How does culture impinge upon managers' demeanor of earnings management? Evidence from cross-country analysis

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ABSTRACT

We examine the impact of national culture on managers' risk preference and on their likelihood of using accrual or real earnings management. We measure national culture using Hofstede's five dimensions of culture (1984, 2001, and 2010). Using data from 27 countries during 1997-2011, we find that managers are likely to use both accruals and real earnings management in high power distance, long-term oriented, and uncertainty avoidance countries. In countries with high masculinity, managers are more likely to use real earnings management. Finally, in countries with high individualism, managers are less likely to use either type of earnings management. Using the results from the estimation, we develop a cultural index for each country indicating the overall impact of culture on accruals and real earnings management. The findings indicate that a universal set of accounting standards may not be appropriate given the cultural diversity across countries. To improve the existing corporate governance framework and to ensure high quality and uniform financial statements, the enforcement of standards should be tailored to specific cultures.

Keywords: Accrual Earnings Management, Real Earnings Management, National Culture, Prospect Theory, Agency Theory

JEL Classification: M41

1 Introduction

In this paper, we examine whether national culture affects the propensity of managers to manage earnings. Second, we examine whether national culture influences managers to use either accruals or real earnings management, or both. We measure national culture using Hofstede's five dimensions of culture (1984, 2001, and 2010): uncertainty avoidance, power distance, individualism, masculinity, and long-term orientation. We rely on prospect theory in designing our hypotheses. Prospect theory is a descriptive theory of decision making under risk and has been shown empirically, in many cases, to be superior to expected utility theory. Under prospect theory, value is assigned to gains and losses around a reference point. Around the reference point, the value function is convex for losses and concave for gains. This means that a $100 loss will feel more painful than a $100 gain.[1] Based on this theoretical framework, we argue that various risks of meeting or beating earnings targets affects the managers' choice of earnings management strategies under different dimensions of national culture.

Managers' cultural values have a significant impact on the way they process and understand information. Cultural values also have an effect on the social and interpersonal interactions with others (Lewellyn and Bao 2017). A business firm, ignoring national culture, does so at its own peril.[2] DaimlerChrysler's acquisition of Mitsubishi is often considered a failure because of ignoring national culture. After the acquisition, DaimlerChrysler replaced some existing managers with German managers. While Japanese managers are politer and paid more attention to the

[1] Empirically, Hastie and Dawes (2010) indicate that losses feel almost twice as painful for an equivalent gain.

[2] See Griffith, Myers, and Harvey (2006) and http://www.commisceo-global.com/blog/cultural-differences-in-international-merger-and-acquisitions#C1

workers' feelings, the German managers were stricter and more pragmatic in their approach. Efficiency dropped. Another dimension of national culture that influenced this acquisition is masculinity. In Germany, masculinity is high, while in Japan this dimension is low. Thus, DaimlerChrysler management were concerned about performance, while existing Mitsubishi employees were more concerned about others and the quality of life. In related research, Frijns, Dodd, and Cimerova (2016) find that cultural diversification in the board of directors has a negative impact on performance of non-complex firms, specifically that masculinity affected the effectiveness of the board.

Clearly national culture affects how managers feel pressure to achieve earnings targets. In a survey of CFOs, Dichev, Graham, Harvey, and Rajgopal (2013) document that almost 20% of firms manage earnings and that the earnings management can amount to 10% of earnings per share. In addition, firms with rapid growth, more lawsuits, and more volatile earnings are likely to manage earnings. Slightly more than 92% of CFOs stated that the motivation to manage earnings came from outside pressure to hit earnings benchmarks. Furthermore, Graham, Harvey, and Rajgopal (2005) report that the two most important earnings benchmarks are quarterly earnings for the same quarter last year and the analyst consensus estimate. They go on to state that managers are willing to make moderate economic sacrifices to meet the earnings expectations. Stock price is the dominant factor driving earnings management given that the market cares about earnings benchmarks and managers believe that the market often overreacts to earnings announcements[3].

[3] Evidence that identifies this stock-price motivation can be found in Dichev et al. (2013), Skinner and Sloan (2002)) and Bartov, Givoly, and Hayn (2002).

Dechow and Skinner (2000) document methods used to manage earnings (both accrual and real cash flow choices). For instance, managers can adjust the amount of expenses reported with the use of overly aggressive or lowered provisions or reserves to meet or beat earnings targets. In addition, they might affect real cash flow choices by postponing or accelerating discretionary expenses (such as R&D or advertising). For instance, Marie Knott (2012) suggests that cutting R&D is an easy approach to meeting targets because R&D is expensed rather than capitalized. The detrimental effects of cutting R&D are not felt for years. There are many other similar deferred expenses that have detrimental long-term effects such as cutting employee training programs or deferring maintenance on machinery and equipment.

While the role of corporate boards and audit committees help to mitigate earnings management Xie, Davidson, DaDalt (2003), managers may undertake real activity-based earnings management to meet a certain earnings threshold (Graham et al. 2005; Roychowdhury 2006). While improved corporate governance imposed by Sarbanes-Oxley is an attempt to restrict accounting scandals, the norms in other countries have motivated the managers to take real actions to manage earnings (Graham et al. 2005). Auditors cannot easily detect real earnings management, because real actions to manage earnings occur in the ordinary course of business. Moreover, real earnings management can occur at any time of the year, giving the manager enough wealth creation opportunities at the cost of the long-term value of the firm.

The extant literature suggests that the national culture is a factor that influences managers to engage in earnings manipulation around the world. Most of these studies are limited to either accrual earnings management (e.g. Han et al. 2010; Callen et al. 2011) or real earnings management (Paredes and Wheatley 2017). Han

et al. and Callen et al. examine accruals earnings management and find opposite results for individualism and uncertainty avoidance. This is most likely because Han et al. (2010) only include two cultural dimensions while Callen et al. investigate all five cultural dimensions. We argue that studies related to earnings management are incomplete without proper consideration of both the real and accrual earnings management measures and including all five of the cultural dimensions. Thus, to provide a better explanation of managers' earnings manipulation behavior, we investigate the effect of cultural values on the behavior of managers by considering both accrual-based and real earnings management approaches.[4] In our paper, we investigate whether the effect of national cultural values on earnings manipulation behavior of managers exists at a cross-country level. Specifically, we probe the influence of five national culture dimensions developed by Hofstede (1984, 2010) and Hofstede and Hofstede (2001) on the managers' tendencies of conducting earnings management (after controlling for other traditional firm-level and country-level factors).

The *loss-aversion concept* from *prospect theory* proposed by Kahneman and Tversky (1979) help facilitate our understanding of managers' risk preference. Based on this theoretical framework, the various risks of meeting or beating earnings target affect managers' choice between two earnings management strategies under different dimensions of national culture. Our results show that managers are likely to use both accruals and real earnings management in high power distance, long-term oriented, and uncertainty avoidance countries. In countries with high masculinity, managers

[4] Mao and Renneboog (2015) also examine both accrual and real earnings management in management buyouts. They find that managers often trade-off between the two based on the likelihood of being detected.

are likely to use real earnings management. Finally, in countries with high individualism, managers are less likely to use either type of earnings management.

Based on our findings, we propose that in developing a high quality corporate governance model and in attempting to increase the uniformity in financial statements, national culture should be considered. The paper is structured as follows. We review the related literature and develop the theoretical framework in section 2. We discuss the data and the empirical framework in section 3. The empirical results are reported in section 4 and section 5 concludes our study.

2. Literature review and Hypothesis Development

2.1 Real and accruals earnings management

Analyzing US data, Cohen, Dey, and Lys (2008) find that managers prefer real earnings management following the introduction of the Sarbanes-Oxley Act (SOX) to reach earnings target and to lessen the chance of being detected. However, it is possible for managers to complement accrual earnings management with real earnings management or switch from one type to other to increase their private benefits at the cost of other stakeholders.[5] In a later study, Cohen and Zarowin (2010) find that managers, at the time of seasoned equity offerings, switch from accrual to real earnings management to manipulate earnings. Finally, Burton et al. (2011) find that auditors are more effective in detecting accruals earnings manipulation in competitive corporate environments, which might lead to more real earnings management in competitive markets.

2.2 Theoretical framework- Prospect Theory

[5] See Cohen et al. (2008), Zang (2011) and Cohen and Zarowin (2010).

Prospect theory can help explain the choice of earnings manipulation under uncertainty. The utility of agents depends on the gain or the loss relative to a reference point. The importance of this theory lies in its ability to explain the loss-aversion behavior of an individual, which means that individuals are more sensitive to any loss than they are to an equivalent amount of a gain (the value function is concave in gains and convex in losses). We argue that the loss aversion under prospect theory, together with the risk-aversion feature of agency theory, can provide a more robust explanation for managers' earnings manipulation behavior.[6]

2.3 Hypotheses development

Hofstede's (1984; 2010; 2001) five dimensions of culture are[7]:

1. ***UAI - uncertainty avoidance***: represents a society's tolerance for uncertainty and ambiguity. High uncertainty avoidance countries tend to have stricter rules and laws and individuals value precision and punctuality. Individuals in low uncertainty avoidance countries tend to be more flexible and have higher tolerances for differing opinions.

2. ***PDI - power distance***: based on the degree of equality of individuals in a country. More centralized authority with levels of hierarchy and supervision characterizes higher power distance countries. Lower power distance countries have more decentralized authority and with more participatory management.

3. ***INDI – individualism***: people in a society consider their own interests without taking the interests of the society as a whole into account. In a low individualism (i.e. high collectivism) country, employees of a firm are considered members of the family of the firm and their interests are more closely aligned with the firm. This can lead to the development of powerful networks that are more susceptible to corruption.

4. ***MAS – masculinity***: represents a preference for achievement, assertiveness, control, and power. In high masculine countries, managers strive for achievement and recognition.

[6] We do not attempt to determine the reference point because as Graham et al. (2005) point out, internal earnings targets tend to differ from externally observed earnings targets. In addition, the reference points can be manipulated. Thus, prospect theory may provide justification for firms issuing management earnings guidance to move the earnings benchmark.

[7] We considered a sixth dimension (indulgence). We dropped this dimension because it was highly correlated with four of the original dimensions and was not significant after controlling for the other dimensions.

5. ***LTO - long-term orientation***: Individuals in a long-term-oriented country are more focused on long-term goals. High scores are likely to indicate that thrift and persistence are rewarded and that social behavior is oriented towards future rewards. Values in a society with short-term orientation are related to the traits of spending extravagantly and to using available resources instantaneously for quick results.

Hofstede suggests that relative national cultural scores should remain constant to a great extant until at least year 2100 (Hofstede and Hofstede 2001) (Hofstede, 2001, p. 36). Consistent with the literature, we treat the cultural dimensions as time-invariant in our analysis.

2.3.1 Uncertainty Avoidance

If earnings management helps to decrease uncertainty, a positive relation with uncertainty avoidance is expected. However, if the earnings management leads to increased uncertainty in the long-run, a negative relation might be found. Countries with high uncertainty avoidance include Belgium, Japan, and France, while Singapore and Denmark are low uncertainty avoidance countries.

According to the loss-aversion concept of prospect theory, if managers are more sensitive to losses, they might adopt more high-risk earnings management options to increase their personal benefits. This leads them to engage, not only in end-of-fiscal year accrual-based earnings management, but also in real activities of earnings management throughout the year. This is because, in high uncertainty avoidance countries, the financial reporting system is more unified[8] and the chance of being detected using accruals management might be higher relative to real earnings management. Thus, real earnings management becomes attractive to managers as the

[8] Gray's (1988) framework suggests that financial reporting tends to be more uniform in countries with low tolerance for uncertainty and ambiguity - i.e. high uncertainty avoidance.

loss-aversion concept suggests that the individual prefers to maintain their current decision to avoid future loss. [9]

2.3.2 Power Distance

Since power is more centralized in higher power distance countries, we expect a positive relation with earnings management. Sweden and Denmark score low on power distance, while the Philippines and Malaysia score high.

The main constraint in the power distance country is the accounting system because the power holder uses the accounting system to validate the decision of the top power holder (Hofstede et al. 2010).Thus the power holder has incentives to manage earnings. Kim and Sohn (2013) show that as managers possess high power in a strong accounting system-based country, they are in a better position to bear the costs associated with real earnings management. If managers only employ accrual-based earnings management in a high-power distance country, they face an increased chance of being detected by auditors. Consequently, they may lose their personal benefits and even their jobs. We argue that managers are equally likely to engage in real earnings management and in accrual-based earnings management. In addition, individuals at the top of a hierarchical system are able to use accruals management at the end of the year to fine-tune the earnings results.

2.3.3 Individualism

The relation between individualism and earnings management is not clear. Managers located in a country with low individualism desire to protect the welfare

[9] Prior studies posit mixed results of the relationship between uncertainty avoidance and accruals management. For instance, Geiger, O'Connell, Clikeman, Ochoa, Witkowski, and Basioudis (2006) argue that when accruals management is used as a mechanism to control for uncertainty, the uncertainty avoidance positively affects the earnings management. But if the accruals management limits future opportunities a negative relation might be observed. Han, Kang, Salter, and Yoo (2010) suggests that managers in high uncertainty societies tend to have a highly secret, yet conservative approach, when engaging in earnings management. This suggests a negative relation between uncertainty avoidance and accruals management

of the stakeholders with whom the managers have informal networks and are more acceptable to earnings management. Low levels of individualism can lead to the development of powerful networks where individuals are more likely to follow their 'extended family' (Hofstede 1984). Earnings management is likely to be more acceptable in low individualistic countries.

In a country with high individualism, flexibility of both the accounting measurement and the managers self-governance is more acceptable. Because of this high flexibility, managers may not need to engage in any earnings management. On the other hand, one could argue that this increased flexibility of accounting measurement, earnings management is more acceptable.

2.3.4 Masculinity

In high masculine countries, we expect a positive relation with earnings management. In high masculine countries, managers' behavior is characterized by their ego for high achievements, wealth, and recognition (Hofstede 1984, p 294). In the accounting and the corporate governance literature, earnings management is affected by the incentives of managers (Davidson, Xie, Xu, and Ning 2007). Tang and Koveos (2008) argue that the informal institutions of a country allow the manager's ego to play a more important role at work and on earnings reputation.

The accounting system of a country with higher masculinity places more emphasis on achieving financial goals (Hofstede et al. 2010). In order to demonstrate the achievement and success in high masculinity countries, managers' have incentives to beat benchmarks. So, with a high degree of masculinity, managers will prefer to report consistent and stable earnings. Thus, real earnings management increases the probability of meeting or beating a benchmark rather than waiting until the end of the year and using accruals management. Furthermore, as the chance of

being detected by auditors for real earnings management is lower than for accrual-based earnings manipulation, managers are more likely to maintain their reputation by not being detected. However, it is still likely that managers will use accruals management to fine-tune earnings at the end of the year to achieve goals

2.3.5 Long-term Orientation

Managers in a long-term-oriented country are more likely to focus on a long-term earnings target and therefore the management reward system is more likely to be based on long-term economic outcomes. Doupnik (2008) argues that there is less earnings management in a long-term-oriented country, since the importance of current earnings is relatively low. However, Prospect theory suggests that managers are not indifferent to differences between current period losses and current period gains. Thus managers may still engage in earnings management. Because it is less costly, accrual-based earnings management may be preferred over real earnings management. The prior studies on earnings management show that managers generally ignore the deterioration of the long-term performance when they tend to engage in real earnings management (Cohen and Zarowin 2010; Braam, Nandy, Weitzel, and Lodh 2015) to accelerate the current earnings within a year.

Also, in short-term oriented countries, both types of earnings management are likely to be used because of the increased focus on short-term goals.

Our hypotheses are stated in terms of earnings management are as follows:

H1: There is a positive association between earnings management and uncertainty avoidance.

H2: There is a positive association between earnings management and power distance.

H3: There is a negative association between earnings management and individualism.

H4: There is a positive association between earnings management and masculinity.

H5: There is a negative association between earnings management and long-term-orientation.

3. Data and Empirical Models

We collect the cultural dimensions from Hofstede's (1984; 2001) studies. We consider those countries with sufficient information to construct our earnings management measures. We have observations from 27 countries. We use Worldscope data for estimation of earnings management measures from 1997 to 2011. We exclude Banks and financial firms (SICs 6000-6999) because their financial statements are not comparable with those of non-financial firms. Following Leuz et al. (2003), we require that firms have three years of consecutive income statement and balance sheet data.

After dropping the missing observations required for earnings management measurement and for those firms with negative book value (Cohen et al. 2008), our final sample includes 3,379 non-financial firms with 21,214 firm-year observations for 27 countries. We require all observations have both accrual and real earnings management variables. This way we can make comparisons between the two types of earnings management.

We use a performance adjusted current accruals model (based on Ashbaugh, LaFond, and Mayhew 2003) as our primary measure of accruals earnings management. See the Appendix for a discussion of the estimation of our earnings management variables. For robustness, we also compute the modified Jones model (see Dechow et al. 1995)[10]. We compute three measures of real earnings

[10] The results are weaker when we use the Modified Jones Model. We expect this because the Jones model uses total accruals and the performance adjusted model that we use is based on current accruals (which are more likely to capture earnings management.)

management and one aggregate measure. We denote the three real earnings-management components as: 1) RM_CFO: abnormal level of cash flow from operations, 2) RM_Prod: abnormal level of production costs and 3) RM_Disc: abnormal decrease in discretionary expenses. We multiple both RM_CFO and RM_Disc by negative one so that positive coefficients on all earnings management variables indicate increased levels of earnings management. Our aggregate measure of real earnings management, Total REM, is the sum of RM_CFO, RM_Prod, and RM_Disc.

3.3.2 Country level Controls

Leuz et al. (2003) suggest that a country's legal and institutional framework influences the earnings management. Following La Porta et al. (1998) we use *anti-director's rights*, which refers to the strength of a country's legal system in protecting the outside investors' rights, as proxy for legal institutional control. Managers can be restricted in the possible misuse of their discretionary power in a country with strong anti-director's rights. Consequently, the outside investors are protected by legal system. In such countries, real earnings management is more likely if it is more difficult to detect.

Existing literature shows that strong security regulation motivates managers to secretly increase their firms' profits if there are high disclosure requirements or if there are difficulties in recovering loses. Following La Porta, Lopez-De-Silanes, and Shleifer (2006), we define *security regulation* by calculating average of three indices, the 'disclosure requirement index', the 'investors' difficulty in recovering loss index', and the 'public enforcement of securities regulation index'.

The efficiency of a financial market depends on the stage of economic development of the country concerned. In other words, earnings management might

be a consequence of changing economic conditions Badertscher (2011). Following the literature on cross-country earnings management behavior (Chaney et al. 2011), we consider *inflation* and *GDP per capita* to control for the possible influence of the business cycle on earnings manipulation of managers in each country. The annual inflation (Consumer Price Index) and the annual GDP (log normal of the changes in real per capita GDP) data for our sample countries are collected from the World Development Indicator produced by the World Bank.

3.3.4 Firm level controls

We also control for firm characteristics associated with accrual and real earnings management. We control for *firm size* measured by the logarithm of market capitalization. *Return on Assets (ROA)* is income before extraordinary items divided by total assets. *ROA* is used to control for firm profitability. Profitable firms are less likely to use earnings management to meet earnings thresholds.

One ratio that captures firm value is the *book-to-market ratio*. *Book-to-Market* ratio is the natural log of book value of equity divided by market value of equity. Managers are careful in representing undervalued or overvalued shares. Thus, we measure this factor by the natural logarithm of the ratio of book value and market value of equity.

Operating leverage is total debt divided by total assets. *Operating leverage* is included because high levels of debt and/or debt covenants influence managers to engage in more earnings manipulation to avoid restrictions of debt covenants. This variable is measured by the ratio of total debt to total asset. We include *stock issuance* because firms that want to raise capital frequently tend to engage in more earnings management. *Stock issuance* which is an indicator variable equal to one if the firm issued stock during the year. To capture the cross-sectional differences in

the level of discretion and consider the different regulations across industries, we control for *industry* effects by using two-digit Standard Industry Classification (SIC) code. To control for the time effect, we also include *year* dummies.

[Insert Tables 1 and 2 here]

4. Empirical Model and Results

Table 1a reports the summary statistics for the earnings management variables for each of the 27 countries (with the number of observations by country reported in parentheses). Countries with high average accruals include Indonesia, Singapore, India, and Taiwan. One the other hand, countries with low average accruals include Italy, France, Switzerland and Australia. Countries with high levels of average real earnings numbers include Israel, Taiwan, South Korea and Maylsia. Lower levels of real earnings management include the United States, United Kingdom, Mexico, and Denmark.

We present the summary statistics of the culture dimensions in Tables 1b and 1c. Table 1c lists the top and bottom five countries on each cultural dimension. For instance, for the United States, individualism is high, but for long-term orientation, the dimension is low. While South Korea is exactly opposite; high on long-term orientation but low on individualism.

Correlations among the variables are reported in Tables 2a and 2b. In Table 2c, we report the descriptive statistics for the country-level and firm-level variables used in the analysis.

The correlations between accruals and real earnings management are negative. This indicates, on a univariate level, that these two means of earnings management might be alternatives for each other. Two issues emerge from the correlations. In Table 2a, the last five columns show the correlations among the

cultural dimensions. There exists very high correlations among the last three dimensions: Uncertainty avoidance, Long-term Orientation, and Individualism. The VIF for these variables exceed 30 for two of them and exceed 10 for the other. Thus multicollinearity is a concern. Therefore, we regress each cultural dimension on the remaining dimensions and compute the residual. This residual can be used as an estimate of how much that particular dimension can be explained beyond the other dimensions. In our analysis, the levels for Power Distance and Masculinity are used along with the residuals for Uncertainty Avoidance, Individualism, and Long-term Orientation. In the tables, if the cultural dimension name is followed by (Resid), the residual is being used in place of the raw dimension in the regression.

The second issue identified by the correlations concerns the country level controls. These variables (in row and column numbers 3 through 6) are highly correlated and result in VIF's greater than 20. We address this issue two different ways. First, since these are control variables, we are less concerned about the regression coefficients. We performed a yearly principal component regression analysis which reduced the four country level variables into two components (two of the eigenvalues exceeded one and the next closest eigenvalue was less than 0.5). The proportion of variance explained by the two components averaged 87% and all factor loadings exceeded 0.53. We labeled the first component, economic regulation and the second component inflation. We identify these variables in the tables by including in parentheses (PCA).

The second approach also considers the influence of firm level unobserved heterogeneity. We used two-stage least squares estimation (instrumental variables). In particular, we use four dummy variables for the English, French, German and Scandinavian origin of the countries as indicated by La Porta, Lopez-de-Silanes,

Shleifer, and Vishny (1998) in 2SLS estimation. We use these legal origin dummy variables as exogenous variables (see La Porta et al. 1998; Leuz et al. 2003) in the first stage. In other words, we regress legal origin on the anti-directors' right and legal enforcement (endogenous variables) along with other control variables from our primary regression in the first stage. We test the validity of our instruments and find that the instruments do not suffer from over-identification and weak instrument choice. In the second stage, we use the fitted values of these endogenous variables as independent variables along with culture dimensions and other control variables to explain the variation of two types of earnings management measures across different national cultures.

After these adjustments, we find that the variance inflation factors (VIFs) are all less than five. In addition, we test for significance using heteroscedastic consistent standard errors.

4.1 Main Regression Results

We estimate, in general, the following model:

$$\begin{aligned} EM_{it} = {} & \alpha_0 + \beta_1 PDI_c + \beta_2 MAS_c + \beta_3 LTO(resid)_c + \beta_4 INDI(resid)_c + \beta_5 UAI(resid)_c \\ & + \alpha_1 FirmSize_{it} + \alpha_2 OperatingLeverage_{it} + \alpha_3 Log(BooktoMarket)_{it} \\ & + \alpha_4 ROA_{ct} + \alpha_5 StockIssuance_{it} + \alpha_6 EconomicRegulation(PCA)_{it} \\ & + \alpha_7 Inflation(PCA)_{ct} + \alpha_8 \sum Industry\ dummies \\ & + \alpha_9 Y \sum Year\ dummies_t + \epsilon_{it} \end{aligned} \quad (1)$$

where EM_{it} represents the proxy for earnings management. There proxies include the performance adjusted accruals-based measure or the real-activity measures of the firm (total real earnings management, RM_CFO, RM_Prod, or RM_Disc).

The results from the pooled OLS and instrumental variable regressions are reported in Panel A of Table 3. We find that national culture impacts the choice of earnings management for both regression specifications (OLS and Instrumental

Variables). Specifically, we find that power distance and uncertainty avoidance have a positive relation with both accruals and total real earnings management. Both accrual and total real earnings management are negatively related to individualism. This is consistent with the argument that countries with low individualism are more susceptible to corruption and that earnings management is more acceptable.

[Insert Table 3 here]

We find that both accruals and total real earnings management are positively correlated with long-term orientation. We initially felt that managers would be less likely to manage short-term earnings if their orientation was more long term. However, under prospect theory, current period losses appear to outweigh long-term concerns.

Finally, the results partially support Hypothesis 4 on Masculinity. This is the only dimension where there appears to be a tradeoff between accruals and total real earnings management. Countries with higher masculinity tend to use total real earnings management and less accruals management.

The results for firm-level variables are very interesting. Because we require that all firms have both accrual and real earnings management variables, we can identify the type of earnings management preferred after controlling for national culture. First, we see that higher operating leverage is positively associated with both higher accruals and real earnings management. Accruals earnings management is positively related to accruals management but negatively related to real earnings management. Thus, more profitable companies prefer a more costless approach to meeting earnings goals through the use of accruals management. On the other hand, larger firms and firms with larger book to market values (less growth opportunities) resort to higher levels of total real earnings management rather than use accruals.

[Insert Table 3 Panel B about here]

In Panel A, of Table 3, we use the total real earnings management variable, but in Panel B, Table 3, we replace the total real earnings management variable with its components: RM_CFO (abnormal cash from operations), RM_Prod (abnormal production costs), and RM_Disc (abnormal discretionary costs). The results for Total REM are consistent with the first two components, RM_CFO (abnormal cash from operations), and RM_Prod (abnormal production costs). However, RM_Disc (abnormal discretionary costs) differ for countries with higher masculinity and higher uncertainty avoidance. In these countries, managers are less likely to use this form of real earnings management.

4.2 Cultural Index

As a way to summarize the aggregate impact of national culture on earnings management, we create a cultural index by country. We compute the index, by using the OLS regression coefficients reported in Table 3 and obtain the predicted amounts using the cultural variables. Thus, the cultural indices computed by country are:

$$\textbf{Accruals Cultural Index}_{\textbf{country}} = 0.007768(PDI_{country}) - .002684(MAS_{country}) + 0.001276(UAI_{country}) + 0.001087(LTO_{country}) - 0.006663(INDI_{country}) \quad (2)$$

$$\textbf{Real Activities Cultural Index}_{\textbf{country}} = 0.006857(PDI_{country}) + .0.000694(MAS_{country}) + 0.0005417(UAI_{country}) + 0.003449(LTO_{country}) - 0.00240(INDI_{country}) \quad (3)$$

These computed values and the standardized values are reported in Table 4, Panel A. Belgium and the United Kingdom, for instance, have the lowest impact of culture on accruals, while Thailand and Indonesia have the highest impact. Australia, Finland, and the United States are low on real earnings management, while Singapore, Hong Kong, and Malaysia are high. The standardized scores allow you to assess how the countries compare relative to each other. Negative values indicate a lower than average impact while a positive value indicates a higher than average impact.

Certain countries rank much higher on accruals versus real earnings management. For instance, Finland and Thailand both rank much higher on accruals versus real earnings management. On the other hand, Germany and the United Kingdom, rank much higher on real earnings management than accruals. Other countries like the United States and France rank about equally on both accruals and real earnings management.

In Panel B of Table 5, we ranked the cultural indices in thirds and computed the average cultural dimension for each third. Several trends about the cultural dimensions can be found. For instance, high power distance countries are likely to use both accruals and real earnings management. Countries with high individualism are less likely to use either accrual or real earnings management. The same pattern can be found for countries with increased uncertainty avoidance.[11]

[Insert Table 4 about here]

4.3 Robustness tests

We preform several robustness tests for our analysis. In Table 5, we repeat the analysis using robust regression and hierarchical linear models (HLM). In addition, in the last column, we report the results replacing the performance adjusted current accruals model with the modified Jones Model (see Dechow et al. (1995)). Robust regression tests the sensitivity of the results to outliers and heteroscedasticity. Hierarchical linear models account for shared variance in hierarchical structured data. Cross-country analysis results in two levels, firm-level and country level.

[11] In testing our accruals and real earnings management indices in other settings, we find that the accruals index is significantly negatively related to S&P's three transparency and Disclosure indices (Financial Transparency and Disclosure, Ownership Structure and Investor Rights, and Board and Management Structure) measured at the country level. Our real earnings management index was not related to the S&P indices. This indicates that real earnings management is more difficult to identify and that our indices can be used as control variables in other cross-border studies. We thank Mara Faccio for providing this analysis for us.

Insert Table 5 here

The results from using these alternative estimation methods are consistent with the results reported in Table 3, national culture is associated with the various types of earnings management. Unlike the coefficient on uncertainty avoidance in the total real earnings management in Table 3, in Table 5, uncertainty avoidance is positive and statistically significant (at 0.001 significance level). This supports our Hypothesis 1. In Hypothesis 3, we predict that individualism has less of an impact on accrual and real earnings management. Depending on flexibility of accounting measurement, managers carry on both real and accrual earnings management and they only consider the risk factor while choosing the earnings management type. Consistent with this prediction, the coefficients of individualism in Table 4 indicate a negative relationship with accrual earnings management and total real earnings management.

In the last column of Table 5, we replace the performance-adjusted current accruals model with Modified Jones model. Overall, the results are consistent with the results reported in Table 3 with the exception that Uncertainty Avoidance which is no longer significant. We expect weaker results when using the Modified Jones Model. We believe this is because total accruals are used in the estimation of discretionary accruals. We believe that the performance-adjusted model that we use based on current accruals is more likely to capture earnings management.

[Insert Table 5 about here]

As a final robustness test, we eliminate one country at a time (not reported). The coefficients on our cultural variables remain statistically significant (as reported in Table 3). However, when observations from Japan, the United Kingdom, or the United States (or excluding all three), the significance level for the Uncertainty

Avoidance increases to 0.01. For the accruals measure and deleting one country at a time, all cultural regression coefficients continue to be significant and have the same sign (as reported in Table 3).

6. Conclusion

In this paper, we examine the impact of the national culture dimensions developed by Hofstede (1984); Hofstede and Hofstede (2001) on the managers' tendencies to conduct two types of earnings management. To overcome the shortcomings of the agency theory, we introduce the loss-aversion concept under the prospect theory to facilitate our understanding of managers' risk preference at a certain reference point (meeting or beating earnings target) and thus construct the theoretical framework of the study. We argue that, under different cultural dimensions, managers consider meeting and beating earnings target as a separate problem, and accordingly, adjust their risk preference and loss avoidance using accrual and real earnings management.

We find that managers are likely to use both accruals and real earnings management in high power distance, long-term oriented, and uncertainty avoidance countries. In addition, managers are more likely to use real earnings management, in countries with high masculinity. Finally, in countries with high individualism, managers are less likely to use either type of earnings management.

Our study also has policy implications for corporate governance. Our findings suggest that the policy makers and regulators should consider the motivation of managers' for conducting accrual-based management or real earnings management under different cultural dimensions. The various risk preferences of managers under different cultural contexts should be considered in developing the country's corporate governance code to effectively constrain managers' earnings manipulation.

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APPENDIX

Estimation of Accrual Earnings Management Measures:

Our primary measure of discretionary accruals is the absolute value of the performance-adjusted current accruals measure (REDCA) based on Ashbaugh, LaFond, and Mayhew (2003). *REDCA* is computed as the difference between total current accruals *(TCA)* and expected total current accruals (*EPTCA*) as follows:

$$REDCA_{ijt} = TCA_{ijt} - EPTCA_{ijt}. \quad (1a)$$

Where *TCA* and *EPTCA* are computed as follows:

$$TCA_{ijt} = \Delta(Current\ Assets)_{ijt} - \Delta(Current\ Liabilities)_{ijt} - \Delta(Cash)_{ijt} + \Delta(Short\ term\ and\ Current\ long\ term\ Debt)_{ijt},$$ deflated by lagged total assets.

Where, Δ is the first difference (with respect to time) operator, and

Current Assets (WC02201) is the sum of cash and equivalents, receivables, inventories, prepaid expenses and other current assets.

Current Liabilities (WC03101) represents debt or other obligations that the company expects to satisfy within one year.

Cash (WC02001) represents the sum of cash and short term investments.

Short Term and Current Long Term Debt (WC03051) represents that portion of financial debt payable within one year including current portion of long term debt and sinking fund requirements of preferred stock or debentures.

Assets (WC02999) are total assets.

To estimate the expected performance-adjusted total current accruals (*EPTCA*), we estimate equation (2).

$$TCA_{it} = \beta_1 \frac{1}{Assets_{it-1}} + \beta_2 \frac{\Delta net\ sales_{it}}{Assets_{it-1}} + \beta_3 ROA_{it-1} + \beta_4 BusCycle_{t-1} + \varepsilon_{it} \quad (2a)$$

where *Sales* (WC01001) are defined as gross sales and other operating revenue less discounts returns and allowances. Lagged *ROA*, computed as operating income after taxes (WC08326) relative to total assets is included to control for firm performance as suggested by (Kothari, Leone, and Wasley 2005). We include two variables as measures of the business cycle. These two variables are PPP (the per capita GDP based on purchasing power parity) and INF (the annual percentage change in consumer prices).[12] The model is

[12] International Monetary fund, World Economic Outlook Database, April 2009. Alternatively, we used the gross domestic product as a measure of the business cycle with similar results.

estimated by Fama-French industry (Fama and French 1997), pooling the data across countries using all firms with the requisite accounting data in any given year. We exclude financial firms (SIC 6000-6999) throughout the analysis.

Using the parameters from equation (2), expected performance-adjusted total current accruals (*EPTCA*) are computed as follows in equation (3):

$$EPTCA_{ijt} = \widehat{\beta}_1 \frac{1}{Assets_{ijt-1}} + \hat{\beta}_2 \frac{\left(\Delta net\ sales_{ijt} - \Delta AR\right)}{Assets_{ijt}} + \widehat{\beta}_3 ROA_{it-1} + \widehat{\beta}_4 BusCycle_{t-1} \qquad (3a)$$

Where ΔAR denotes the change in accounts receivables (and is included as suggested by Dechow et al. (1995)) and all other variables are defined earlier.

Estimation of Real Earnings Management Measures

Based on the prior literature (refer Dechow, Sloan, and Sweeney 1995; Gunny 2010; Roychowdhury 2006; Zang 2011; Cohen et al. 2008; Cohen and Zarowin 2010), we develop three proxies for real earnings management.

The first proxy for real earnings management is the abnormal level of cash flows from operation (RM_CFO). In order to temporarily increase sales volume, managers sometime increase the price discounts or provide more lenient credit terms. Although this increases the current period earnings, with the passage of time the firms again come back to old prices. As a result, one can observe a lower cash flow in the current period. So, a *lower value of abnormal cash flows* indicates more real earnings management of this type. For every year, we measure normal cash flows from operations (CFO) as a linear function of sales and the change in sales as follows:

$$\frac{\mathrm{CFO_{it}}}{\mathrm{Assets_{i(t-1)}}} = K_1 \frac{1}{\mathrm{Assets_{i(t-1)}}} + K_2 \frac{\mathrm{SALES_{it}}}{\mathrm{Assets_{i(t-1)}}} + K_3 \frac{\Delta\mathrm{SALES_{it}}}{\mathrm{Assets_{i(t-1)}}} + \varepsilon_{it} \quad \ldots\ldots\ldots .(7a)$$

where the abnormal cash flow from operations is the difference between actual CFO and the normal level of CFO, which is the predicted value obtained from Equation (7).

The second measure of real earnings management is the abnormal production cost (RM_Prod). In such cases, managers report lower cost of goods sold through increased production. To reduce per unit fixed costs, managers increase firms' production more than necessary. So the total cost per unit keeps falling unless or until the reduction in fixed cost per unit is offset by the per unit increase in marginal cost. Given a certain sales level, cash flow from operations will decrease as the unnecessary production keeps increasing the annual production cost relative to sales. A *higher value of abnormal production costs*

indicates more real earnings management of this type. So, for this measure, we calculate the sum of cost of goods sold (COGS) and the change in inventory (ΔINV) during the year as the production cost (PROD). The following linear function of contemporaneous sales represents the COGS:

$$\frac{\text{COGS}_{it}}{\text{Assets}_{i(t-1)}} = K_1 \frac{1}{\text{Assets}_{i(t-1)}} + K_2 \frac{\text{SALES}_{it}}{\text{Assets}_{i(t-1)}} + \varepsilon_{it} \quad \text{…… .(8a)}$$

The inventory growth, which is a linear function of the contemporaneous and lagged change in sales, is as follows:

$$\frac{\Delta\text{INV}_{it}}{\text{Assets}_{i(t-1)}} = K_1 \frac{1}{\text{Assets}_{i(t-1)}} + K_2 \frac{\Delta\text{SALES}_{it}}{\text{Assets}_{i(t-1)}} + K_3 \frac{\Delta\text{SALES}_{it-1}}{\text{Assets}_{i(t-1)}} + \varepsilon_{it} \quad \text{…….. .(9a)}$$

From the above two equations the normal level of production cost is estimated by the use of the next equation.

$$\frac{\text{PROD}_{it}}{\text{Assets}_{i(t-1)}} = K_1 \frac{1}{\text{Assets}_{i(t-1)}} + K_2 \frac{\text{SALES}_{it}}{\text{Assets}_{i(t-1)}} + K_3 \frac{\Delta\text{SALES}_{it}}{\text{Assets}_{i(t-1)}} + K_4 \frac{\Delta\text{SALES}_{i(t-1)}}{\text{Assets}_{i(t-1)}} + \varepsilon_{it} \quad \text{.(10a)}$$

The abnormal production cost is the difference between actual PROD and the normal level of PROD, which is the predicted value from Equation (10).

The last proxy for real earnings management is the abnormal decrease in discretionary expenses (RM_Disc). Discretionary expenses consist of advertising expenses, research and development expenses and SG&A expenses. Managers prefer to increase the current period cash flows by reducing the discretionary expenses. In general, *lower values of abnormal discretionary expenses* indicate more real earnings management of this type. The following linear function of sales represents the normal level of discretionary expenses:

$$\frac{\text{DISC}_{it}}{\text{Assets}_{i(t-1)}} = K_1 \frac{1}{\text{Assets}_{i(t-1)}} + K_2 \frac{\text{SALES}_{it}}{\text{Assets}_{i(t-1)}} + \varepsilon_{it} \,. \qquad (11a)$$

The above regression model gives significantly low residuals if managers manage the requirements to increase sales numbers in the current year. So, to solve this issue, the following model is used to measure the normal level of discretionary expenses as a function of lagged sales:

$$\frac{\text{DISC}_{it}}{\text{Assets}_{i(t-1)}} = K_1 \frac{1}{\text{Assets}_{i(t-1)}} + K_2 \frac{\text{SALES}_{i(t-1)}}{\text{Assets}_{i(t-1)}} + \varepsilon_{i,t}. \qquad (12a)$$

The abnormal discretionary expenses are the difference between actual DISC and the normal level of DISC, which is the predicted value from Equation (12a).

Table 1a: Descriptive Statistics of Earnings Management Measures*

Country (obs)		**Accruals EM**	**Total REM**	**RM-CFO**	**RM-Prod**	**RM-Disc**
Australia (64**)**						
	Mean	0.374	0.249	-0.193	0.017	0.425
	Std Dev	0.22	0.44	0.12	0.23	0.16
Belgium (21)						
	Mean	0.480	0.077	-0.047	0.003	0.120
	Std Dev	0.37	0.33	0.09	0.14	0.14
Canada (172)						
	Mean	0.420	0.253	-0.086	0.071	0.268
	Std Dev	0.30	0.39	0.18	0.19	0.27
Chile (1)						
	Mean	0.746	0.535	-0.075	0.204	0.405
	Std Dev	.	.	.	.	.
Denmark (12)						
	Mean	0.441	-0.110	-0.133	-0.073	0.096
	Std Dev	0.30	0.45	0.14	0.17	0.23
Finland (24)						
	Mean	0.571	0.153	-0.086	0.040	0.199
	Std Dev	0.32	0.21	0.08	0.09	0.15
France (114)						
	Mean	0.366	0.023	-0.120	-0.040	0.183
	Std Dev	0.20	0.30	0.08	0.15	0.18
Germany (45)						
	Mean	0.530	-0.003	-0.097	-0.072	0.166
	Std Dev	0.47	0.44	0.14	0.18	0.31
Hong Kong (50)						
	Mean	0.570	0.321	-0.085	0.103	0.303
	Std Dev	0.34	0.26	0.10	0.12	0.13
India (24)						
	Mean	0.779	0.170	-0.113	0.017	0.265
	Std Dev	0.33	0.29	0.07	0.12	0.16
Indonesia (93)						
	Mean	0.794	0.017	-0.110	-0.062	0.189
	Std Dev	0.24	0.51	0.11	0.25	0.26
Israel (9)						
	Mean	0.411	0.610	-0.032	0.225	0.416
	Std Dev	0.36	0.24	-0.10	0.07	0.28
Italy (85)						
	Mean	0.364	0.239	-0.104	0.065	0.278
	Std Dev	0.29	0.33	0.06	0.12	0.19
Japan (8,155)						
	Mean	0.464	0.227	-0.086	0.073	0.239
	Std Dev	0.35	0.29	0.06	0.14	0.16

Table 1a (continued)

Country (obs)		**Accruals EM**	**Total REM**	**RM-CFO**	**RM-Prod**	**RM-Disc**
Malaysia (195)						
	Mean	0.681	0.373	-0.118	0.114	0.378
	Std Dev	0.21	0.21	0.08	0.08	0.13
Mexico (19)						
	Mean	0.630	-0.117	-0.079	-0.115	0.076
	Std Dev	0.27	0.32	0.08	0.15	0.18
Netherlands (2)						
	Mean	0.335	0.516	-0.068	0.177	0.407
	Std Dev	0.15	0.03	0.01	0.02	0.00
Philippines (25)						
	Mean	0.532	0.290	-0.109	0.068	0.331
	Std Dev	0.30	0.15	0.08	0.06	0.08
Singapore (153)						
	Mean	0.787	0.263	-0.088	0.090	0.260
	Std Dev	0.29	0.25	0.10	0.12	0.17
South Korea (1,100)						
	Mean	0.678	0.403	-0.081	0.144	0.340
	Std Dev	0.24	0.26	0.09	0.12	0.14
Sweden (103)						
	Mean	0.556	-0.077	-0.128	-0.079	0.131
	Std Dev	0.23	0.35	0.06	0.17	0.19
Switzerland (247)						
	Mean	0.371	0.016	-0.107	-0.029	0.152
	Std Dev	0.26	0.30	0.06	0.13	0.17
Taiwan (524)						
	Mean	0.753	0.408	-0.098	0.153	0.353
	Std Dev	0.27	0.19	0.08	0.08	0.10
Thailand (72)						
	Mean	0.635	0.250	-0.136	0.047	0.339
	Std Dev	0.22	0.37	0.11	0.19	0.16
Turkey (1)						
	Mean	1.482	0.434	0.066	0.000	0.368
	Std Dev	.	.	.	.	.
United Kingdom (2284)						
	Mean	0.458	-0.127	-0.089	-0.110	0.072
	Std Dev	0.25	0.51	0.14	0.23	0.30
United States (7619)						
	Mean	0.457	-0.197	-0.061	-0.108	-0.028
	Std Dev	0.33	0.53	0.19	0.24	0.36

* See the Appendix for a description of the computation for each variable.

Table 1b: Descriptive statistics of Cultural Dimensions by Country

Country	Power distance	Masculinity	Uncertainty avoidance	Long-term orientation	Individualism
Australia	38	61	51	21	90
Belgium	65	54	94	82	75
Canada	39	52	48	36	80
Chile	63	28	86	31	23
Denmark	18	16	23	35	74
Finland	33	26	59	38	63
France	68	43	86	63	71
Germany	35	66	65	83	67
Hong Kong	68	57	29	61	25
India	77	56	40	51	48
Indonesia	78	46	48	62	14
Israel	13	47	81	38	54
Italy	50	70	75	61	76
Japan	54	95	92	88	46
Malaysia	100	50	36	41	26
Mexico	81	69	82	24	30
Netherlands	38	14	53	67	80
Philippines	94	64	44	27	32
Singapore	74	48	8	72	20
South Korea	60	39	85	100	18
Sweden	31	5	29	53	71
Switzerland	34	70	58	74	68
Taiwan	58	45	69	93	17
Thailand	64	34	64	32	20
Turkey	66	45	85	46	37
United Kingdom	35	66	35	51	89
United States	40	62	46	26	91
Mean	55.2	48.7	58.5	55.2	50.6
Std Dev.	22.4	20.1	24.0	22.3	25.8
Minimum	13	5	8	24	14
Maximum	100	95	94	100	91

Table 1C: Countries with high and low cultural dimensions

Country	Power distance	Country	Masculinity	Country	Uncertainty Avoidance	Country	Long-term orientation	Country	Individualism
Top 5 Countries									
Malaysia	100	Japan	95	Belgium	94	South Korea	100	United States	91
Philippines	94	Italy	70	Japan	92	Taiwan	93	United Kingdom	89
Mexico	81	Switzerland	70	France	86	Japan	88	Netherlands	80
Indonesia	78	Mexico	69	Chile	86	Germany	83	Canada	80
India	77	Germany	66	Turkey	85	Belgium	82	Italy	76
Bottom 5 Countries									
Switzerland	34	Chile	28	United Kingdom	35	Thailand	32	Singapore	20
Finland	33	Finland	26	Hong Kong	29	Chile	31	Thailand	20
Sweden	31	Denmark	16	Sweden	29	Philippines	27	South Korea	18
Denmark	18	Netherlands	14	Denmark	23	United States	26	Taiwan	17
Israel	13	Sweden	5	Singapore	8	Mexico	24	Indonesia	14

Table 2 Panel A: Correlation matrix – Earnings Management and Cultural Dimensions (n=21,214)

	Variables	1	2	3	4	5	6	7	8	9	10
1	Performance -based Accrual EM	1.00									
2	Total Real Earnings Management	**-0.08**	1.00								
3	RM_ CFO	**0.05**	**0.12**	1.00							
4	RM_ Prod	**-0.10**	**0.96**	**0.16**	1.00						
5	RM_Disc	**-0.08**	**0.85**	**-0.38**	**0.73**	1.00					
6	Power distance (PDI)	**0.14**	**0.37**	**-0.06**	**0.37**	**0.36**	1.00				
7	Masculinity (MAS)	**-0.11**	**0.17**	**-0.02**	**0.18**	**0.16**	**0.23**	1.00			
8	Uncertainty avoidance (UAI)	**0.01**	**0.38**	**-0.04**	**0.38**	**0.35**	**0.59**	**0.69**	1.00		
9	Long term orientation (LTO)	**0.08**	**0.43**	**-0.07**	**0.42**	**0.42**	**0.64**	**0.53**	**0.86**	1.00	
10	Individualism (INDI)	**-0.15**	**-0.45**	**0.07**	**-0.44**	**-0.44**	**-0.86**	**-0.28**	**-0.76**	**-0.89**	1.00

Table 2 Panel B: Correlation matrix- Earnings Management, country level controls, and firm level controls (n=21,214)

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Performance -based Accrual EM	**1.00**												
2	Total Real Earnings Management	**-0.08**	**1.00**											
3	Anti-director Rights	**-0.13**	**-0.36**	**1.00**										
4	Security Regulation	**-0.03**	**-0.39**	**0.67**	**1.00**									
5	Inflation (raw)	**-0.01**	**-0.22**	**0.11**	**0.65**	**1.00**								
6	GDP	**-0.25**	**-0.19**	**0.46**	**0.14**	**-0.21**	**1.00**							
7	Economic Regulation (PCA)	**-0.20**	**-0.33**	**0.78**	**0.64**	**0.22**	**0.52**	**1.00**						
8	Inflation (PCA)	**0.04**	**-0.24**	**0.29**	**0.72**	**0.71**	**-0.19**	**0.05**	**1.00**					
9	ROA	**0.09**	**-0.10**	**-0.14**	**-0.17**	**-0.08**	**-0.05**	**-0.14**	**-0.11**	**1.00**				
10	Firm size (ln of Assets)	**0.04**	**0.41**	**-0.61**	**-0.74**	**-0.45**	**-0.16**	**-0.54**	**-0.50**	**0.28**	**1.00**			
11	Operating Leverage	**0.09**	**0.25**	**-0.20**	**-0.17**	**-0.08**	**-0.14**	**-0.19**	**-0.07**	-0.01	**0.26**	**1.00**		
12	Book to Market	0.00	**0.44**	**-0.37**	**-0.39**	**-0.21**	**-0.16**	**-0.33**	**-0.24**	**0.07**	**0.33**	**0.03**	**1.00**	
13	Stock Issuance	**0.11**	**-0.27**	**0.07**	**0.15**	**0.16**	**0.02**	**0.09**	**0.12**	**0.20**	**-0.07**	**-0.04**	**-0.29**	**1.00**

*All correlations in bold are significant at the 0.001 level. Performance-adjusted accruals is REDCA, as defined in the appendix. Total Real Earnings Management is the sum of the three components of real earnings management, RM_CFO, RM_Prod, and RM_Disc. *Return on Assets (ROA)* is income before extraordinary items divided by total assets. *Firm size* is the natural logarithm of the market value of equity. *Operating leverage* is total debt divided by total assets. *Book-to-Market* ratio is the natural log of book value of equity divided by market value of equity. *Stock issuance* which is an indicator variable equal to one if the firm issued stock during the year. *Economic Regulation* and *Inflation* are the first two principal components of anti-directors' rights, security regulation, inflation, and GDP per capita. *Inflation* comes from the Consumer Price Index and *GDP* is the log normal of the changes in real per capita GDP by country.

Table 2c: Descriptive statistics of independent variables (n= 21,214)

Variable	Mean	Std dev.	p25	Median	p75
Country Level					
Anti-directors rights	4.272	0.899	4.000	5.000	5.000
Security regulation	0.693	0.220	0.470	0.639	0.958
GDP per Capita	0.044	0.845	0.094	0.232	0.349
Economic regulation (PCA)	-0.184	0.907	-0.460	-0.109	0.521
Inflation (PCA)	-0.350	1.073	-1.483	-0.055	0.519
Firm Level					
ROA	-0.017	0.210	-0.012	0.022	0.056
Firm size	15.186	3.568	12.032	15.530	18.086
Operating leverage	0.191	0.175	0.029	0.158	0.308
Book-to-market (log)	-0.433	0.931	-0.982	-0.368	0.188
Stock issuance	0.345	0.475	0.000	0.000	1.000

Notes: *Return on Assets (ROA)* is income before extraordinary items divided by total assets. *Firm size* is the natural logarithm of the market value of equity. *Operating leverage* is total debt divided by total assets. *Book-to-Market* ratio is the natural log of book value of equity divided by market value of equity. *Stock issuance* which is an indicator variable equal to one if the firm issued stock during the year. *Economic Regulation* and *Inflation* are the first two principal components of anti-directors' rights, security regulation, inflation, and GDP per capita. *Security regulation* is the average of three indices 'disclosure requirement index', the 'investors' difficulty in recovering loss index', and the 'public enforcement of securities regulation index' (see La Porta et al. (2006)). *Inflation* comes from the Consumer Price Index and *GDP* is the log normal of the changes in real per capita GDP by country.

Table 3: Panel A:
The Impact of Culture on Accruals and Real Earnings Management

Dependent Variable	Performance-Adjusted Accruals		Total Real Earnings Management	
	(OLS)	(Instrument)	(OLS)	(Instrument)
Intercept	0.244***	0.042	-0.623***	-0.636***
	(0.023)	(0.030)	(0.030)	(0.037)
Power distance	**0.008*****	**0.011*****	**0.007*****	**0.008*****
	(0.000)	(0.000)	(0.001)	(0.001)
Masculinity	**-0.003*****	**-0.002*****	**0.001****	**0.001*****
	(0.000)	(0.000)	(0.000)	(0.000)
Long-term orientation (Resid)	**0.001*****	**0.003*****	**0.003*****	**0.004*****
	(0.000)	(0.000)	(0.000)	(0.000)
Individualism (Resid)	**-0.007*****	**-0.007*****	**-0.002*****	**-0.003*****
	(0.000)	(0.000)	(0.001)	(0.001)
Uncertainty avoidance (Resid)	**0.001*****	**0.004*****	0.001	**0.001****
	(0.000)	(0.000)	(0.000)	(0.000)
Economic regulation (PCA)	-0.037***	0.048***	-0.016**	-0.002
	(0.004)	(0.009)	(0.006)	(0.012)
Inflation (PCA)	-0.023***	-0.007*	-0.002	0.006
	(0.004)	(0.003)	(0.005)	(0.004)
ROA	0.153***	0.161***	-0.434***	-0.431***
	(0.010)	(0.010)	(0.013)	(0.013)
Firm size	-0.013***	-0.013***	0.023***	0.023***
	(0.001)	(0.001)	(0.001)	(0.001)
Operating leverage	0.048***	0.070***	0.384***	0.381***
	(0.012)	(0.013)	(0.015)	(0.016)
Book-to-market	-0.032***	-0.030***	0.130***	0.130***
	(0.003)	(0.003)	(0.003)	(0.003)
Stock issuance	0.068***	0.067***	-0.119***	-0.120***
	(0.004)	(0.004)	(0.006)	(0.006)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	21,214	21,214	21,214	21,214
Adj-R^2	0.289	0.283	0.435	0.453

Notes: OLS and Instrumental Regression Analysis. Standard errors are in parentheses. *, **, *** indicate significance at 5, 1, and 0.1 percent levels respectively using a two-tailed test. Heteroscedastic-consistent standard errors are estimated. Performance-adjusted accruals is REDCA, as defined in the appendix. Total Real Earnings Management is the sum of the three components of real earnings management, RM_CFO, RM_Prod, and RM_Disc. *Return on Assets (ROA)* is income before extraordinary items divided by total assets. *Firm size* is the natural logarithm of the market value of equity. *Operating leverage* is total debt divided by total assets. *Book-to-Market* ratio is the natural log of book value of equity divided by market value of equity. *Stock issuance* which is an indicator variable equal to one if the firm issued stock during the year. *Economic Regulation* and *Inflation* are the first two principal components of anti-directors' rights, security regulation, inflation, and GDP per capita. *Inflation* comes from the Consumer Price Index and *GDP* is the log normal of the changes in real per capita GDP by country.

Table 3: Panel B:
The Impact of Culture on the Components of Real Earnings Management

Dependent Variable	RM1_CFO	RM2_Prod	RM3_Disc	Total REM
Intercept	-0.107***	-0.322***	-0.195***	-0.623***
	(0.009)	(0.013)	(0.019)	(0.030)
Power distance	**0.003*****	**0.003*****	**0.001*****	**0.007*****
	(0.000)	(0.000)	(0.000)	(0.001)
Masculinity	**0.001*****	**0.000****	**-0.001*****	**0.001****
	(0.000)	(0.000)	(0.000)	(0.000)
Long-term orientation (Resid)	**0.001*****	**0.001*****	**0.002*****	**0.003*****
	(0.000)	(0.000)	(0.000)	(0.000)
Individualism (Resid)	**-0.001*****	**-0.001*****	0.000	**-0.002*****
	(0.000)	(0.000)	(0.000)	(0.001)
Uncertainty avoidance (Resid)	**0.002*****	**0.000**	**-0.001*****	0.001
	(0.000)	(0.000)	(0.000)	(0.000)
Economic regulation (PCA)	0.011***	-0.004	-0.023***	-0.016**
	(0.002)	(0.002)	(0.004)	(0.006)
Inflation (PCA)	0.004***	0.001	-0.007*	-0.002
	(0.001)	(0.002)	(0.003)	(0.005)
ROA	-0.320***	-0.260***	0.146***	-0.434***
	(0.004)	(0.006)	(0.008)	(0.013)
Firm size	-0.012***	0.013***	0.021***	0.023***
	(0.000)	(0.001)	(0.001)	(0.001)
Operating leverage	0.048***	0.130***	0.207***	0.384***
	(0.005)	(0.007)	(0.010)	(0.015)
Book-to-market	0.001	0.056***	0.073***	0.130***
	(0.001)	(0.001)	(0.002)	(0.003)
Stock issuance	0.005	-0.057***	-0.066***	-0.119***
	(0.002)	(0.003)	(0.004)	(0.006)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	21,214	21,214	21,214	21,214
Adj-R^2	0.320	0.442	0.394	0.435

Notes: OLS Regression Analysis. Standard errors are in parentheses. *, **, *** indicate significance at 5, 1, and 0.1 percent levels respectively using two-tailed tests. Heteroscedastic-consistent standard errors are estimated. Total Real Earnings Management is the sum of the three components of real earnings management, RM_CFO, RM_Prod, and RM_Disc. *Return on Assets (ROA)* is income before extraordinary items divided by total assets. *Firm size* is the natural logarithm of the market value of equity. *Operating leverage* is total debt divided by total assets. *Book-to-Market* ratio is the natural log of book value of equity divided by market value of equity. *Stock issuance* which is an indicator variable equal to one if the firm issued stock during the year. *Economic Regulation* and *Inflation* are the first two principal components of anti-directors' rights, security regulation, inflation, and GDP per capita. *Inflation* comes from the Consumer Price Index and *GDP* is the log normal of the changes in real per capita GDP by country.

Table 4
Panel A: Ranked Cultural Index for Accruals and Real Earnings Management by Country

Country	Accruals Earnings Management		Country	Real Earnings Management	
	Predicted	Standardized		Predicted	Standardized
Thailand	0.5871	1.7798	Singapore	0.7041	2.2701
Indonesia	0.5229	1.3835	Hong Kong	0.6053	1.5117
Singapore	0.4815	1.1278	Malaysia	0.5939	1.4243
Malaysia	0.4758	1.0925	Indonesia	0.5805	1.3214
Mexico	0.4629	1.0126	Philippines	0.5331	0.9574
Hong Kong	0.4597	0.9928	Taiwan	0.5325	0.9532
Philippines	0.4561	0.9707	India	0.5122	0.7967
Taiwan	0.4313	0.8177	South Korea	0.4916	0.6386
South Korea	0.4024	0.6391	Japan	0.4428	0.2644
Israel	0.3746	0.4673	Thailand	0.4102	0.0139
Finland	0.3341	0.2172	Mexico	0.3963	-0.0923
Denmark	0.3214	0.1389	Switzerland	0.3906	-0.1363
India	0.3179	0.1171	Germany	0.3869	-0.1649
Sweden	0.2898	-0.0561	United Kingdom	0.3591	-0.3784
Canada	0.1895	-0.6760	Sweden	0.3331	-0.5778
Japan	0.1726	-0.7806	Italy	0.3242	-0.6463
Australia	0.1500	-0.9197	Belgium	0.3202	-0.6766
Switzerland	0.1417	-0.9709	France	0.3055	-0.7895
France	0.1335	-1.0216	Canada	0.2983	-0.8445
United States	0.1292	-1.0485	Denmark	0.2959	-0.8635
Germany	0.1245	-1.0777	United States	0.2729	-1.0397
Italy	0.0950	-1.2596	Finland	0.2620	-1.1233
United Kingdom	0.0818	-1.3409	Australia	0.2442	-1.2599
Belgium	0.0390	-1.6054	Israel	0.2053	-1.5587

Table 4
Panel B: Cultural Dimensions within the Cultural Index for Accruals and Real Earnings Management

Accruals Earnings Management

Country Rank	Power distance	Masculinity	Uncertainty avoidance	Long-term orientation	Individualism
Top Third	77	52	48	52	23
Middle Third	41	42	57	55	57
Bottom Third	46	62	64	58	78

Real Earnings Management

Country Rank	Power distance	Masculinity	Uncertainty avoidance	Long-term orientation	Individualism
Top Third	74	56	50	66	27
Middle Third	47	54	58	54	60
Bottom Third	39	45	61	42	75

Table 4: The Impact of Culture on Accruals and Real Earnings Management

Dependent Variable	Performance-Adjusted Accruals		Total Real Earnings Management		Modified Jones Accruals
	(Robust)	(HLM)	(Robust)	(HLM)	(OLS)
Intercept	0.332***	0.097	-0.557***	0.059	0.265***
	(0.017)	(0.078)	(0.023)	(0.052)	(0.011)
Power distance	**0.008*****	**0.091*****	**0.008*****	**0.136*****	**0.001***
	(0.000)	(0.015)	(0.000)	(0.022)	(0.000)
Masculinity	**-0.005*****	**-0.026***	**0.001*****	0.040	**-0.001*****
	(0.000)	(0.013)	(0.000)	(0.027)	(0.000)
Long-term orientation (resid)	**0.002*****	**0.041*****	**0.003*****	**0.039***	**0.0002****
	(0.000)	(0.010)	(0.000)	(0.020)	(0.000)
Individualism (resid)	**-0.006*****	**-0.022*****	**-0.003*****	**-0.030*****	**-0.001*****
	(0.000)	(0.005)	(0.000)	(0.008)	(0.000)
Uncertainty avoidance (resid)	**0.001*****	**0.023***	**0.001*****	**0.074*****	0.0002
	(0.000)	(0.011)	(0.000)	(0.017)	(0.000)
Economic regulation (PCA)	0.001	-0.081	-0.014**	0.013	0.008***
	(0.003)	(0.042)	(0.004)	(0.007)	(0.002)
Inflation (PCA)	-0.004	-0.059	0.000	0.023***	0.006***
	(0.003)	(0.043)	(0.004)	(0.007)	(0.002)
ROA	0.113***	0.022***	-0.521***	-0.076***	-0.214***
	(0.007)	(0.006)	(0.010)	(0.023)	(0.011)
Firm size	-0.010***	-0.020	0.018***	0.045*	-0.005***
	(0.001)	(0.011)	(0.001)	(0.019)	(0.001)
Operating leverage	0.009	0.010	0.304***	0.058***	0.039***
	(0.009)	(0.007)	(0.012)	(0.009)	(0.006)
Book-to-market	-0.021***	-0.021**	0.111***	0.098***	0.001
	(0.002)	(0.007)	(0.003)	(0.019)	(0.002)
Stock issuance	0.047***	0.032*	-0.077***	-0.053*	0.034***
	(0.003)	(0.015)	(0.004)	(0.020)	(0.002)
Industry dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Observations	21,214	21,214	21,214	21,214	21,214
Adj-R^2	0.312		0.328		0.215
Chi-Square		155.52***		206.39***	

Notes: Robust Regression and Hierarchical Linear Model (HLM). Standard errors are in parentheses. *, **, *** indicate significance at 5, 1, and 0.1 percent levels respectively using two-tailed tests. Year and industry effects are included in all models but not reported. Chi-square is used to test the significance of the model (equivalent to a likelihood ratio test).