the ranks were mean centered.

ACCEPT: indicates the level of acceptability of accounting rules in a country during 2000-2001. The countries in the sample were ranked and then mean centered.

PRE\_ENF: indicates the level of preventive enforcement in a country based on the index of accounting enforcement. The countries in the sample were ranked and then mean centered.

PUN\_ENF: indicates the level of punitive enforcement in a country based the index of accounting enforcement. The countries in the sample were ranked and then mean centered.

ARE: a composite variable to represent an accounting regulatory environment of a country; as a result factorization of STD\_QUAL, ACCEPT,

PRE\_ENF and PUN\_ENF.

LEGALSYS: indicates the legal system of a country, either as a common law or code law country; it takes 1 for common law, 0 otherwise.

LISTED: It is the average of 2000 and 2001 ratios of the number of domestic listed companies in a country to the population of that country. It reflects the level of capital market development in a country.

D\_DEV: The classification of a country as a developed or emerging country based on GNP per capita in year 2000; it takes 1 for developed country, 0 for others.

**Table 4. OLS Regression of Relationship between Value Relevance of Earnings and Quality, Acceptability, and Enforceability of Accounting Standards**

Independent Variables	Prediction	Model 1	Model 2	Model 3a	Model 3b	Model 4	Model 5a	Model 5b
STD_QUAL	+	0.457	0.359	0.379	0.291			
<i>t-stat</i>		3.062	2.483	2.601	2.071			
<i>p-value</i>		0.004	0.019	0.014	0.047			
ACCEPT	+		0.362	0.361	0.261			
<i>t-stat</i>			2.462	2.456	1.828			
<i>p-value</i>			0.020	0.020	0.078			
PRE_ENF	+			-0.143	-0.211			
<i>t-stat</i>				-1.012	-1.573			
<i>p-value</i>				0.319	0.127			
PUN_ENF	+				0.374			
<i>t-stat</i>					2.400			
<i>p-value</i>					0.023			
ARE	+					0.567	0.485	
<i>t-stat</i>						4.145	2.849	
<i>p-value</i>						0.000	0.008	
LEGALSYS	+						0.140	0.426
<i>t-stat</i>							0.822	2.797
<i>p-value</i>							0.417	0.009
D_DEV	+	0.330	0.248	0.273	0.423	0.335	0.314	0.247
<i>t-stat</i>		2.210	1.734	1.882	2.850	2.447	2.248	1.621
<i>p-value</i>		0.034	0.093	0.070	0.008	0.020	0.032	0.115
Intercept		0.237	0.254	0.249	0.219	0.236	0.227	0.213
<i>t-stat</i>		6.681	7.534	7.315	6.454	7.259	6.540	5.601
<i>p-value</i>		0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adj R Sq		0.247	0.350	0.351	0.439	0.367	0.360	0.218
F-stat		6.584	7.105	5.589	6.332	10.845	7.382	5.738
<i>p-value</i>		0.004	0.001	0.002	0.000	0.000	0.001	0.007
N		35	35	35	35	35	35	35

Dependent variable: VAL\_NI

VAL\_NI: Value relevance of earnings is the market-adjusted return for the  $\Delta$  NI portfolio scaled by the market-adjusted return for the *AdjRet* portfolio.  
 STD\_QUAL: Quality of accounting regulation in a country is the rank of average differences between national accounting standards and IAS in year 2000 and 2001. To compute the average difference we measured the difference of a country's GAAP from the IAS GAAP for each of the two years, 2000 and 2001. Then we averaged the two years' differences. We ranked the countries by these average differences. For the final regression, the ranks were mean centered.

ACCEPT: indicates the level of acceptability of accounting rules in a country during 2000-2001. The countries in the sample were ranked and then mean centered.

PRE\_ENF: indicates the level of preventive enforcement in a country based on the index of accounting enforcement. The countries in the sample were ranked and then mean centered.

PUN\_ENF: indicates the level of punitive enforcement in a country based on the index of accounting enforcement. The countries in the sample were ranked and then mean centered.

ARE: a composite variable to represent an accounting regulatory environment of a country; as a result factorization of STD\_QUAL<sub>c</sub> ACCEPT<sub>c</sub> PRE\_ENF and PUN\_ENF.

LEGALSYS: indicates the legal system of a country, either as a common law or code law country; it takes 1 for common law, 0 otherwise.

D\_DEV: The classification of a country as a developed or emerging country based on GNP per capita in year 2000; it takes 1 for developed country, 0 for others.

**Table 5. Relationship between Value Relevance of Earnings and ARE for sub-samples**

Panel A. OLS Regression

Independent variables	Prediction	Code law countries	Common law countries	Emerging countries	Developed countries	Code law + emg common law countries	Developed common law countries
ARE	+	0.558	0.017	0.892	0.467	0.456	-0.049
<i>t-stat</i>		2.847	0.058	5.929	2.474	2.510	-0.131
<i>p-value</i>		0.010	0.955	0.000	0.022	0.019	0.900
D_DEV	+	0.338	0.542				
<i>t-stat</i>		1.728	1.861				
<i>p-value</i>		0.099	0.096				
Intercept		0.233	0.282	0.227	0.331	0.280	0.427
<i>t-stat</i>		5.925	4.293	10.063	15.007	12.314	6.535
<i>p-value</i>		0.000	0.002	0.000	0.000	0.000	0.000
Adj R Sq		0.238	0.143	0.774	0.182	0.175	-0.140
F-stat		4.444	1.919	35.158	6.120	6.299	0.017
<i>p-value</i>		0.025	0.202	0.000	0.022	0.019	0.900
N		23	12	11	24	26	9

Panel B. Oneway ANOVA

Description	Mean	Std Dev	F	p-value	
Code law vs Common law countries					
VAL_NI	Code law	0.259	0.127	8.431	0.007
	Common law	0.386	0.113		
ARE	Code law	-0.410	0.918	16.389	0.000
	Common law	0.786	0.616		
Emerging vs Developed countries					
VAL_NI	Emerging	0.245	0.156	3.025	0.091
	Developed	0.329	0.119		
ARE	Emerging	0.116	0.889	0.211	0.649
	Developed	-0.053	1.061		

Dependent variable: Value relevance of earnings (VAL\_NI)

VAL\_NI: Value relevance of earnings is the market-adjusted return for the  $\Delta$  NI portfolio scaled by the market-adjusted return for the *AdjRet* portfolio.

ARE: a composite variable to represent an accounting regulatory environment of a country; as a result factorization of STD\_QUAL, ACCEPT, PRE\_ENF and PUN\_ENF.

D\_DEV: The classification of a country as a developed or emerging country based on GNP per capita in year 2000; it takes 1 for developed country, 0 for others.