Journal of International Business Studies (2010) 41, 123–141

www.jibs.net

A cross-country study on the effects of national culture on earnings management

Sam Han[1],
Tony Kang[2],
Stephen Salter[3]
and Yong Keun Yoo[4]

[1] *Singapore Management University, Singapore, Singapore;* [2] *Florida Atlantic University, Davie, USA;* [3] *University of Texas at El Paso, El Paso, USA;* [4] *Korea University, Seoul, Korea*

Correspondence:
T Kang, Barry Kaye College of Business, Florida Atlantic University, Liberal Arts Building Rm 460, 2912 College Avenue, Davie, FL 33314, USA.
Tel: +1 954 236 1957;
E-mail: tkang@fau.edu

Received: 24 July 2007
Revised: 12 February 2008
Accepted: 19 February 2008
Online publication date: 20 November 2008

Abstract
This study hypothesizes and tests whether the degree to which managers exercise earnings discretion relates to their value system (i.e., culture) as well as the institutional features (i.e., legal environment) of their country. We find that uncertainty avoidance and individualism dimensions of national culture explain managers' earnings discretion across countries, and that this association varies with the strength of investor protection. This study extends prior literature by documenting that both national culture and institutional structure are important factors that explain corporate managers' earnings discretion practices around the world, and that the influences of these factors on earnings discretion are conditional on each other.
Journal of International Business Studies (2010) **41,** 123–141.
doi:10.1057/jibs.2008.78

Keywords: cross-cultural management; cultural frameworks; international financial reporting; earnings management; national culture; investor protection; disclosure

INTRODUCTION

As accounting and finance research attempts to come to grips with the influence of the softer dimension of human values (psychology, sociology, and possibly anthropology) on capital markets, there has been increasing interest in how cross-national differences in societal values (culture) affects capital markets (Chui, Lloyd, & Kwok, 2002; Doupnik & Tsakumis, 2004; Gray, 1988; Hope, 2003; Kwok & Tadesse, 2006; Radebaugh, Gray, & Black, 2006; Salter & Niswander, 1995; Zarzeski, 1996). However, previous culture/value research has been limited primarily to explaining the effect of culture/value on the broad systemic or structural differences across countries. This study attempts to build up the link between culture/value and cross-country variances, not in the broad accounting or financial systems, but in the actions of actors as one portion of the capital markets community.

Specifically, as its first objective, this paper uses differences in culture across countries to explain the magnitude of discretion that managers exercise in measuring accounting earnings, a process referred to as earnings management. Earnings management is a significant concern to regulators, and a source of much interest both in the United States and in the rest of the world (see, for summary, Healy & Wahlen, 1999; Leuz, Nanda, & Wysocki, 2003; Lopez & Rees, 2002). Previous studies that examine determinants of earnings management internationally have focused on legal institutions, but the cultural dimension has received less attention.

Cross-nationally, only one published paper, Guan, Pourjalali, Sengupta, and Teruya (2006), examines whether national culture explains earnings management in a small and specific sample of five Asian countries, and is quite limited in scope: for example, they do not discuss managers' incentives to manage earnings (e.g., contracting), making the interpretation of their results difficult.

As its second objective, this paper examines how culture and institutional structure interact with each other as they play out in earnings management. For its theoretical framework, this paper uses Gray's (1988) model as extended by Doupnik and Tsakumis (2004; see Figure 1). Gray's (1988) model posits accounting outcomes as the product of social values and interactions of social values and institutions. As Doupnik and Tsakumis (2004) explain: "In brief, Gray argues that shared cultural values within a country lead to shared accounting values, which in turn influence the nature of a nation's accounting system." To date, there has been significant testing of the validity of Gray's accounting value and its effect on systems (e.g., Hope, 2003; Lewis & Salter, 2006; Salter & Niswander, 1995). However, there has been only very limited testing of the role of institutional effects and institutional/cultural interactions on accounting outcomes. Our investigation fills this void in the literature.

This study uses a sample of 96,409 firm–year observations from 32 countries for the period between 1992 and 2003. The results indicate that both cultural values and institutional structure have explanatory power for earnings management around the world. These results also suggest that the effects of the two factors on earnings management are conditional on each other. Thus, while institutions can and do modify culturally conditioned behavior, the impact is only partial. Therefore our findings have an interesting implication for the influence of national culture on the effects of external institutions that can be imported or imposed from the sources with very different cultural bases (e.g., the use of International Financial Reporting Standards (IFRS) in the EU).

The remainder of this paper is organized as follows. The next section reviews previous literature and develops hypotheses. This is followed by an outline of research methodology and a description of the sample. The empirical findings are then discussed, and followed by conclusions, limitations, and suggestions for future research.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

In arriving at the hypotheses for this study, a review of the extant US literature on earnings and earnings management and the available findings and theory on the influence of cultural values on finance and accounting systems is conducted. This is followed

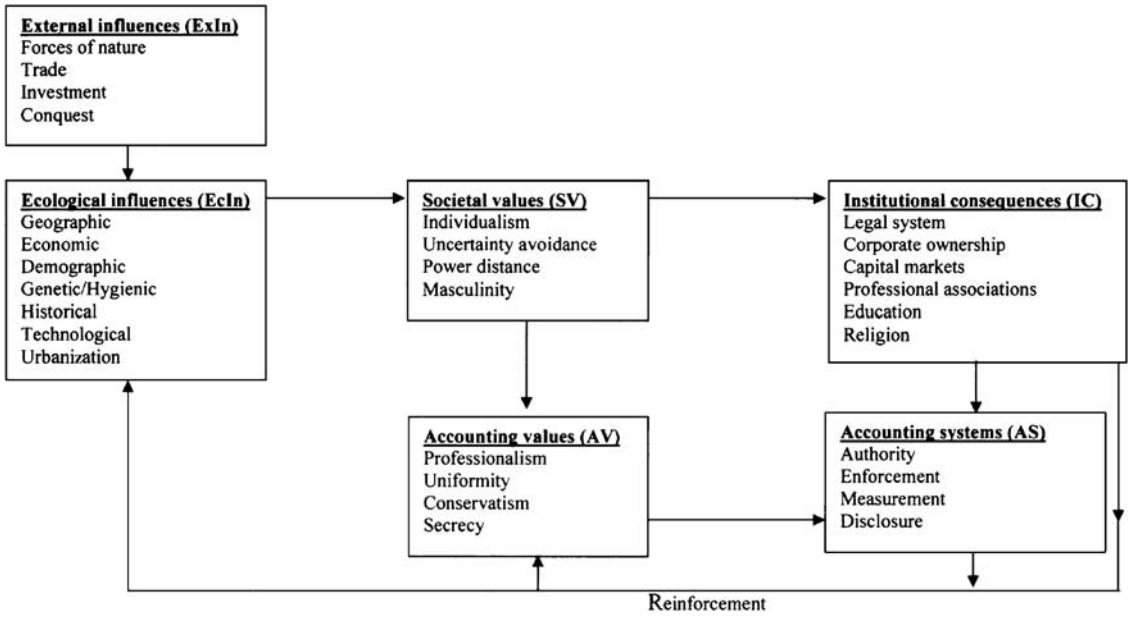

Figure 1 Gray's (1988) model with Doupnik and Tsakumis's (2004) extension.
Source: Gray (1988: 7). Items under SV, AV, and AS have been added to the original.

by a synthesis of this literature, and hypotheses development.

Earnings and Earnings Management

In the US domestic finance and accounting literature, accounting earnings have been shown to be a key component in determining the prices of debts and equities (e.g., Ball & Brown, 1968; Francis, LaFond, Olsson, & Schipper, 2004; Kothari, 2001). The key argument is that accounting earnings or earnings announcements contain information content that markets regard as useful in pricing debts and equities.

One potential side effect of the importance of accounting earnings is the temptation for managers to ensure that earnings arrive at their preferred target numbers. Given that accounting is not a perfect science, and allows for discretion in choosing how to treat certain events through depreciation rates, accruals for bad debt, and asset write-offs, among others, there has been the suspicion that accountants may make discretionary choices to arrive at a particular earnings result. The process of manipulating such accounting choices to arrive at a preferred earnings number is known as earnings management.

Evidence of earnings management has been quite widespread. Burgstahler and Dichev (1997), Degeorge, Patel, and Zeckhauser (1999), and Brown and Caylor (2005) conclude that US earnings are being manipulated to arrive at higher levels of earnings. To the contrary, Strong and Meyer (1987), Elliott and Shaw (1988), and Kinney and Trezevant (1997) suggest that US managers may recognize income-decreasing items to smooth earnings or to lower their pre-managed earnings below current expectation further for higher future earnings (e.g., Kirschenheiter & Melumad, 2002). The primary reason for earnings management in the US literature appears to be that accountants and their superiors wish to meet or exceed market expectations during current and/or future periods, and hence maintain their positions in a long term and maximize multi-period financial rewards. Other contractual incentives for managers to manipulate earnings include debt covenants, management compensation agreements, union negotiation, and other regulatory incentives (e.g., Fields, Lys, & Vincent, 2001).

Earnings management is by no means a risk-free proposition. Dechow, Sloan, and Sweeney (1996), for example, present evidence of significant negative stock market responses to allegations of earnings management by the financial press or the SEC. Other costs can include legal and political responses to perceived earnings manipulation. Leuz et al. (2003) provide evidence that earnings management is least prevalent in strong investor protection countries, where rules exist to limit earnings manipulation.

Culture and Accounting Choices

Almost all the work that has been done in earnings management has been limited to the US market. As Boyacigiller and Adler (1991) said of the US management literature over 15 years ago, much of the US literature that studies capital markets and accounting is a "parochial dinosaur," taking little or no account of how other countries may view this issue.

While national culture has been used to explain a wide variety of individual behavior or systemic differences across nations in other research areas, there has been only limited usage of national culture in finance and accounting. International accounting research that has attempted to incorporate culture into accounting is also limited in that it has been conducted either at the macro level, limiting the role of culture to explaining cross-national differences in macro measures of the level of accounting disclosure, conservatism, and audit licensing (e.g., Hope, 2003; Salter & Niswander, 1995), or at the individual level with experimental behavioral work (see, for summary, Chenhall, 2003; Harrison & McKinnon, 1999).

Gray's (1988) model of culture, societal values, and the accounting subculture began with Hofstede's propositions that societal values have institutional consequences in the form of legal, political, and economic systems including the pattern of corporate ownership and capital markets. The model (see Figure 1), as extended by Doupnik and Tsakumis (2004), links Hofstede's (1980) societal values to a system of accounting values leading to accounting outcomes. In the model, Gray (1988) notes that the value systems of attitudes of accountants may be expected to be related to and derived from societal values, with special reference to work-related values. Salter and Niswander (1995), among others, operationalized and tested the relationship between Gray's accounting values and Hofstede's original social values. They confirmed the direction and significance of most of the propositions by showing that Hofstede's cultural dimension indices have statistically significant relationships with the measures of accounting

system attributes across countries (see Doupnik and Tsakumis (2004), as a summary for other related studies).

Doupnik and Tsakumis (2004) find that Gray's (1988) model may be relevant in explaining: (1) systemic differences in financial reporting attributes across counties with different cultures and institutions and (2) inter-country differences in the way rules are interpreted, even if the countries appear to operate under the same set of financial reporting rules (institutional framework). Thus the focus shifts from separate work on cultural and institutional framework to a more integrated framework within which the outcomes and behavior of culturally driven players are examined within an institutional framework.

Gray's (1988) model starts by defining four accounting values that are linked to Hofstede's (1980) "societal values" (SV) These "accounting values" (AV) are professionalism, uniformity, conservatism, and secrecy. According to Gray (1988: 8), professionalism refers to "a preference for the exercise of individual professional judgment and the maintenance of professional self-regulation."… "Uniformity refers to a preference for the enforcement of uniform accounting practices between companies, and for the consistent use of such practices over time, as opposed to flexibility in accordance with the perceived circumstances of individual companies."… "Conservatism refers to a preference for a cautious approach to measurement so as to cope with the uncertainty of future events, as opposed to a more optimistic, laissez-faire, and risk-taking approach." Finally, secrecy refers to "a preference for confidentiality and the restriction of disclosure of information about the business only to those who are closely involved with its management and financing, as opposed to a more transparent, open, and publicly accountable approach."

Gray (1988) notes that only individualism and uncertainty avoidance are fully linked to all four accounting values and can act as proxies for them. Similarly, Hope (2003) notes that the individualism and uncertainty avoidance dimensions of the Hofstede culture dimensions probably have the most straightforward implications for managers' accounting choice behaviors. Gray's (1988) model predicts that where individualism is the dominant culture, accountants and preparers will have the most flexibility in terms both of self-governance (professionalism) and of flexibility of measurement (flexible or non-uniform). Accountants within an individualistic society should also be predisposed to report the most optimistic numbers allowed by institutions (negative conservatism) during current or future periods. The only cultural limitation on accountants' behavior will be the need to disclose significant amounts of information (transparency). Thus earnings management by accountants in such an individualistic society is likely to be prevalent, which might lead to a positive association between the magnitude of earnings management and individualism. Furthermore, such a positive association is likely to be observed for both income-increasing and income-decreasing earnings managements, which leads us to expect the positive associations between the magnitude of earnings management and individualism, respectively. Accordingly, our first hypothesis (in an alternative form) is as follows:

Hypothesis 1: There will be a positive relationship between the individualism dimension of national culture and the magnitude of earnings management (either income-increasing or income-decreasing earnings management).

Under Gray's (1988) model, countries that are highly uncertainty avoidant require more uniformity from accountants, with many rules and little self-governance in the selection of regulation for the accounting profession (statutory control) and what financial reports present (uniformity). In uncertainty-avoidant countries, rules would support a conservative approach to earnings management (conservatism) but operate in the dark (secrecy). In the interests of uniformity, these societies would provide fewer opportunities for earnings management with the blessing of the authorities. Consistent with this idea, in a small sample of five Asian-Pacific countries, Guan et al. (2006) report a negative relation between discretionary accruals and uncertainty avoidance. Hence the second alternate hypotheses relate to the role of uncertainty avoidance as it impacts on earnings management behavior.

Hypothesis 2: There will be a negative relationship between the uncertainty avoidance dimension of national culture and the magnitude of earnings management (either income-increasing or income-decreasing earnings management).

Culture, Institutions, and Earnings Management

Shleifer and Vishny (1997) and La Porta, Lopez-de-Silanes, Schleifer, and Vishny (2000) identify

investor protection as a key institutional factor affecting corporate policy choices. As Leuz et al. (2003) summarize, the institution can protect investors by conferring on them rights to discipline insiders (e.g., to replace managers), as well as by enforcing contracts designed to limit insiders' private control benefits. Thus strong and well-enforced outsider rights limit insiders' acquisition of private control benefits, and, as a result, mitigate insiders' incentives to manage accounting earnings because they have little to conceal from outsiders. Consistent with this idea, they find that, across 31 countries, earnings management decreases with investor protection. Thus we include a variable to retest the ability of strong investor protection to reduce the magnitude of earnings discretion. This provides a retest of Leuz et al. (2003) through the third hypothesis.

Hypothesis 3: Strong investor protection will reduce the magnitude of earnings discretion (either income-increasing or income-decreasing earnings discretion).

A priori, institutions can serve to modify or reinforce the effects of base culture on earnings management. Gray's (1988) model, as extended by Doupnik and Tsakumis (2004), paints a picture in which institutions act independently on accounting practice but are also themselves the product of cultural forces. Thus the final accounting outcome, such as the degree of earnings management, is a joint product of culture and institutions (which may or may not be culturally driven). In this regard, Guan et al.'s (2006) analysis is unidimensional in that they approach earnings management solely from the cultural side. Likewise, Leuz et al. (2003) do not consider the impact of culture as a modifier of behavior or the role of institutions as the modifiers of cultural predilections. Taken together, Leuz et al. (2003) and Guan et al. (2006) provide evidence that both cultural values and the strength of the institutional framework can separately affect the magnitude of earnings management. Integrating these findings into Gray's (1988) model, the question that arises is whether the institutional structure (measured as the degree of investor protection) supersedes, restrains, or reinforces cultural perspectives.

Once the initial institutional mitigation described in Leuz et al. (2003) is in place, what happens? From the theoretical perspective, Ball (2001) argues that how financial information is communicated to corporate outsiders (i.e., public vs private provision of information), as well as the manner of contracting between the firm and managers, varies with the legal infrastructure. Empirical evidence by Ball, Kothari, and Robin (2000) suggests that the efficiency of public financial accounting (i.e., the extent to which and the speed at which economic loss is incorporated in accounting losses) varies with the legal environment. They argue that a comparative lack of auditor independence in weak investor protection countries (e.g., Hope, Kang, Thomas, & Yoo, 2007) permits considerable managerial discretion over reported income, and a near absence of stockholder and lender litigation costs to managers and auditors alike reduces their incentives to improve the efficiency (i.e., to confront economic losses and to recognize them in the financial statements). Along similar lines, Hung (2001) and DeFond, Hung, and Trezevant (2007) conclude that earnings are more highly correlated with stock prices in countries with stronger investor protection institutions.

Taken together, the extant theory and empirical evidence suggest that public accounting information is more likely to be used in managerial contracting in strong investor countries than in weak investor protection countries. Thus managers' incentives to exercise accounting discretion in publicly disclosed financial information from the contracting perspective are likely to be higher in strong investor protection environments in general, and this tendency is expected to be particularly strong for individualistic managers who tend to pursue their self-interests at the expense of others'. For these reasons, we anticipate that individualistic managers' tendency to exercise earnings discretion will be more pronounced in strong investor protection environments than in weak investor protection countries. Thus we prepare our fourth alternative hypothesis as follows:

Hypothesis 4: The interaction between the individualism dimension of national culture and investor protection in explaining the magnitude of earnings discretion (either income-increasing or income-decreasing earnings discretion) will be positive.

Initially, in highly uncertainty-avoidant societies, strong investor protection may compound the existing conservatism and unwillingness to manage earnings by providing clearer rules. This should satisfy the need to be uniform. However, it does not

fully satisfy the need to be conservative, since rules can be made in either direction. IFRS rules, for example, are far more optimistic than pre-IFRS rules in many EU countries. Thus there is nothing to prevent the effect detected in Salter and Niswander (1995) that in supposedly conservative countries, once the required rules had been met, accountants felt free to measure items in a method to meet their own objectives. That is, while the accountant is culturally inclined to reduce uncertainty, the accountant having met his/her obligation can seek through unregulated opportunities to benefit himself/herself. Hence, when strong regulation is obeyed, the highly uncertainty-avoidant accountant, freed from his/her rule-based obligations, will move into a zone of earnings manipulation. Therefore our last hypothesis is stated (in an alternative) as follows:

Hypothesis 5: The interaction between the uncertainty avoidance dimension of national culture and investor protection in explaining the magnitude of earnings discretion (either income-increasing or income-decreasing earnings discretion) will be positive.

EMPIRICAL MODELS AND SAMPLE

Dependent Variable: Earnings Discretion

In order to obtain empirical measures of earnings discretion, we use the performance-controlled accruals model following Tucker and Zarowin (2006). To identify the discretionary component of accruals for given country–year observations, we first estimate the following model using ordinary least squares (OLS) for all sample firms available in Compustat North America (US firms) or Compustat Global (non-US firms) at time t for each country (firm subscripts omitted):

$$\frac{\mathrm{TACC}_t}{\mathrm{TA}_{t-1}} = a_0\left(\frac{1}{\mathrm{TA}_{t-1}}\right) + a_1\left(\frac{\Delta\mathrm{REV}_t}{\mathrm{TA}_{t-1}}\right) + a_2 \times \left(\frac{\mathrm{GPPE}_t}{\mathrm{TA}_{t-1}}\right) + a_3\left(\frac{\mathrm{ROA}_t}{\mathrm{TA}_{t-1}}\right) + \varepsilon_t \qquad (1)$$

where TACC_t is the total accruals in year t, $\Delta\mathrm{REV}_t$ is the change of revenue in year t, GPPE_t is the level of gross property, plant, and equipment in year t, and ROA_t is the return on asset in year t. Since the error term of this regression exhibits heteroskedasticity, we deflate each variable in the model by the lagged book value of total assets (TA_{t-1}) following prior literature. The residuals from the regressions are used as a proxy for discretionary accruals.

Independent Variables

Cultural factors. Following prior studies, each country's cultural values for those four dimensions are obtained from Hofstede (1980) and are assumed to be held constant over time (e.g., Gray & Vint, 1995; Jaggi & Low, 2000). For the two key variables, individualism (IND) and uncertainty avoidance (UA), IND is stronger in Australia, the United Kingdom, and the United States, and is weaker in Indonesia, South Korea, and Pakistan. In contrast Belgium, Greece, Japan, and Portugal could be classified as highly uncertainty avoidant (UA) countries, while Denmark, Hong Kong, Singapore, and Sweden are considered as low uncertainty avoidance countries.

Investor protection. The "legal enforcement" variable from La Porta, Lopez-de-Silanes, Schleifer, and Vishny (1998) is first used as a proxy for the level of investor protection in a country. While La Porta et al. (1998) suggest that both legal regime and investor protection are more primitive determinants of financial developments, Dyck and Zingales (2004) find that legal origin is not an important variable after controlling for other factors. Based on these studies, we focus on investor protection as the main conditional variable. The "legal enforcement" variable is measured as the mean score across five legal variables:

(1) the efficiency of the judicial systems;
(2) an assessment of the rule of law;
(3) the corruption index;
(4) the risk of expropriation; and
(5) the risk of contract repudiation.

The first two variables pertain to proper law enforcement and the last three deal with the government's stance toward business. This summary measure for investor protection (INVPRO) has been used in several studies (e.g., Leuz et al., 2003).

In the second phase of our analysis a new measure of the degree of investor protection (DIP) is created in order to facilitate the comparison of coefficients. An advantage of such aggregation is in diversifying away the possible measurement errors in the investor protection scores. This binary measure classifies countries into two groups:

- *Strong investor protection countries*: those countries whose investor protection score is greater than the mean INVPRO score (9.17), such as Australia, Canada, the United Kingdom, and the United

States, as strong investor protection countries (DIP=1);
- *Weak investor protection countries*: those countries whose investor protection score is less than the mean INVPRO score (9.17), such as Hong Kong, India, Malaysia, Singapore, and South Africa, as weak investor protection countries (DIP=0).

While the distinction between strong and weak investor protection is a continuum, we determine the cut-off that leaves adequate sample size for the weak investor protection group in our regression analysis. When we use different cut-offs such as median, however, results are very similar to those reported.

Control variables. In addition to culture and legal environment-related variables, we include control variables considered to be associated with earnings discretion. Specifically, we include the natural logarithm of market value of equity (LNSIZE) because large firms tend to exercise less discretion as they are subject to continuous stock market monitoring. We control for the natural logarithm of book-to-market ratio (LNBM) because it is one of the major risk factors identified in prior finance studies (e.g., Fama & French, 1993), and risky firms possess greater incentive to exercise discretion in reported earnings owing to the high variability of earnings. The leverage ratio (LEV) and a dummy variable of stock issuance (ISSUE) are included because firms that are likely to raise capital more often have incentives to manage earnings opportunistically. A dummy variable for loss firms (LOSS) is included because loss firms tend to use more discretionary accruals to have better earnings numbers this year or make cookie jar reserves to increase earnings in the future. Finally, we include the year (DYR) and industry (DIND; two-digit SIC Code) dummies in order to control for the time-series and cross-sectional differences in the level of discretion and regulatory environment.

Empirical Models

We first test whether individualism (IND) and uncertainty avoidance (UA) are associated with earnings discretion. Since the earnings discretion measure used in this paper is discretionary accruals, and earnings discretion is affected by various factors such as firm size, risk factors, and regulatory environment across industry and time, we estimate the following multivariate regression using the absolute and the signed measure of performance controlled discretionary accruals as in Tucker and Zarowin (2006) after controlling for factors discussed above (firm and time subscripts omitted):

$$\begin{aligned} ED = {} & \alpha_0 + \alpha_1 IND + \alpha_2 UA + \alpha_3 MA + \alpha_4 PD \\ & + \alpha_5 INVPRO + \alpha_6 LNSIZE + \alpha_7 LNBM \\ & + \alpha_8 LEV + \alpha_9 ISSUE + \alpha_{10} LOSS \\ & + \alpha_{11-22} DYR + \alpha_{23-121} DIND + \varepsilon \end{aligned} \quad (2)$$

where ED is earnings discretion measured by absolute discretionary accruals (|DACC|); IND is the individualism score from Hofstede (1980); UA is the uncertainty avoidance score from Hofstede (1980); MA is the masculinity score from Hofstede (1980); PD is the power distance score from Hofstede (1980); INVPRO is the investor protection score from La Porta et al. (1998); LNSIZE is the natural logarithm of market value of equity; LNBM is the natural logarithm of book-to-market ratio; LEV is the leverage ratio; ISSUE is an indicator variable for equity issuance; LOSS is an indicator variable for loss firms; DYR are indicator variables for the years 1992–2003; and DIND are indicator variables for industries based on the two-digit SIC code.

Next, we examine whether IND and UA interact with the level of investor protection. We extend the previous regression model by adding two interaction variables using an indicator variable for high investor protection group as follows (firm and time subscripts omitted):

$$\begin{aligned} ED = {} & \alpha_0 + \alpha_1 IND + \alpha_2 IND \times DIP + \alpha_3 UA \\ & + \alpha_4 UA \times DIP + \alpha_5 MA + \alpha_6 PD \\ & + \alpha_7 DIP + \alpha_8 LNSIZE + \alpha_9 LNBM \\ & + \alpha_{10} LEV + \alpha_{11} ISSUE + \alpha_{12} LOSS \\ & + \alpha_{13-24} DYR + \alpha_{25-123} DIND + \varepsilon \end{aligned} \quad (3)$$

where ED is earnings discretion measured by absolute discretionary accruals (|DACC|); IND is the individualism score from Hofstede (1980); UA is the uncertainty avoidance score from Hofstede (1980); MA is the masculinity score from Hofstede (1980); PD is the power distance score from Hofstede (1980); DIP is an indicator variable for firms with high investor protection score (INVPRO > mean); LNSIZE is the natural logarithm of market value of equity; LNBM is the natural logarithm of book-to-market ratio; LEV is the leverage ratio; ISSUE is an indicator variable for equity issuance; LOSS is an indicator variable for loss firms; DYR are indicator variables for the years 1992–2003; and DIND are indicator variables for industries based on the two-digit SIC code.

Sample

The sample used in this study consists of 96,409 firm–year observations (18,609 distinct firms) for the period from 1992 to 2003 in 32 countries. Sample firms in a country are assumed to represent the country's culture, language, and geography, and to be traded in major stock markets. We extract data from Compustat North America (US firms) and Compustat Global (non-US firms). We also use the exchange rate data from IMF International Financial Statistics to adjust the LNSIZE variable. We select firm–years that satisfy the following criteria:

(1) non-financial firm;
(2) all the necessary financial statement variables in the regression model are available;
(3) consistency of currency codes between adjacent years;
(4) book value of equity is positive;
(5) country-level variables are available; and
(6) each country–year combination has at least 10 observations to ensure a reasonable sample size for the measurement of discretionary accruals.

To mitigate the effects of outliers, we winsorize DACC, LNSIZE, LNBM, and LEV at the 1st and 99th percentiles of the pooled distribution. Other variables are categorical in nature and do not exhibit extreme observations.

RESULTS

Descriptive Statistics

Descriptive statistics for the sample and Pearson correlations among key variables are reported in Table 1.

Panel A of Table 1 shows that DACC has a mean (median) of −0.0030 (−0.0003) and |DACC| has a mean (median) value of 0.1182 (0.0595), which are comparable to those reported in prior studies (e.g., Xie, 2001). The means (medians) of individualism (IND) and uncertainty avoidance (UA) are 75.5977 (91.0000) and 51.7452 (46.0000), respectively. The mean (median) of investor protection score (INVPRO) is 9.1736 (9.5220).

Panel B of Table 1 presents the firm-specific Pearson correlations among selected variables. Absolute discretionary accruals (|DACC|) is significantly positively related to IND (0.2163, $p<0.01$) and significantly negatively related to UA (−0.1538, $p<0.01$). The first correlation finding supports Hypothesis 1 that, on average, individualism encourages earnings discretion through an increasing magnitude of discretionary accruals. The second correlation finding supports Hypothesis 2 that uncertainty avoidance inhibits excessive usage of earnings discretion. In addition, |DACC| is significantly negatively associated with firm size (LNSIZE), book-to-market ratio (LNBM), and leverage (LEV), and is positively associated with stock issuance (ISSUE) and loss firms (LOSS). However, these correlation results should be interpreted with caution, because they do not control for differences in other firm characteristics in the cross-section. This will be dealt with in the multiple regression analysis below.

Multiple Regression Analysis

As is common when using samples from different countries, sample sizes vary greatly across countries (from 108 in Portugal to 54,690 in United States). This is dealt with in the following ways:

- Results are reported using country-weighted least squares (WLS) as well as OLS. In WLS, the weight is inversely proportional to the number of observations per country. Using WLS ensures that uneven country representation in the sample will not bias the results towards countries that are more heavily represented.
- Second, given that the United States constitutes such a large portion (56.73%) of the sample, the regressions are rerun with the sample limited to non-US companies.

Cultural factors and discretionary accruals (Hypotheses 1–3). Table 2 provides a test of the ability of cultural factors to explain the magnitude of earnings discretion. More specifically, we test whether individualism (IND) and uncertainty avoidance (UA) constrain or promote the usage of earnings discretion measured by the absolute value of discretionary accruals and how they are associated with the absolute value of income-increasing and/or income-decreasing discretionary accruals, respectively. Since income-increasing accruals could be used to inflate earnings while income-decreasing accruals could be used to make what we call "cookie jar reserves" to manage earnings in the future, it is useful to examine whether cultural values constrain either or both of these types of accruals. In addition, as discussed above, the analysis is repeated using only non-US observations to assess the sensitivity of the results to the large number of US observations.

The results for the overall association between IND and UA and absolute value of discretionary

Table 1 Descriptive statistics and correlations among variables

A Descriptive statistics

	N	*Mean*	*s.d.*	*25%*	*Median*	*75%*
Main variables						
DACC	96,409	−0.0030	0.1850	−0.0641	−0.0003	0.0559
|DACC|	96,409	0.1182	0.1711	0.0244	0.0595	0.1353
IND	96,409	75.5977	23.9015	67.0000	91.0000	91.0000
UA	96,409	51.7452	18.5974	46.0000	46.0000	48.0000
MA	96,409	62.1754	16.0302	62.0000	62.0000	62.0000
PD	96,409	46.1212	15.5221	40.0000	40.0000	54.0000
INVPRO	96,409	9.1736	0.9789	9.3720	9.5220	9.5220
DIP	96,409	0.6334	0.4819	0.0000	1.0000	1.0000
Control variables						
LNSIZE	96,409	4.3299	2.0476	2.8882	4.2245	5.7012
LNBM	96,409	−0.4994	1.0228	−1.0950	−0.4641	0.1539
LEV	96,409	0.2203	0.1884	0.0422	0.1947	0.3522
ISSUE	96,409	0.3986	0.4896	0.0000	0.0000	1.0000
LOSS	96,409	0.3210	0.4669	0.0000	0.0000	1.0000

This table presents the mean, first quartile, median, third quartile, and standard deviation of variables. Variable definitions are given in the Appendix.

B Pearson correlations

	|DACC|	*IND*	*UA*	*MA*	*PD*	*INVPRO*	*DIP*	*LNSIZE*	*LNBM*	*LEV*	*ISSUE*
IND	0.2163										
	(0.0000)										
UA	−0.1538	−0.3668									
	(0.0000)	(0.0000)									
MA	−0.0537	−0.0361	0.5439								
	(0.0000)	(0.0000)	(0.0000)								
PD	−0.1251	−0.7922	0.1236	−0.0252							
	(0.0000)	(0.0000)	(0.0000)	(0.0000)							
INVPRO	0.0938	0.6711	−0.0698	0.2336	−0.6683						
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)						
DIP	0.2506	0.7565	−0.4156	−0.2562	−0.5705	0.4987					
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)					
LNSIZE	−0.1299	0.0558	0.0701	0.0574	−0.0727	0.0903	0.0016				
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.6197)				
LNBM	−0.1281	−0.2716	0.1587	0.0787	0.1929	−0.1516	−0.2240	−0.3954			
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)			

Table 1 *Continued*

B Pearson correlations

	|DACC|	*IND*	*UA*	*MA*	*PD*	*INVPRO*	*DIP*	*LNSIZE*	*LNBM*	*LEV*	*ISSUE*
LEV	−0.0669	−0.1229	0.1038	0.0378	0.0875	−0.0976	−0.0647	−0.0064	0.0723		
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0469)	(0.0000)		
ISSUE	0.1198	0.1283	−0.1402	−0.1206	−0.0713	0.0073	0.1384	0.1508	−0.2207	−0.1064	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0229)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
LOSS	0.1470	0.0972	−0.0435	0.0044	−0.0673	0.0738	0.1279	−0.3130	0.0397	0.0688	−0.2888
	(0.0000)	(0.0000)	(0.0000)	(0.1687)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

This table presents the Pearson correlations between variables. Variable definitions are given in the Appendix. p-values are in parenthesis. The sample consists of 96,409 firm–year observations.

accruals are presented in Panel A of Table 2. The first two columns show the results of OLS regressions of the reduced model. The result shows that the coefficient on IND is significantly positive (0.0016) while that on UA is significantly negative (−0.0013), both at the 1% level. The full model, in which all other factors are controlled for, shows results consistent with the reduced model in both the full sample and the non-US sample. These findings provide evidence that more highly individualistic countries have a greater magnitude of discretionary accruals and hence strong evidence of a higher propensity to manage earnings in highly individualistic countries. This allows us to reject the null in Hypothesis 1 in favor of the alternative that there will be a positive relationship between the individualism dimension of national culture and the magnitude of earnings discretion. Similarly, the coefficients on the UA variable permit us to reject the null in Hypothesis 2 that there will be a negative relationship between the level of uncertainty avoidance and the magnitude of earnings discretion.

Panel B of Table 2 provides the result from running regressions using the absolute values of discretionary accruals for the income-increasing and income-decreasing accruals groups separately. The result indicates that the coefficient on IND (UA) remains positive (negative) for both partitions at the 1% level, although the statistical significance of IND is weaker for the non-US sample. This result indicates that the posited positive (negative) relationship between individualism (uncertainty avoidance) and earnings discretion holds for both income-increasing and income-decreasing earnings discretion.

These results clearly confirm the results of prior US studies that in highly individualistic countries, such as the United States, earnings discretion occurs. It also provides support for Gray's (1988) model in that individualist countries take more opportunistic positions whereas highly uncertainty avoidant countries do not.

Panel A of Table 2 also provides statistical evidence that investor protection (INVPRO) is significant as a main effect at the 1% level, and reduces the magnitude of earnings discretion. This permits us to reject the null in Hypothesis 3 in favor of the alternative that strong investor protection will reduce the probability of exercising earnings discretion across all countries. Panel B of Table 2 provides evidence that strong investor protection also serves to return earnings results to the central

tendency by acting to reduce the use of earnings discretion to arrive at a more positive or negative result.

In sum, the results in Table 2 support the notion that the cultural values of IND and UA play an important role in explaining earnings discretion after controlling for the effect of investor protection as well as other factors.

Cultural factors, legal environments, and discretionary accruals (Hypotheses 4 and 5). In this section, Hypotheses 4 and 5 are examined to determine whether the effects of individualism (IND) and uncertainty avoidance (UA) on earnings discretion are conditional on the legal environment (i.e., the level of investor protection). Simply put, is the association between IND (or UA) and absolute discretionary accruals weakened or strengthened as the level of investor protection increases, after controlling for the main effects of culture and investor protection? Furthermore, we examine whether these interactive roles of IND (or UA) and the level of investor protection on earnings discretion vary across income-increasing or income-decreasing discretionary accruals partition.

Table 3 shows that IND is generally positively related to absolute discretionary accruals, and the effect is magnified when investors are well protected. In other words, the interactions between individualism (IND) and the degree of investor protection (DIP) tend to be positive, suggesting that individualistic managers use more earnings discretion in high investor protection countries. This supports a rejection of the null in Hypothesis 4 in favor of the alternative that the increased relevance of accounting information for managers' financial rewards under strong investor protection and the individualistic need to manage earnings to guarantee rewards will result in a positive relationship between the degree of earnings discretion and an interaction of the degree of investor protection in the economy and the individualism culture dimension.

Table 3 also shows that the main effect of uncertainty avoidance (UA) on absolute discretionary accruals is negative, but that the interaction of UA and the degree of investor protection (DIP) tends to be positive. Furthermore, the effect of UA on absolute discretionary accruals becomes positive (coefficient estimates of 0.0008 (0.0002) for all samples (non-US sample)) in strong investor protection countries, while it is still negative in weak investor protection countries. This suggests that in jurisdictions where accounting numbers play an important role in managerial contracting, uncertainty-avoiding managers tend to exercise more earnings discretion, presumably to reduce the uncertainty of missing their contractual targets in the current year or future years.

Taken together, these results suggest that the effects of various dimensions of national culture and institutional environment on earnings discretion are conditional on each other, and hence that future research that investigates determinants of earnings discretion in an international sample should control for both of these dimensions as well as their joint effects in the research design. These interaction effects are illustrated in Figure 2.

The regression results for each of income-increasing and income-decreasing discretionary accruals partition show similar patterns. That is, the coefficients on IND $\times$ DIP and UA $\times$ DIP are positive and significant for both income-increasing and income-decreasing discretionary accruals partitions. This suggests that cultural factors and investor protection level interact with each other, especially in a direction that strong investor protection induces more excessive use of both positive and negative discretionary accruals by individualistic or risk-avoidant managers. We repeat the analysis using non-US observations and find that the inferences on the interaction between cultural values and investor protection are not largely affected by the exclusion.

Taken together, the analyses in Tables 2 and 3 suggest that individualism and uncertainty avoidance, on average, have a statistically significant influence on earnings discretion after controlling for the effect of investor protection. Furthermore, we find that earnings discretion is also affected by the interaction between cultural factors and investor protection. Finally, our results do not change with the inclusion of the long-term orientation dimension of national culture. However, including this variable reduces the number of countries represented to 15. Thus we exclude this variable in the main analysis for the sake of external validity.

Robustness Checks

To test whether the association between cultural factors and earnings discretion is affected by the research design choices, we perform a number of sensitivity analyses.

First, to test the validity of cultural values constructed by Hofstede (1980), we use alternative

Table 2 Cultural factors and discretionary accruals

A Absolute value of discretionary accruals

Variable	*|DACC|*				
	Reduced model		*Full model*		
	OLS	*OLS*	*OLS*	*WLS (all)*	*WLS (non-US)*
IND	0.0016		0.0019	0.0019	0.0001
	[76.86]**		[60.61]**	[53.94]**	[2.74]**
UA		−0.0013	−0.0002	−0.0003	−0.0003
		[−69.58]**	[−10.00]**	[−10.74]**	[−11.29]**
MA			0.0009	0.0008	0.0000
			[21.22]**	[15.46]**	[0.92]
PD			0.0000	0.0001	−0.0002
			[1.71]	[2.31]*	[−6.80]**
INVPRO			−0.0056	−0.0054	−0.0040
			[−10.33]**	[−8.83]**	[−8.40]**
LNSIZE			−0.0152	−0.0167	−0.0066
			[−42.69]**	[−40.92]**	[−21.15]**
LNBM			−0.0236	−0.0259	−0.0104
			[−28.96]**	[−27.50]**	[−12.59]**
LEV			−0.0330	−0.0394	−0.0137
			[−10.74]**	[−11.02]**	[−4.72]**
ISSUE			0.0405	0.0446	0.0216
			[32.99]**	[30.92]**	[17.09]**
LOSS			0.0341	0.0335	0.0150
			[24.81]**	[20.90]**	[11.41]**
Intercept	0.0974	−0.0771	−0.0468	−0.0499	0.1109
	[16.03]**	[−12.53]**	[−5.40]**	[−4.82]**	[12.59]**
N	96,409	96,409	96,409	96,409	41,719
Adjusted R^2	0.1113	0.1309	0.1912	0.2043	0.1036

This table presents the results of regressions for the following equation. Please see Appendix for explanations of variables. *N* denotes the number of sample observations used for the regression. The entire sample consists of 96,409 firm–year observations.

$$|\text{DACC}| = \alpha_0 + \alpha_1 \text{IND} + \alpha_2 \text{UA} + \alpha_3 \text{MA} + \alpha_4 \text{PD} + \alpha_5 \text{INVPRO} + \alpha_6 \text{LNSIZE} + \alpha_7 \text{LNBM} + \alpha_8 \text{LEV} + \alpha_9 \text{ISSUE} + \alpha_{10} \text{LOSS} + \alpha_{11-22} \text{DYR} + \alpha_{23-121} \text{DIND} + \varepsilon$$

The *t*-statistics are based on White's (1980) standard errors. *t*-statistics are in brackets, and ** (*) indicates statistical significance at the 1% (5%) level (two-tailed).

B Absolute value of positive or negative discretionary accruals

Variable	*DACC*					
	|[+]DACC|			*|[−]DACC|*		
	OLS	*WLS (all)*	*WLS (non-US)*	*OLS*	*WLS (all)*	*WLS (non-US)*
IND	0.0018	0.0019	0.0001	0.0017	0.0018	−0.0000
	[43.23]**	[38.74]**	[2.97]**	[46.03]**	[41.66]**	[−0.56]
UA	−0.0003	−0.0003	−0.0003	−0.0002	−0.0003	−0.0002
	[−9.02]**	[−9.26]**	[−9.20]**	[−7.28]**	[−8.32]**	[−7.32]**
MA	0.0008	0.0008	0.0000	0.0008	0.0007	−0.0000
	[15.11]**	[11.55]**	[0.74]	[15.32]**	[11.11]**	[−0.28]
PD	0.0000	0.0000	−0.0002	−0.0000	−0.0000	−0.0002
	[0.16]	[0.61]	[−4.72]**	[−0.28]	[−0.92]	[−5.57]**
INVPRO	−0.0051	−0.0050	−0.0038	−0.0065	−0.0065	−0.0040
	[−6.96]**	[−6.10]**	[−5.86]**	[−9.48]**	[−8.38]**	[−6.61]**
LNSIZE	−0.0115	−0.0125	−0.0058	−0.0149	−0.0162	−0.0073
	[−27.50]**	[−26.36]**	[−13.30]**	[−38.91]**	[−37.52]**	[−18.71]**
LNBM	−0.0193	−0.0211	−0.0074	−0.0211	−0.0226	−0.0133
	[−19.75]**	[−18.75]**	[−7.15]**	[−25.24]**	[−23.95]**	[−13.74]**
LEV	−0.0015	−0.0063	0.0092	−0.0581	−0.0639	−0.0384
	[−0.37]	[−1.41]	[2.38]*	[−17.34]**	[−16.78]**	[−10.98]**
ISSUE	0.0409	0.0440	0.0274	0.0307	0.0337	0.0139
	[27.00]**	[25.06]**	[15.98]**	[22.94]**	[21.89]**	[9.15]**
LOSS	0.0293	0.0298	0.0121	0.0317	0.0298	0.0163
	[17.70]**	[15.59]**	[6.92]**	[21.12]**	[17.34]**	[10.26]**
Intercept	−0.0503	−0.0561	0.1040	−0.0187	−0.0203	0.1170
	[−4.57]**	[−4.32]**	[8.66]**	[−1.62]	[−1.48]	[10.38]**
N	48,035	48,035	21,101	48,374	48,374	20,618
Adjusted R^2	0.1978	0.2145	0.1093	0.2381	0.2538	0.1332

This table presents the results of regressions for the following equation. Please see the Appendix for explanations of variables. *N* denotes the number of sample observations used for the regression. The entire sample consists of 96,409 firm–year observations.

$$|[+]\text{DACC}|\text{or}|[-]\text{DACC}| = \alpha_0 + \alpha_1\text{IND} + \alpha_2\text{UA} + \alpha_3\text{MA} + \alpha_4\text{PD} + \alpha_5\text{INVPRO} + \alpha_6\text{LNSIZE} + \alpha_7\text{LNBM} + \alpha_8\text{LEV} + \alpha_9\text{ISSUE} + \alpha_{10}\text{LOSS} + \alpha_{11-22}\text{DYR} + \alpha_{23-121}\text{DIND} + \varepsilon$$

The *t*-statistics are based on White's (1980) standard errors. *t*-statistics are in brackets, and ** (*) indicates statistical significance at the 1% (5%) level (two-tailed).

Table 3 Cultural factors, investor protection, and discretionary accruals

Variable	*|DACC|*		*|[+]DACC|*		*|[−]DACC|*	
	WLS (all)	*WLS (non-US)*	*WLS (all)*	*WLS (non-US)*	*WLS (all)*	*WLS (non-US)*
IND	0.0002	0.0000	0.0003	0.0001	0.0001	0.0000
	[4.48]**	[1.23]	[5.08]**	[1.98]*	[2.24]*	[0.65]
IND × DIP	0.0057	0.0011	0.0053	0.0013	0.0054	0.0007
	[40.48]**	[4.49]**	[29.38]**	[4.13]**	[29.99]**	[2.18]*
UA	−0.0001	−0.0002	−0.0001	−0.0002	−0.0000	−0.0002
	[−1.91]	[−8.73]**	[−3.08]**	[−7.44]**	[−1.47]	[−5.33]**
UA × DIP	0.0009	0.0004	0.0008	0.0002	0.0010	0.0006
	[6.65]**	[3.45]**	[4.37]**	[1.45]	[5.55]**	[3.94]**
MA	−0.0004	−0.0004	−0.0005	−0.0004	−0.0005	−0.0005
	[−13.46]**	[−16.17]**	[−11.11]**	[−11.40]**	[−10.99]**	[−12.47]**
PD	−0.0001	0.0000	0.0000	0.0000	−0.0001	−0.0001
	[−1.16]	[0.68]	[0.08]	[0.43]	[−1.31]	[−0.96]
DIP	−0.4798	−0.1195	−0.4534	−0.1276	−0.4597	−0.1018
	[−33.55]**	[−6.15]**	[−24.10]**	[−4.91]**	[−25.90]**	[−3.89]**
LNSIZE	−0.0163	−0.0068	−0.0122	−0.0059	−0.0159	−0.0074
	[−40.34]**	[−21.62]**	[−25.83]**	[−13.88]**	[−37.11]**	[−18.97]**
LNBM	−0.0257	−0.0103	−0.0207	−0.0074	−0.0225	−0.0131
	[−27.38]**	[−12.46]**	[−18.50]**	[−7.09]**	[−24.06]**	[−13.56]**
LEV	−0.0434	−0.0122	−0.0099	0.0106	−0.0677	−0.0369
	[−12.17]**	[−4.24]**	[−2.20]*	[2.77]**	[−17.85]**	[−10.64]**
ISSUE	0.0427	0.0220	0.0427	0.0277	0.0317	0.0143
	[29.85]**	[17.67]**	[24.48]**	[16.47]**	[20.74]**	[9.55]**
LOSS	0.0309	0.0149	0.0276	0.0121	0.0271	0.0161
	[19.34]**	[11.37]**	[14.50]**	[6.92]**	[15.82]**	[10.19]**
Intercept	0.0403	0.0978	0.0296	0.092	0.0528	0.1031
	[4.33]**	[12.21]**	[2.56]*	[8.29]**	[4.21]**	[10.06]**
N	96,409	41,719	48,035	21,101	48,374	20,618
Adjusted R^2	0.2145	0.1048	0.2258	0.1106	0.2673	0.1345

This table presents the results of regressions for the following equation. Please see the Appendix for explanations of variables. *N* denotes the number of sample observations used for the regression. The entire sample consists of 96,409 firm–year observations.

$$\begin{aligned}|\text{DACC}|\text{or}|[+]\text{DACC}|\text{or}|[-]\text{DACC}| =& \alpha_0 + \alpha_1 \text{IND} + \alpha_2 \text{IND}\times\text{DIP} + \alpha_3 \text{UA} + \alpha_4 \text{UA}\times\text{DIP} \\ &+ \alpha_5 \text{MA} + \alpha_6 \text{PD} + \alpha_7 \text{DIP} + \alpha_8 \text{LNSIZE} + \alpha_9 \text{LNBM} \\ &+ \alpha_{10} \text{LEV} + \alpha_{11} \text{ISSUE} + \alpha_{12} \text{LOSS} \\ &+ \alpha_{13-24} \text{DYR} + \alpha_{25-123} \text{DIND} + \varepsilon\end{aligned}$$

The *t*-statistics are based on White's (1980) standard errors. *t*-statistics are in brackets, and ** (*) indicates statistical significance at the 1% (5%) level (two-tailed).

measures for the cultural values. Since we are interested in the difference in cultural values across countries, we form an indicator variable for each cultural value (IND, UA, MA, PD) using various cut-offs and repeat the same regression analyses. As an alternative approach, we deduct the mean (minimum) value from each cultural dimension and repeat the same exercise. The untabulated result reveals no significant differences.

Second, we test the robustness of our results to the choice of investor protection measure. The La Porta et al. (1998) measure comprises five proxies for the quality of legal enforcement. However, the risk of expropriation and the contract repudiation by the government deal more generally with the government's stance toward business. Thus we use only the first three items in their enforcement variables (i.e., rule of law, judicial efficiency, and corruption), and repeat the exercises. The results are consistent with those reported in Tables 2 and 3.

Third, to test Hypotheses 4 and 5, we use the dummy variable for the level of investor protection, since it facilitates the interpretation of the coefficients (unlike using a continuous variable). Even

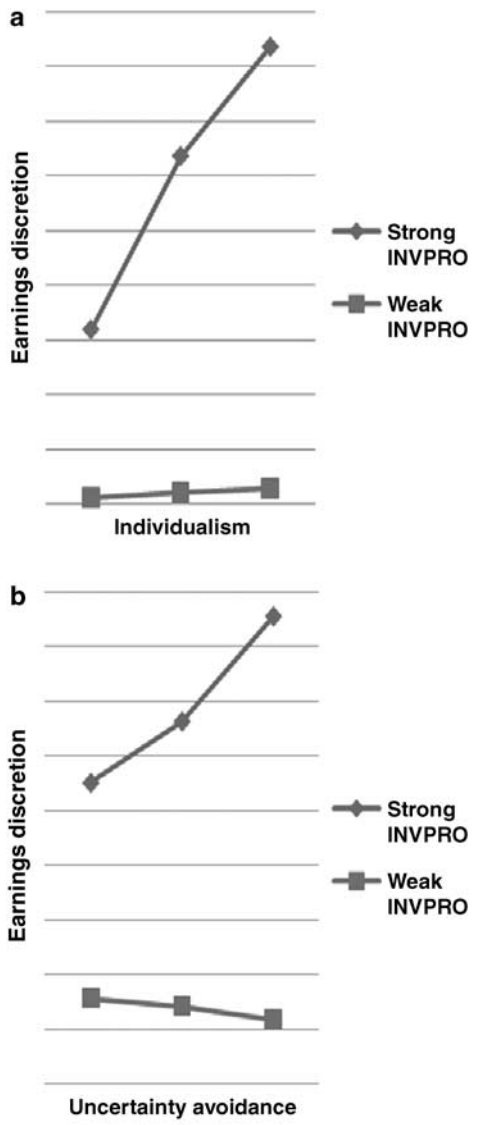

Figure 2 Illustration of the interaction effects between the national culture variables and investor protection on earnings discretion. The *y*-axis is earnings discretion (ED), and the *x*-axis captures (a) individualism (IND) and (b) uncertainty avoidance (UA), respectively. In both graphs, the culture variables do not increase in a parallel fashion in strong and weak investor protection environments, suggesting that the effects of IND and UA on ED vary systematically with the strength of the investor protection of the economy.

when we use either the quintile or decile ranks of investor protection instead of the dichotomous dummy, we obtain very similar results. We have also compared the magnitudes of IND and UA coefficients in the top and bottom seven countries in terms of investor protection. Both the IND and UA coefficients are significantly higher for the firms in top seven countries, consistent with our main results. Taken together, we conclude that our results are fairly robust across different ways of partitioning the sample into strong and weak investor protection groups.

Fourth, some prior studies suggest possible measurement errors in estimating discretionary accruals using the accrual-based earnings discretion measures as in this study. As an alternative measure for accrual-based earnings discretion, we use the ratio of earnings volatility to cash flows volatility on the basis of rolling periods of 5 years, assuming that it reflects the extent to which managers have smoothed earnings beyond the volatility inherent in business operations. If managers aggressively exercise accounting discretion, earnings volatility would be relatively lower than cash flows volatility. Consistent with the previous results using the accrual-based earnings discretion measure, individualism (uncertainty avoidance) has a statistically positive (negative) relation with the income smoothing measure after controlling for the effect of investor protection. This suggests that the results are not sensitive to the choice of earnings discretion measure.

Fifth, we note that the Hofstede scores, while capturing the national culture dimensions we are interested in, are rather outdated and not without limitations (see for instance House, Hanges, Javidan, Dorfman, & Gupta, 2004). To alleviate this concern, we replaced Hofstede's culture scores with those of House et al.'s (2004) GLOBE scores (the uncertainty avoidance and the inverse of institutional collectivism scores) and re-estimated the model, but the results did not change.

Finally, since we use a pooled sample, the coefficients' standard errors could be subject to bias due to the spatial dependence. As a robustness check, we estimate standard errors using the methodology by Driscoll and Kraay (1998). The results are virtually the same.

CONCLUSIONS

In this paper, an examination is conducted to determine whether certain cultural values of a country explain earnings discretion practices across countries. The evidence leads to a conclusion that individualism (uncertainty avoidance) is positively (negatively) related to the magnitude of earnings discretion, after controlling for factors that are known to influence managers' decisions to manage

earnings. Furthermore, the positive association between individualism and discretionary accruals is particularly pronounced in strong investor protection regimes, while the average negative association between uncertainty avoidance and discretionary accruals becomes positive in strong investor protection regimes.

These results support prior but much more limited studies. They also strongly support the first principal logical derivations of likely behavior based on Gray's (1988) model, which defines the relationship between social values, such as those of Hofstede (1980), and accounting values and outcomes. Once again the strong relationship between individualism and optimism plays out in the results herein. Also, the relationship of uncertainty avoidance with conservatism and a desire for non-discretion is clearly displayed. Furthermore, our results confirm that Gray's (1988) institutions can have a role that runs contrary to the base cultural values. For the institutional dimension, the evidence appears to support a conclusion that strong investor protection reduces earnings discretion regardless of culture. Beyond this effect of investor protection, the interaction between the degrees of investor protection and both individualism and uncertainty avoidance is positively associated with the magnitude of earnings discretion. Put more simply, in strong legal schemes, where accounting numbers are more commonly used in managerial contracting, subjects with highly individualistic/strong uncertainty-avoidant cultures tend to manipulate earnings more.

The results show that culture affects not only corporate disclosure (Hope, 2003; Salter & Niswander, 1995) but also the qualitative aspect of it, that is, firms' discretionary accrual choices. The study also shows that the ability of institutions (i.e., investor protection mechanisms) to constrain earnings management (Leuz et al., 2003) varies with the national culture. This yields some interesting consequences, as the accounting world is now in a very short-term and aggressive process of consolidating around a single global GAAP (IFRS). Our results imply that even with convergence, accounting choices under the single GAAP might vary across countries, due for instance to the cultural differences of those who apply the GAAP. In other words, our findings suggest that a uniform reporting standard might not necessarily translate into uniform reporting practices. Further, our findings add to the growing evidence from all aspects of the international business literature that cultural differences still matter in today's globalized international business environments. Recent works such as Kwok and Tadesse (2006), Leung, Bhagat, Buchan, Erez, and Gibson (2005), and Kirkman, Lowe, and Gibson (2006) point out that the debate surrounding cultural convergence and divergence is far from over, and that culture in conjunction with other socio-political and contextual factors such as regulation provides international business research with a much richer background with which to explain global phenomena. Our results support this prior work in showing that, in decisions that affect financial markets, cultural and institutional factors interact to arrive at the final outcome. Our study also moves from the individual decision level to the individual group level, as recommended by Kirkman et al. (2006). Finally, the study adds representation from international accounting with a market approach, an area long neglected in the international business literature.

Finally, this study is subject to the following caveats. First, while we hypothesize and provide evidence consistent with the view that national culture influences managers' tendency to manage earnings, causality is difficult to prove. However, given that national culture tends to be relatively stable over time, we believe that the tests provide reasonable assurance for the possible effects of national culture on accounting choices. Second, the inference is based on indices of national culture (Hofstede, 1980), which could be measured with error. However, to the extent that the measurement errors are random across countries, this factor biases against documenting the findings. Third, we cannot rule out the possibility that the statistical power reported in the study is due at least in part to the relatively large sample size for an empirical study. Finally, each country has some unique cultural, institutional and legal environments that are not captured by the measures. We try to mitigate this concern by using country fixed-effect models. Despite these potential limitations, this study makes a unique contribution to the literature by identifying national culture as an important determinant of managers' earnings discretion practices around the world, and by providing evidence that both national culture and legal environment jointly determines managers' discretionary accounting choices.

ACKNOWLEDGEMENTS

We thank anonymous reviewers, Lee Radebaugh (the editor), and seminar participants at the 2007 American Accounting Association Midyear and Annual Meetings, and the 2007 European Accounting Association Annual Congress, for helpful comments.

REFERENCES

Ball, R. 2001. Infrastructure requirements for an economically efficient system of public financial reporting and disclosure. In R. E. Litan & R. Herring (Eds), *Brookings–Wharton papers on financial services*: 127–182. Washington DC: Brookings Institute Press.

Ball, R., & Brown, P. 1968. An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, 6(2): 159–178.

Ball, R., Kothari, S. P., & Robin, A. 2000. The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics*, 29(1): 1–51.

Boyacigiller, N., & Adler, N. 1991. The parochial dinosaur: Organizational science in a global context. *Academy of Management Review*, 16(2): 262–290.

Brown, L. B., & Caylor, M. L. 2005. A temporal analysis of quarterly earnings thresholds: Propensities and valuation consequences. *The Accounting Review*, 80(2): 423–440.

Burgstahler, D., & Dichev, I. 1997. Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, 24(1): 99–126.

Chenhall, R. H. 2003. Management control systems design within its organizational context: Findings from contingency-based research and directions for the future. *Accounting, Organizations, and Society*, 28(2): 127–168.

Chui, A., Lloyd, A., & Kwok, C. 2002. The determination of capital structure: Is national culture a missing piece to the puzzle? *Journal of International Business Studies*, 33(1): 99–127.

Dechow, P., Sloan, R. G., & Sweeney, A. P. 1996. Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*, 13(1): 1–36.

DeFond, M., Hung, M., & Trezevant, R. 2007. Investor protection and the information content of annual earnings announcements: International evidence. *Journal of Accounting and Economics*, 43(1): 37–67.

Degeorge, F., Patel, J., & Zeckhauser, R. 1999. Earnings management to exceed thresholds. *Journal of Business*, 72(1): 1–33.

Doupnik, T., & Tsakumis, G. 2004. A critical review of tests of Gray's theory of cultural relevance and suggestions for future research. *Journal of Accounting Literature*, 23: 1–48.

Driscoll, J., & Kraay, A. C. 1998. Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics*, 80(4): 549–560.

Dyck, A., & Zingales, L. 2004. Private benefits of control: An international comparison. *Journal of Finance*, 59(2): 537–600.

Elliott, J., & Shaw, W. 1988. Write-offs as accounting procedures to manage perceptions. *Journal of Accounting Research*, 26(Suppl.): 91–119.

Fama, E. F., & French, K. R. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1): 3–56.

Fields, T. D., Lys, T. Z., & Vincent, L. 2001. Empirical research on accounting choice. *Journal of Accounting and Economics*, 31(1–3): 255–307.

Francis, J., LaFond, R., Olsson, P., & Schipper, K. 2004. Costs of equity and earnings attributes. *The Accounting Review*, 79(4): 967–1010.

Gray, S. J. 1988. Towards a theory of cultural influence on the development of accounting systems internationally. *Abacus*, 24(1): 1–15.

Gray, S. J., & Vint, H. 1995. The impact of culture on accounting disclosures: Some international evidence. *Asia-Pacific Journal of Accounting*, 2(December): 33–43.

Guan, L., Pourjalali, H., Sengupta, P., & Teruya, J. 2006. Effect of cultural environment and accounting regulation on earnings manipulation: A five Asian-Pacific country analysis. *Multinational Business Review*, 13(2): 1–20.

Harrison, G., & McKinnon, J. 1999. Cross-cultural research in management control systems design: A review of the current state. *Accounting, Organizations, and Society*, 24(5–6): 483–509.

Healy, P., & Wahlen, J. 1999. A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13(4): 365–383.

Hofstede, G. 1980. *Culture's consequences: International differences in work-related values*. London: Sage Publications.

Hope, O. K. 2003. Firm-level disclosures and the relative roles of culture and legal origin. *Journal of International Financial Management & Accounting*, 14(3): 218–248.

Hope, O. K., Kang, T., Thomas, W., & Yoo, Y. K. 2007. *Impact of excess auditor remuneration on cost of equity capital around the world*. Working paper, University of Toronto, Florida Atlantic University, University of Oklahoma, and Korea University.

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. 2004. *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Thousand Oaks, CA: Sage Publications.

Hung, M. 2001. Accounting standards and value relevance of financial statements: An international analysis. *Journal of Accounting and Economics*, 30(3): 401–420.

Jaggi, B., & Low, P. Y. 2000. Impact of culture, market forces, and legal systems on financial disclosures. *International Journal of Accounting*, 35(4): 495–519.

Kinney, M., & Trezevant, R. 1997. The use of special items to manage earnings and perceptions. *Journal of Financial Statement Analysis*, 3(1): 45–53.

Kirkman, B., Lowe, K., & Gibson, C. 2006. A quarter century of *Culture's Consequences*: A review of empirical research incorporating Hofstede's cultural values framework. *Journal of International Business Studies*, 37(3): 285–320.

Kirschenheiter, M., & Melumad, N. D. 2002. Can "big bath" and earnings smoothing co-exist as equilibrium financial reporting strategies? *Journal of Accounting Research*, 40(3): 761–796.

Kothari, S. P. 2001. Capital markets research in accounting. *Journal of Accounting and Economics*, 31(1–3): 105–231.

Kwok, C. Y., & Tadesse, S. 2006. National culture and financial systems. *Journal of International Business Studies*, 37(2): 227–247.

La Porta, R., Lopez-de-Silanes, F., Schleifer, A., & Vishny, R. W. 1998. Law and finance. *Journal of Political Economy*, 106(6): 1113–1155.

La Porta, R., Lopez-de-Silanes, F., Schleifer, A., & Vishny, R. W. 2000. Investor protection and corporate governance. *Journal of Financial Economics*, 58(1–2): 3–27.

Leung, K., Bhagat, R., Buchan, N., Erez, M., & Gibson, C. 2005. Culture and international business: Recent advances and their implications for future research. *Journal of International Business Studies*, 36(4): 357–378.

Leuz, C., Nanda, D., & Wysocki, P. D. 2003. Earnings management and investor protection: An international comparison. *Journal of Financial Economics*, 69(3): 505–527.

Lewis, P., & Salter, S. 2006. Europe and America – Together or apart: An empirical test of differences in actual reported results. In J. T. Sale (Ed.), *Advances in international accounting*, Vol. 19: 221–243. Greenwich, CT: JAI Press.
Lopez, T., & Rees, L. 2002. The effect of beating and missing analysts' forecasts on the information content of unexpected earnings. *Journal of Accounting, Auditing & Finance*, 17(2): 155–184.
Radebaugh, L., Gray, S., & Black, E. 2006. *International accounting and multinational enterprises*, (6th ed.). Hoboken, NJ: John Wiley & Sons.
Salter, S. B., & Niswander, F. 1995. Cultural influence on the development of accounting systems internationally: A test of Gray's (1988) theory. *Journal of International Business Studies*, 26(2): 379–397.
Shleifer, A., & Vishny, R. 1997. A survey of corporate governance. *Journal of Finance*, 52(2): 737–783.
Strong, J., & Meyer, J. 1987. Asset write-downs: Managerial incentives and security returns. *Journal of Finance*, 42(3): 643–661.
Tucker, J., & Zarowin, P. 2006. Does income smoothing improve earnings informativeness? *The Accounting Review*, 81(1): 252–270.
White, H. 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48(4): 817–838.
Xie, H. 2001. The mispricing of abnormal accruals. *The Accounting Review*, 76(3): 357–373.
Zarzeski, M. T. 1996. Spontaneous harmonization effects of culture and market forces on accounting disclosure practices. *Accounting Horizon*, 10(1): 18–37.

APPENDIX: DEFINITION OF VARIABLES

Dependent variable

DACC	Discretionary accruals estimated in the cross-sectional accruals model as in Tucker and Zarowin (2006)
|DACC|	Absolute value of discretionary accruals estimated in the cross-sectional accruals model as in Tucker and Zarowin (2006)
|[+]DACC| (|[−]DACC|)	Absolute value of positive (negative) discretionary accruals estimated in the cross-sectional accruals model as in Tucker and Zarowin (2006)

Culture-related variables

IND	Individualism score from Hofstede (1980)
UA	Uncertainty avoidance score from Hofstede (1980)
MA	Masculinity score from Hofstede (1980)
PD	Power distance score from Hofstede (1980)

Legal environment-related variables

INVPRO	Investor protection score from La Porta et al. (1998)
DIP	1 if the investor protection score by La Porta et al. (1998) of the country is greater than average score; 0 otherwise

Control variables

LNSIZE	Natural logarithm of market value of equity
LNBM	Natural logarithm of book-to-market ratio
LEV	Leverage ratio, measured by debt to total assets
ISSUE	1 if shareholders' equity increases by more than 10%; 0 otherwise
LOSS	1 if the firm reported a loss during the year; 0 otherwise
DYR	Indicator variables for the years from 1992 to 2003
DIND	Indicator variables for industries based on two-digit SIC code

ABOUT THE AUTHORS

Sam Han is Assistant Professor of Accounting at the Singapore Management University. He obtained a PhD in Accounting from the University of Illinois at Urbana-Champaign. His research interests include the role of financial reporting and disclosure in capital markets, with a focus on ownership structure and managerial compensation. He was born in Seoul, South Korea and holds Korean citizenship. His e-mail address is: sshan@smu.edu.sg.

Tony Kang is currently on the faculty of Florida Atlantic University. He graduated from the University of Illinois with a PhD in Accounting in 2003. He was born in Tokyo, Japan, and has lived in Korea, Canada, France, Singapore, and United States. His research focuses on financial accounting and auditing issues in international capital markets. His e-mail is: tkang@fau.edu.

Stephen B. Salter is Professor of Accounting & Chair of Western Hemispheric Trade at the University of Texas – El Paso. He was born in Canada and spent his early life in Trinidad, the UK and Australia. He holds US citizenship and received his PhD from the University of South Carolina. His research and recent publications interests focus on national culture and its effects on control systems, information sharing, financial reporting, and other aspects of accounting. He can be reached at sbsalter@utep.edu.

Yong Keun Yoo is Assistant Professor of Accounting at Korea University, Seoul, Korea. Born in Korea, he is a Korean citizen. He received his PhD from Columbia University Business School. His research interests are in (international) financial accounting areas, focusing equity valuation using accounting information. His e-mail address is yooyk@korea.ac.kr.

Accepted by Lee Radebaugh, Area Editor, 19 February 2008. This paper has been with the authors for two revisions.