Accounting Quality: International Accounting Standards and US GAAP

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Abstract

We compare measures of accounting quality for firms applying IAS with US firms to investigate whether IAS are associated with less earnings management, more timely loss recognition, and higher value relevance of accounting amounts than US GAAP. We find that IAS firms exhibit lower accounting quality relative to US firms in terms of earnings smoothing, correlation between accruals and cash flows, timely loss recognition, and the association between accounting amounts and share price. Comparisons for IAS firms before and after they adopt IAS suggest that applying IAS moves firms closer to US GAAP. Conclusions are similar when we limit our sample to more recent periods. Comparing IAS firms with US GAAP reconciled from domestic GAAP and reported by non-US firms that cross list on US markets, we find that IAS accounting amounts are of similar quality to reconciled US GAAP amounts. Our results suggest that although IAS accounting amounts may not be of higher quality than those of US GAAP applied comprehensively, they are of comparable quality to reconciled US GAAP amounts reported by cross-listed firms.

1. Introduction

An ongoing debate in accounting regulation focuses on the appropriateness of requiring reconciliation of accounting amounts produced by applying domestic Generally Accepted Accounting Principles (GAAP) to US GAAP for non-US firms trading on US exchanges. Historically, the US has required non-US firms listing on US exchanges to provide reconciliations to US GAAP of earnings and book value of equity. This requirement stems from the belief that US investors can make better investment decisions regarding non-US firms if the investors have access to information about these firms that is "similar" and of "similar quality" to that available for US firms (Jenkins, 1999). Of particular concern to securities regulators is the belief that non-US domestic GAAP accounting standards provide greater opportunity for non-US firms to engage in earnings management and smoothing (Breeden, 1994). This belief is supported by prior research that suggests accounting amounts reported by non-US firms applying domestic GAAP are generally of lower quality than those reported by US firms applying US GAAP (Leuz, Nanda and Wysocki, 2003). In particular, such firms engage in more earnings management, have less timely loss recognition, and have a lower association between accounting amounts and share price.

International Accounting Standards (IAS) issued by the International Accounting Standards Committee (IASC) that have evolved into International Financial Reporting Standards (IFRS) issued by its successor body, the International Accounting Standards Board (IASB), have emerged as a leading alternative to US GAAP for global reporting.[1] Through its participation in the International Organization of Securities Commissions (IOSCO), the US Securities and

[1] IFRS include standards issued by the IASB and those issued by the IASC, some of which have been amended by the IASB. Our sample period pre-dates the effective dates of standards issued by the IASB. Thus, following the convention of Barth, Landsman, and Lang (2006), throughout we refer to our sample firms' usage of IAS rather than IFRS.

Exchange Commission (SEC) has committed to cooperating in the development of IFRS that would permit cross-listing on US exchanges without requiring firms to reconcile from IFRS to US GAAP. In 2005, the SEC staff established a "roadmap" to eliminate the need for the reconciliation requirement for firms using IFRS no later than 2009. SEC Chairman Donaldson indicated that the SEC plans to base timing on, among other things, "the application and interpretation of IFRS in financial statements across companies and jurisdictions."[2]

Consistent with application of IAS resulting in high quality accounting amounts, Barth, Landsman, and Lang (2006) finds that firms applying IAS generally report accounting amounts that are of higher quality than firms applying non-US domestic GAAP. In particular, Barth, Landsman, and Lang (2006) finds that firms applying IAS evidence less earnings management, more timely loss recognition, and more value relevance of accounting than do a matched sample of non-US firms applying domestic GAAP. Further, firms applying IAS generally exhibit higher accounting quality after adopting IAS.

The question that remains for US policy makers is whether accounting amounts that result from applying IAS are of sufficient quality relative to those that result from applying US GAAP to eliminate the need for reconciliation to US GAAP. Pownall and Schipper (1999) suggests most relevant to the SEC's deliberations on removing the reconciliation requirement for firms applying IAS would be research comparing the quality of IAS and US GAAP accounting amounts. Yet, there is little evidence relating to this comparison. Further, as Pownall and Schipper (1999) notes, the SEC is likely as interested in the quality of IAS amounts for firms that do not currently trade on US markets as it is in the quality of IAS amounts for those that do. This is because part of the SEC's goal is to attract US listings by removing impediments.

[2] "Chairman Donaldson Meets with EU Internal Market Commissioner McCreevy," Press Release 2005-62, U.S. Securities and Exchange Commission, Washington, D.C., April 21, 2005.

Whether IAS result in accounting amounts that are of quality comparable to those resulting from application of US GAAP is an open empirical question that we address. Following prior research, we interpret earnings that exhibit less earnings management, more timely loss recognition, and higher value relevance as being of higher quality. Our metrics of earnings management are based on the variance of the change in net income, the ratio of the variance of the change in net income to the variance of the change in cash flows, the correlation between accruals and cash flows, and the frequency of small positive net income. Our metrics for timely loss recognition are based on the frequency of large losses and the association between bad-news returns and earnings, and our measures of value relevance are the explanatory powers of income and equity book value for prices, and stock return for earnings.

We first conduct a cross-sectional comparison of characteristics of accounting amounts for firms that apply IAS and a matched sample of US firms. Our results suggest that firms that apply IAS generally have lower accounting quality than US firms. In particular, IAS firms have a significantly lower variance of the change in net income, a lower ratio of the variances of the change in net income and change in cash flows, a significantly more negative correlation between accruals and cash flows, and a higher frequency of small positive net income. In addition, they have a significantly lower frequency of large negative net income, and significantly lower value relevance of earnings and equity book value for share prices.

Next, we repeat the comparison between the firms that apply IAS and the matched sample of US firms but using sample data from the period before IAS firms adopted IAS, i.e., when they applied domestic GAAP, to determine if the difference in accounting quality diminishes with the application of IAS. Findings generally indicate that application of IAS reduces the difference in accounting quality between the IAS and US firms.

Third, we repeat our analysis comparing quality of accounting amounts for firms applying IAS and US GAAP but limiting data to the most recent sample years. IAS underwent several changes during our sample period. Thus, it is possible that IAS improved sufficiently in recent years that accounting quality for firms applying IAS and US GAAP are similar, but this is obscured because our primary tests are based on sample data spanning nearly a decade. Inferences based on this analysis are the same as based on the full sample, suggesting that even for more recent years, accounting amounts for US firms are of higher quality than those for IAS firms.

Finally, we compare accounting quality for IAS firms and for cross-listed firms that reconcile accounting amounts to US GAAP on Form 20-F. From the SEC's standpoint, this may be the more relevant comparison because their decision is whether to allow IAS for cross-listing as a substitute for requiring reconciliations on Form 20-F. Findings in Lang, Raedy, and Wilson (2005) suggest that reconciled US GAAP accounting amounts provided by cross-listed firms are of lower quality than for those of US firms. But, it is not clear how the quality of the reconciled amounts and IAS accounting amounts compares. By comparing firms applying IAS with firms applying domestic GAAP and reconciling to US GAAP on Form 20-F, we provide evidence on whether the reconciliation requirement provides investors with higher quality accounting amounts relative to IAS. Also, this comparison mitigates the potentially confounding effects of underlying economic factors affecting accounting quality in the US relative to non-US environments. However, in this comparison we are limited in our ability to match IAS and 20-F firms because both samples are relatively small. As a result, when conducting our tests we rely on control variables and fixed effects used in related prior research.

Our results suggest that IAS accounting amounts are of similar quality to the reconciled US GAAP amounts presented on Form 20-F. In particular, consistent with higher quality, IAS firms have higher variance of the change in net income, a higher ratio of the variances of the change in net income and change in cash flows, and a higher value relevance of earnings and equity book value in a price regression and of earnings in a bad news return regression. However, consistent with lower quality, IAS firms have a significantly more negative correlation between accruals and cash flows, and a significantly higher frequency of small positive net income. These results suggest that IAS accounting amounts provide investors with information comparable in quality to that provided in Form 20-F.

The remainder of our paper is organized as follows. The next section discusses related literature. Sections three and four develop our hypotheses and explain our research design. Sections five and six describe our sample and data and present our results. Section seven offers our summary and concluding remarks.

2. Related Literature

There are few studies comparing properties of accounting amounts prepared using IAS to those prepared using US GAAP, generally in fairly narrow contexts, and results are generally mixed. Leuz (2003) compares measures of information asymmetry for firms on Germany's New Market and finds little evidence of differences in bid/ask spreads and trading volume for firms that apply US GAAP relative to those that apply IAS. However, measures of information asymmetry are noisy and incorporate a wide range of factors beyond accounting quality. In contrast, Bartov, Goldberg, and Kim (2004) documents that earnings response coefficients are highest for German firms applying US GAAP, followed by those applying IAS and German GAAP. However, earnings response coefficients also reflect a range of factors beyond

accounting quality. Harris and Muller (1999) provides evidence that US GAAP reconciliations for firms applying IAS are value relevant incremental to IAS for 31 IAS firms cross listed on US markets over the period 1992-1996. However, it is difficult to generalize from this study because the results differ across empirical specifications, the sample size is small, and the period studied pre-dates substantial changes in IAS after 1996. Also, given that cross-listed firms are required to reconcile to US GAAP, they may make IAS-consistent choices under domestic standards to minimize the number of reconciling items (Lang, Raedy, and Wilson, 2005).

Much of the prior literature focuses on comparisons of accounting amounts resulting from applying domestic GAAP with those resulting from applying IAS, with a goal of determining whether applying IAS is associated with higher accounting quality. Barth, Landsman, and Lang (2006) compares attributes of accounting amounts resulting from applying domestic GAAP to those resulting from applying IAS for 411 firms across 24 countries. The study provides evidence that accounting amounts for firms applying IAS evidence less earnings management, more timely recognition of losses, greater value relevance of accounting amounts, and a lower cost of capital. In addition, firms applying IAS evidence significant changes in these same attributes following application of IAS relative to prior period when they applied domestic GAAP, which suggests that applying IAS is associated with improved accounting quality.[3]

Other studies examine IAS in particular country settings, with generally mixed results. Bartov, Goldberg, and Kim (2004), Hung and Subramanyam (2004), and Van Tendeloo and Vanstraelen (2005) compare German firms applying IAS and German GAAP. They provide mixed evidence on the superior quality of IAS. Hung and Subramanyam (2004) provides

[3] Findings in Ashbaugh and Pincus (2001) also suggest that IAS are of higher quality by showing that firms using IAS exhibit smaller analyst forecast errors than those applying domestic GAAP. In particular, the study finds that the greater the difference between domestic GAAP and IAS, the greater are the forecast errors and that forecast errors tend to be smaller after firms apply IAS. However, forecastable earnings are not necessarily of higher quality because, for example, smoothed earnings are typically more forecastable.

evidence that reconciling items from IAS to German GAAP are not value relevant and Van Tendeloo and Vanstraelen (2005) finds no evidence that IAS firms engage in less earnings smoothing. However, Bartov, Goldberg, and Kim (2004) documents that IAS firms have higher earnings response coefficients than German GAAP firms, which the authors interpret as evidence of higher accounting quality. Similarly, Eccher and Healy (2003) finds no evidence that in China accounting amounts based on IAS are more value relevant than those based on Chinese GAAP.

Extant research does not provide clear evidence on how IAS in practice compare with US GAAP. Providing evidence on this issue is particularly timely because, as noted above, the SEC is actively considering permitting cross listing based on IAS without reconciliation to US GAAP.

3. Hypothesis Development

3.1 IAS AND ACCOUNTING QUALITY

A primary goal of the IASB is to develop a single set of high quality, global accounting standards that are accepted worldwide for general purpose financial statements. To achieve this goal, relative to domestic GAAP in most countries, the IASB limits allowable alternative accounting practices and provides a consistent approach to accounting measurement for the purpose of having a firm's recognized amounts faithfully represent its underlying economics. However, the IASB has adopted an approach in developing standards different from the FASB that could increase management discretion in recognizing accounting amounts. In particular, the IASB's approach relies more on principles, whereas the FASB's approach relies more on rules.[4] Reliance on principles specifies guidelines, but requires judgment in application. Reliance on

[4] The distinction here is more relative than absolute. IAS and US GAAP include both general principles and rules, depending on context (Schipper 2003). However, the FASB has generally provided more detailed guidance on application of accounting principles than has the IASB.

rules specifies more requirements that leave less room for discretion. Ewert and Wagenhofer (2005) develops a rational expectations model that shows that accounting standards that limit opportunistic discretion result in accounting earnings that are more reflective of a firm's underlying economics and, therefore, are of higher quality. The inherent flexibility IAS principles-based standards afford can allow firms to manage earnings, thereby decreasing accounting quality.

There are additional reasons beyond the accounting standards why accounting amounts resulting from applying IAS may be of lower quality than those resulting from applying US GAAP. For example, Cairns (1999), Street and Gray (2001), and Ball, Robin, and Wu (2003) suggest that lax enforcement can result in limited compliance with IAS, thereby limiting their effectiveness. Findings in Bradshaw and Miller (2005) and Lang, Raedy, and Wilson (2005) suggest that both accounting standards and the regulatory and litigation environment are important to the application of accounting standards. Therefore, the question remains whether accounting quality is higher applying US GAAP than applying IAS. Given the principles-based approach of IAS and issues related to its application, we predict that application of US GAAP results in accounting amounts that are of higher quality than those resulting from application of IAS. Despite the bases for our prediction, there are reasons our prediction may be refuted. First, proponents of IAS contend that more principles-based standards can result in higher quality accounting amounts because managers have more discretion to select accounting amounts that better reflect a firm's economic position and performance. Second, even if accounting amounts resulting from applying IAS were initially of lower quality, IAS have evolved substantially in

recent years, which may have reduced any difference in quality between US GAAP and IAS accounting amounts.[5]

We have no basis for predicting whether firms applying IAS or those applying US GAAP only in reconciliations from domestic GAAP have higher quality accounting amounts. Prior research suggests that IAS accounting amounts may be of higher quality than domestic GAAP (Bartov, Goldberg, and Kim, 2004; Barth, Landsman, and Lang, 2006). However, studies comparing US firms applying US GAAP to non-US firms applying domestic GAAP but reconciling accounting amounts to US GAAP using Form 20-F suggest that reconciled US GAAP accounting amounts for these non-US firms are of lower quality than US GAAP applied comprehensively by US firms (Lang, Raedy, and Wilson, 2005). Based on this evidence, it is difficult to predict how the quality of IAS accounting amounts compare to reconciled US GAAP amounts reported on Forms 20-F.

3.2 MEASURES OF ACCOUNTING QUALITY

Following prior research, we operationalize accounting quality using earnings management, timely loss recognition, and value relevance metrics. We predict firms with higher quality earnings exhibit less earnings management, more timely loss recognition, and higher value relevance of earnings and equity book value.

We examine two manifestations of earnings management, earnings smoothing and managing towards positive earnings. As discussed in section 3.1, we expect US GAAP earnings to be less managed than IAS GAAP earnings because US accounting standards limit management's discretion to report earnings less reflective of the firm's economic performance. Regarding earnings smoothing, following prior research, we expect that firms that smooth earnings less will exhibit more earnings variability after controlling for other economic

[5] As described below, we address this second point by conducting analyses using sample years beginning in 2001.

determinants of earnings volatility (Lang, Raedy, and Yetman, 2003; Leuz, Nanda, and Wysocki, 2003; Lang, Raedy, and Wilson, 2005; Barth, Landsman, and Lang, 2006). We predict that firms applying US GAAP exhibit more variable earnings than those applying IAS.[6] As noted above, we have no basis for predicting whether the US GAAP amounts for firms applying domestic GAAP but reconciling accounting amounts to US GAAP on Form 20-F exhibit more earnings smoothing than those firms applying IAS. As a consequence, we predict both sets of firms have the same amount of earnings smoothing. To test our predictions, we use two measures of earnings variability, variability in change in net income and variability of change in net income relative to variability of change in cash flow.

We also expect that firms with less earnings smoothing exhibit a more negative correlation between accruals and cash flows (Lang, Raedy, and Yetman, 2003; Leuz, Nanda, and Wysocki, 2003; Lang, Raedy, and Wilson, 2005; Barth, Landsman, and Lang, 2006). Because accruals reverse over time, accruals and cash flows tend to be negatively correlated even in the absence of earnings management. Land and Lang (2002) and Myers and Skinner (2002), among others, argue that a more negative correlation indicates earnings smoothing because managers respond to weak (strong) cash flow outcomes by increasing (decreasing) accruals. Thus, we predict that firms applying US GAAP exhibit a less negative correlation between accruals and cash flows than those applying IAS, and that firms applying IAS and the US GAAP amounts for firms applying domestic GAAP and reconciling accounting amounts to US GAAP exhibit the same negative correlation between accruals and cash flows.

Prior research identifies positive earnings as a common target of earnings management. Evidence of managing towards positive earnings is a larger frequency of small positive earnings

[6] Our prediction is supported by Ewert and Wagenhofer (2005), which shows that applying accounting standards that limit management's discretion should result in higher variability in accounting earnings. See Barth, Landsman, and Lang (2006) for more discussion.

(Burgstahler and Dichev, 1997; Leuz, Nanda, and Wysocki, 2003). The notion underlying this target is that management prefers to report small positive earnings rather than negative earnings. If US GAAP reduces managerial discretion relative to IAS, we expect that firms applying US GAAP report small positive earnings with lower frequency than those applying IAS, and that firms applying IAS and the US GAAP amounts for firms applying domestic GAAP and reconciling accounting amounts to US GAAP report small positive earnings with similar frequency.

Regarding timely loss recognition, we expect firms with higher quality earnings to exhibit a larger frequency of large losses. This is consistent with Ball, Kothari, and Robin (2000), Lang, Raedy, and Yetman (2003), Leuz, Nanda, and Wysocki (2003), and Lang, Raedy, and Wilson (2005) that suggest that one characteristic of higher quality earnings is that large losses are recognized as they occur rather than deferred to future periods. This characteristic is closely related to earnings smoothing in that if earnings are smoothed, large losses should be relatively rare. Thus, we predict that firms applying US GAAP report large losses with higher frequency than those applying IAS, and that firms applying IAS and the US GAAP amounts for firms applying domestic GAAP and reconciling accounting amounts to US GAAP report large losses with similar frequency.

Turning lastly to value relevance, we expect firms with higher quality earnings have a higher association between stock prices and earnings and equity book value because higher quality earnings better reflect a firm's underlying economics (Barth, Beaver, and Landsman, 2001). First, higher quality earnings are the product of applying accounting standards that require recognition of amounts that are intended to faithfully represent a firm's underlying economics. Second, higher quality earnings are less subject to opportunistic managerial

discretion. Prior research also suggests that higher quality earnings are more value relevant (Lang, Raedy, and Yetman, 2003; Lang, Raedy, and Wilson, 2005; Barth, Landsman, and Lang, 2006). Accordingly, we predict that firms applying US GAAP exhibit higher value relevance of earnings and equity book value than firms applying IAS, and that firms applying IAS and the US GAAP amounts of firms applying domestic GAAP and reconciling accounting amounts to US GAAP exhibit similar value relevance.[7] In addition, because more timely loss recognition should increase the value relevance of accounting amounts for bad news firm, i.e., those with negative stock returns (Ball, Kothari, and Robin, 2000), we expect our predicted difference in value relevance between IAS and US firms to be most pronounced for bad news firms.

We examine whether firms applying US GAAP, applying IAS, and applying domestic GAAP and reconciling accounting amounts to US GAAP have predicted differences in earnings quality (and equity book value in the value relevance tests) by conducting a range of tests relating to earnings management, timely loss recognition, and value relevance. We infer higher quality from a consistent pattern of evidence provided by the portfolio of tests.[8]

4. Research Design

To test our predictions, we first compare firms that apply IAS, "IAS firms," to a matched sample of US GAAP firms, "US firms," in the period after IAS adoption. To compare IAS and US firms, following Barth, Landsman, and Lang (2006), we identify each IAS firm's country, industry (i.e., three-digit SIC code), and adoption year. We then select as the matched US firm a

[7] Examining value relevance in this context is subject to at least two caveats. First, it presumes the pricing process is similar across firms and across countries, after we match on and control for firm size and industry. For example, Eccher and Healy (2003) provides evidence that prices reflect investor clienteles that can differ across firms and countries. Second, earnings smoothing can increase the association between earnings and share prices. For example, the presence of large asset impairments is likely to be positively associated with frequency of large negative net income, but could reduce the value relevance of accounting earnings because extreme losses tend to have a low correlation with share prices and returns. See Wysocki (2005) for a discussion of various approaches to assessing accounting quality.

[8] See Barth, Landsman, and Lang (2006) for a discussion of the benefits of this portfolio approach.

US firm in the same industry as the IAS firm whose size as measured by equity market value is closest to the IAS firm's at the end of the year of its adoption. Our analyses include all firm-years for which the IAS firm and its matched US firm both have data. For example, if the IAS firm has data from 1994 through 2000, and its matched US firm has data for 1995 through 2002, then our analysis includes data from 1995 through 2000 for the IAS firm and its matched US firm.

It is possible that our matching procedure fails to control for differences between IAS and US firms that are correlated with differences in accounting quality. Therefore, following Barth, Landsman, and Lang (2006), when conducting our tests we include controls for leverage, growth, equity and debt issuance, total asset turnover, size, cash flows, and auditor.[9]

We then examine whether IAS firms exhibit differences in accounting quality in comparison to US GAAP amounts for firms applying domestic GAAP and reconciling accounting amounts to US GAAP on Form 20-F, "20-F firms". Ideally, we would follow a similar matching procedure for IAS and 20-F firms, matching on industry and size. However, data limitations preclude us from doing so because the resulting matched sample would be too small to conduct meaningful tests. Therefore, all tests comparing IAS and 20-F firms include all available firms with overlapping sample years. When conducting our tests, we include controls for factors that could be correlated with differences in accounting quality and also require 20-F firms to be from the same countries as the IAS firms.

4.1 Earnings Management

Our first earnings management measure is based on the variability of the change in net income scaled by total assets, ΔNI (Lang, Raedy, and Wilson, 2005; Barth, Landsman, and

[9] Untabuled findings indicate that inferences are insensitive to inclusion of the controls.

Lang, 2006).[10] A smaller variance in the change in net income is evidence consistent with earnings smoothing. However, net income is likely to be sensitive to a variety of factors that reflect differences in economic environments between the US and IAS countries unrelated to earnings smoothing. Although our matching procedure mitigates the confounding effects of these factors, some effects may remain. Therefore, our measure of earnings variability is the variance of the residuals from the regression of change in net income on control variables identified in prior research (Ashbaugh, 2001; Pagano et al., 2002; Lang, Raedy, and Yetman, 2003; Lang, Raedy, and Wilson, 2005; Barth, Landsman, and Lang, 2006), ΔNI^{*}:

$$\Delta NI_{it} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 EISSUE_{it} + \alpha_4 LEV_{it} + \alpha_5 DISSUE_{it} + \alpha_6 TURN_{it} + \alpha_7 CF_{it} + \alpha_8 AUD_{it} + \varepsilon_{it} \quad (1)$$

$SIZE$ is the natural logarithm of end of year market value of equity, $GROWTH$ is percentage change in sales, $EISSUE$ is percentage change in common stock, LEV is end of year total liabilities divided by end of year equity book value, $DISSUE$ is percentage change in total liabilities, $TURN$ is sales divided by end of year total assets, CF is annual net cash flow from operating activities, and AUD is an indicator variable that equals one if the firm's auditor is PwC, KPMG, Arthur Andersen, E&Y, or D&T, and zero otherwise. Equation (1) also includes country and industry fixed-effects, as do equations (2) through (4).

We estimate equation (1) pooling observations that are relevant to the particular comparison we test. For example, when comparing IAS and US firms in the post-adoption period, we pool all sample years in the post-adoption period. Similarly, when comparing IAS and 20-F firms, we pool all sample years in the post-adoption period. For this comparison, the

[10] DataStream provides several definitions of operating income. The one we use does not include extraordinary items and other non-operating income. However, because the criterion for extraordinary items differs across countries and excluding extraordinary items could result in differences based on the location on the income statement of one-time items, we replicate the analysis including extraordinary and non-operating items. Results are similar.

variability of ΔNI^* is the cross-sectional variance of the IAS and US (or 20-F) firms' respective residuals from equation (1) in the post-adoption period. When comparing IAS firms in the post- and pre-adoption periods, we pool all sample years for IAS firms. For this comparison, the variability of ΔNI^* is the respective cross-sectional variance of residuals for the IAS firms in the post- and pre-adoption periods. We test for differences in these variances using a variance ratio F-test.

Our second measure of earnings smoothing is based on the ratio of the variability of the change in net income, ΔNI , to the variability of the change in operating cash flows, ΔCF . Firms with more volatile cash flows typically have more volatile net income, and our second measure controls for this. If firms use accruals to manage earnings, the variability of the change in net income should be lower than that of operating cash flows. As with ΔNI , ΔCF is likely to be sensitive to a variety of factors related to firms' incentives to adopt IAS that are unrelated to earnings smoothing. Therefore, we also estimate an equation similar to equation (1), but with ΔCF as the dependent variable:

$$\begin{aligned}\Delta CF_{it} = {} & \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 EISSUE_{it} + \alpha_4 LEV_{it} + \\ & \alpha_5 DISSUE_{it} + \alpha_6 TURN_{it} + \alpha_7 CF_{it} + \alpha_8 AUD_{it} + \varepsilon_{it}\end{aligned} \tag{2}$$

As with equation (1), we pool observations appropriate for the particular comparison. The variability of ΔCF^* is the cross-sectional variance of groups of residuals from equation (2), where the composition of the groups depends on the particular comparison we test. Our resulting second measure is the ratio of the variability of ΔNI^* to variability of ΔCF^*. As in Lang, Raedy, and Wilson (2005) and Barth, Landsman, and Lang (2006), we do not test the differences because we are unaware of any statistical test for differences in the ratios of variances.

Our third measure of earnings smoothing is based on the Spearman correlation between accruals and cash flows. As with the two variability measures based on equations (1) and (2), because our matching procedure may not fully eliminate the sensitivity of the accruals and cash flows correlation to factors unrelated to earnings smoothing, we compare correlations of residuals from equations (3) and (4), CF^* and ACC^*, rather than correlations between *CF* and *ACC* directly. As with the equations (1) and (2), both *CF* and *ACC* are regressed on the control variables, but excluding *CF*:

$$CF_{it} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 EISSUE_{it} + \alpha_4 LEV_{it} + \alpha_5 DISSUE_{it} + \alpha_6 TURN_{it} + \alpha_7 AUD_{it} + \varepsilon_{it} \quad (3)$$

$$ACC_{it} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 EISSUE_{it} + \alpha_4 LEV_{it} + \alpha_5 DISSUE_{it} + \alpha_6 TURN_{it} + \alpha_7 AUD_{it} + \varepsilon_{it} \quad (4)$$

We test for differences in the correlations between CF^* and ACC^* based on the squared correlation as derived in Cramer (1987).

Our measure of managing towards positive earnings is the coefficient on small positive net income, *SPOS*, in equations (5) and (6).

$$IAS(0,1)_{it} = \alpha_0 + \alpha_1 SPOS_{it} + \alpha_2 SIZE_{it} + \alpha_3 GROWTH_{it} + \alpha_4 EISSUE_{it} + \alpha_5 LEV_{it} + \alpha_6 DISSUE_{it} + \alpha_7 TURN_{it} + \alpha_8 CF_{it} + \alpha_9 AUD + \varepsilon_{it} \quad (5)$$

$IAS(0,1)$ is an indicator variable set to one for IAS firms and zero for US firms or 20-F firms, depending on the comparison we test, and $SPOS$ is an indicator variable that equals one if net income scaled by total assets is between 0 and 0.01 (Lang, Raedy, and Yetman, 2003). A positive coefficient on $SPOS$ suggests that IAS firms manage earnings toward small positive amounts more frequently than do US or 20-F firms. We use the coefficient on *SPOS* from equation (5) rather than directly comparing the percentages of small positive income to assess

whether IAS firms are less likely to manage earnings because the matching procedure may not fully capture differences in economic factors associated with firms applying IAS.

4.2 Timely Loss Recognition

We measure timely loss recognition as the coefficient on the percentage of large negative net income, *LNEG*, in equations (6) (Lang, Raedy, and Yetman, 2003; Lang, Raedy, and Wilson, 2005; Barth, Landsman, and Lang, 2006).

$$IAS(0,1)_{it} = \alpha_0 + \alpha_1 LNEG_{it} + \alpha_2 SIZE_{it} + \alpha_3 GROWTH_{it} + \alpha_4 EISSUE_{it} + \alpha_5 LEV_{it} + \alpha_6 DISSUE_{it} + \alpha_7 TURN_{it} + \alpha_8 CF_{it} + \alpha_9 AUD_{it} + \varepsilon_{it} \quad (6)$$

LNEG is an indicator variable set to one for observations for which annual net income scaled by total assets is less than −0.20, and zero otherwise. A positive coefficient on *LNEG* suggests that IAS firms recognize large losses more frequently than US or 20-F firms. As with equation (5), we use the coefficient on *LNEG* from equation (6) rather than directly comparing the percentages of large losses to assess whether IAS firms are less likely to manage earnings.[11] Equations (5) and (6) include industry fixed effects.

4.3 Value Relevance

The first value relevance measure is based on the explanatory power from a regression of stock price on earnings and equity book value. To obtain a measure of value relevance that is unaffected by differences in value relevance across countries and industries, when comparing IAS and US firms, and IAS and 20-F firms, we first regress stock price, *P*, on country and industry fixed effects.[12] We regress the residuals from this regression, *P**, on equity book value per share, *BVEPS*, and net income per share, *NIPS*, separately for IAS firms and US firms (or 20-

[11] In the analyses of small positive and large negative net income, we report results from OLS estimation, rather than from a logit estimation because the model rejects the test for homoskedasticity. Greene (1993) reports that logit models are extremely sensitive to the effects of heteroskedasticity.

[12] We cannot match on industry in the IAS/20-F value relevance tests because there are too few firms in each industry for the 20-F sample**,** although we do include industry fixed effects as controls.

F firms) in both the post- and pre-adoption periods, i.e., we estimate four regressions. Following prior research, to ensure accounting information is in the public domain, we measure *P* six months after fiscal year-end (Lang, Raedy, and Yetman, 2003; and Lang, Raedy, and Wilson, 2005; Barth, Landsman, and Lang, 2006). Our first value relevance measure is the adjusted R^2 from equation (7).

$$P^*_{it} = \beta_0 + \beta_1 BVEPS_{it} + \beta_2 NIPS_{it} + \varepsilon_{it} \quad (7)$$

We test for significance in difference of R^2s in all value relevance tests based on the Cramer (1987) test.

Our second and third value relevance measures are based on the explanatory power from regressions of net income per share on annual stock return. Ball, Kothari, and Robin (2000) predicts that accounting quality differences will be most pronounced for "bad news" because when firms have "good news" they have less incentive to manage earnings. Thus, we estimate the earnings-returns relation separately for positive and negative return subsamples. Because we partition firms based on the sign of the return, we estimate two "reverse" regressions with earnings as the dependent variable, where one is for good news firms and the other is for bad news firms. As with our first value relevance measure, to obtain good and bad news value relevance measures that are unaffected by differences in value relevance across countries and industries, when comparing IAS and US firms, and IAS and 20-F firms, we first regress net income per share, *NI/P*, on country and industry fixed effects. We regress the residuals from this regression, *NI/P**, on annual stock return, *RETURN*, the twelve-month stock return commencing nine months before fiscal year end and ending three months after fiscal year end (Lang, Raedy, and Wilson, 2005; Barth, Landsman, and Lang, 2006). Our second and third value relevance measures are the R^2s from equation (8) estimated for good news and bad news firms.

$$[NI/P]^{*}_{it} = \beta_0 + \beta_1 RETURN_{it} + \varepsilon_{it} \quad (8)$$

As with equation (7), we estimate equation (8) separately for IAS and US firms in both the post- and pre-adoption periods, as well as for 20-F firms.

5. Data and Sample

Our sample comprises 2,553 firm year observations for 428 firms applying IAS for which DataStream data are available over the period 1990 through 2004.[13] We obtain our sample of IAS firms from Worldscope, and gather financial and accounting data from DataStream. Data for US firms are collected from Compustat and CRSP. 20-F firms' data are also obtained from Compustat except net income and equity book value, which are obtained from Forms 20-F. We winsorize all variables used to construct our metrics at the 5% level to mitigate the effects of outliers on our inferences.

Table 1, panel A, includes descriptive statistics for our sample firms in terms of country representation. In general, the sample firm-years are from a wide range of countries, with greatest representation from Switzerland, Germany, and China. Panel B of table 1 reports representation by industry. The sample also comprises a range of industries, with most firms in manufacturing, finance, insurance and real estate, or services. However, our matching criteria are designed to control for industry effects. Panel C of table 1 reports representation by number of observations and IAS adoption year. The sample observations are from a wide range of years, as are the IAS adoptions.

Table 2 reports descriptive statistics for IAS and US firms. In terms of the variables of interest, US firms have fewer incidents of small positive earnings and more incidents of large

[13] Our data were obtained from DataStream in October 2004. The way DataStream constructs the database changed shortly thereafter, making it more difficult to ensure that subsequent accounting data are as reported. However, our analyses should be unaffected because our data pre-date the change.

negative earnings. Although these statistics do not control for other factors, they suggest that US firms are less likely to manage earnings towards a target and more likely to recognize losses in a timely manner than IAS firms. In terms of control variables, IAS and US firms have similar growth rates (median 7% versus 8%) and are of similar size, reflecting our matching procedure. Further, IAS firms are more highly levered than US firms (median 1.47 versus 0.99), although IAS firms issue only somewhat more debt and issue similar amounts of equity compared with US firms. IAS firms have lower asset turnover than US firms (median 0.76 versus 0.88), have similar cash flows (median 0.07 versus 0.06), and are less likely to be audited by a large, international audit firm (77% versus 83%).

6. Results

6.1 Comparison of IAS and US Firms

Table 3 presents our results for earnings management, timely loss recognition, and value relevance for IAS and US firms.

Earnings Management

Results for earnings management provide consistent evidence of greater earnings smoothing for IAS firms relative to US firms. In particular, IAS firms exhibit significantly lower variability in the change in net income, ΔNI^*, 0.0065 versus 0.0095. Similarly, the ratio of the variance of change in net income, ΔNI^*, to the variance in the change in cash flow, ΔCF^*, is lower for IAS firms than for US firms. In particular, the ratios are 1.1994 and 1.2836 for IAS and US firms. Although we are unaware of a test of significance for the difference, the statistics suggest higher earnings volatility relative to cash flow volatility for US firms relative to IAS firms. Consistent with the first two measures, the correlation between accruals, ACC^*, and cash

flow, *CF**, for IAS firms, –0.2833, is significantly more negative than for the US firms, –0.1394. This finding also suggests that IAS firms smooth earnings more than US firms.

Results for managing toward positive earnings are also consistent with IAS firms managing earnings more than US firms. In particular, the coefficient on *SPOS* from equation (1), 0.0623, is positive, although not significantly so, which suggests that IAS firms more frequently report small positive earnings.

Timely Loss Recognition

In terms of timely loss recognition, the coefficient on *LNEG* in equation (2) is significantly negative, suggesting that IAS firms recognize large negative losses less frequently than do US firms. Coupled with the results for earnings smoothing, this finding is consistent with IAS firms being more likely to defer and smooth large losses rather than recognizing them in a timely manner.

Value Relevance

Our final set of findings in table 3 relates to value relevance of accounting amounts. First, regressions of price on earnings and equity book value for IAS and US firms reveal that the R^2 for IAS firms is significantly smaller than that for US firms, 24.80% versus 38.88%. Untabulated regression summary statistics indicate that, as expected, the coefficients on earnings and equity book value are significantly positive for both IAS and US firms, and that both coefficients are smaller for IAS firms. The findings are consistent with accounting amounts being more value relevant for US firms than for IAS firms.

In terms of the returns regressions, results are mixed. R^2s for US firms are higher for good news firms (2.27% versus 1.06%) and lower for bad news firms (3.31% versus 3.63%),

although neither difference is significant.[14] Thus, only price regressions are consistent with higher value relevance for US firms.

6.1.1 Comparison of IAS Firms Before and After Adoption

The preceding results suggest that accounting quality is lower for IAS firms relative to the US firms in that IAS evidence more earnings smoothing, more managing toward targets, a greater tendency to smooth losses, and a lower association between share prices and accounting amounts. A related question that we address in this section is whether IAS application moves accounting quality for these firms closer to that associated with US GAAP.

Table 4, panel A, presents a comparison of findings for earnings management, timely loss recognition, and value relevance for IAS firms and US firms in the period before the IAS firms adopted IAS, i.e., when they applied domestic GAAP. As expected based on Barth, Landsman, and Lang (2006), which shows that the quality of accounting amounts for IAS firms improved after applying IAS, findings in panel A are similar to those in table 3. In particular, IAS firms exhibit more evidence of earnings smoothing than US firms in terms of the variability of net income, the variability of net income relative to cash flows, and the correlation of cash flows and accruals. In addition, IAS firms have a significantly greater tendency than US firms to recognize small profits in the pre-adoption period. This difference is insignificant in the post-adoption period. Similarly, as in table 3, IAS firms' accounting amounts are less value relevant for stock prices than are those for US firms, and value relevance for returns is insignificantly different.

The more interesting question is whether the difference in accounting quality between IAS and US firms is smaller when the IAS firms apply IAS than when they reported using

[14] An alternative approach to assessing the association between bad news returns and earnings is based on the coefficient estimate on earnings as described in Ball, Kothari and Robin (2000). Using this approach, untabulated findings show that the coefficient estimate on earnings is larger for bad news US firms than bad news IAS firms, which is consistent with US firms recognizing losses in a more timely manner than IAS firms.

domestic GAAP. Table 4, panel B, addresses this question by presenting differences in each of the accounting quality measures between IAS firms and US firms in both reporting periods, and a change in the difference. We do not conduct a test of significance for the change in the differences in table 4, panel B, because we are unaware of any test for significance and therefore only view these statistics as descriptive.

The evidence in the final column indicates that for two of the three earnings management metrics, correlation between ACC^* and CF^* and variability of ΔNI^* over ΔCF^*, the difference between US and IAS firms is smaller as a result of application of IAS (0.0942 versus 0.0107). However, the variability ΔNI^* changes in the opposite direction (–0.0011). In addition, the *SPOS* coefficient is smaller after application of IAS, as indicated by a change of –0.0987, which suggests that IAS firms are less likely to recognize small losses following adoption of IAS. Similarly, the timely loss recognition measure, *LNEG*, decreases in magnitude from –0.2450 to –0.2182, a change of 0.0268, which consistent with an increase in timely loss recognition for IAS firms after application of IAS. Turning to the value relevance measures, consistent with predictions, the difference in R^2 between US and IAS firms decreases 9.14% for the price regressions. As with the previous findings, results for the returns regressions are mixed, with the R^2 for good (bad) news increasing (decreasing) somewhat.[15]

Collectively, the evidence in tables 3 and 4 generally is consistent with US firms having higher quality accounting amounts than IAS firms prior to IAS adoption, and with the gap in quality decreasing with the application of IAS.

6.1.2 Comparison of IAS Over Time

[15] As discussed in footnote 14, an alternate approach to assessing the association between bad news returns and earnings is based on the coefficient estimate on earnings. Using on that approach, untabulated findings indicate the coefficient estimate is larger for US firms than IAS firms in both the pre- and post-adoption period, and the difference narrows after adoption of IAS.

The IAS reporting environment underwent several changes during our sample period, including the decision by the European Union to require IAS be applied by publicly listed EU firms in lieu of domestic GAAP, the issuance by the IASC of a set of core standards, the replacement of the IASC with the IASB, the increased activity of IOSCO and the International Auditing Standards Board, and increased cooperation between the IASB and the FASB. Thus, it is possible that application of IAS has improved sufficiently in recent years that accounting quality for firms applying IAS and US GAAP is similar, but this is obscured because our tests are based on sample data spanning nearly a decade. To determine whether this is the case, we repeat the table 3 analysis comparing quality of accounting amounts for firms applying IAS and US GAAP, but limiting data to the period 2001-2004. We selected 2001 as a cutoff year because this is the year the IASB replaced the IASC as the body charged with developing international accounting standards.

The findings are presented in table 5. The results are similar to those for the entire sample period with no changes in inferences. Consistent with predictions, IAS firms exhibit significantly lower variability in the change in net income, ΔNI^* (0.0097 versus 0.0147), lower variability of ΔNI^* relative to ΔCF^* (1.4609 versus 1.4936), significantly more negative correlation between accruals, ACC^*, and cash flow, CF^* (–0.2123 versus –0.0742), significantly lower frequency of large negative losses (*LNEG* coefficient = –0.1632), and significantly lower value relevance for price (27.64% versus 48.49%). IAS firms also exhibit less value relevance for both good news (0.38% versus 1.76%), and bad news (3.10% versus 6.65%) regressions, but the differences are not significant. As in table 3, although the coefficient on *SPOS* has the predicted sign, it is insignificant. Overall, the fact that the findings for the more recent period are

consistent with those for the full sample period suggests that the relative quality of IAS and US accounting amounts is similar throughout the sample period.

6.2 Comparison of IAS and 20-F Firms

Table 6 presents descriptive statistics paralleling those in table 2 for IAS and US firms. It reveals that 20-F and IAS firms exhibit similar growth, extent of external financing, and asset turnover. However, the 20-F firms are larger than the IAS firms. As noted in section 4, we include control variables to mitigate the effects of these differences.

Table 7 presents our results for earnings management, timely loss recognition, and value relevance for IAS and 20-F firms. Overall, the results reveal no clear pattern of differences in accounting quality between IAS and 20-F firms.

Earnings Management

Table 7 reveals mixed evidence relating to earnings management. On the one hand, it reveals the IAS firms exhibit greater earnings variability. The variability of the change in net income, ΔNI^*, is 0.0044 for IAS firms versus 0.0041 for 20-F firms, but the difference is insignificant. Similarly, the ratio of the variance of change in net income, ΔNI^*, to the variance in the change in cash flow, ΔCF^*, is higher for IAS firms than for 20-F firms (1.1965 versus 1.0305). On the other hand, the correlation between accruals, *ACC**, and cash flow, *CF**, for IAS firms, –0.4142, is significantly more negative than for the 20-F firms, –0.3148. And, the coefficient on *SPOS*, 0.0449, is significantly positive.

Timely Loss Recognition

Regarding timely loss recognition, table 7 reveals that the coefficient on *LNEG*, –0.0293, is negative, but it is insignificantly different from zero. This indicates that IAS firms and 20-F firms recognize losses with similar frequency.

Value Relevance

Table 7 reveals that IAS firms generally exhibit greater value relevance than do 20-F firms. For IAS firms the R^2 of the price regressions is significantly higher than that for 20-F firms, 24.80% versus 15.61%. Untabulated regression summary statistics indicate that, as expected, the coefficients on earnings and equity book value are significantly positive for both IAS and 20-F firms, and that both coefficients are larger for IAS firms. These findings are consistent with accounting amounts being more value relevant for IAS firms than for 20-F firms. Regarding the returns regression, the R^2 for IAS firms are significantly higher for bad news firms (3.63% versus 1.16%), but insignificantly lower for good news firms (1.06% versus 1.20%).

7. Summary and Concluding Remarks

This study compares characteristics of accounting amounts for firms that apply IAS and a matched sample of US firms that apply US GAAP. Our results suggest that firms that apply IAS generally have lower accounting quality than US firms. In particular, IAS firms have a significantly lower variance of the change in net income, a lower ratio of the variances of the change in net income and change in cash flows, a significantly more negative correlation between accruals and cash flows, and a higher frequency of small positive net income. In addition, they have a significantly lower frequency of large negative net income, and significantly lower value relevance of earnings and equity book value for share prices.

Comparisons of accounting amounts for IAS and US firms before and after the IAS firms adopt IAS suggest that application of IAS reduces, but does not eliminate, differences in accounting quality between the two the two sets of firms. The comparison of the quality of accounting amounts for IAS and US firms based on the most recent sample years yields similar

inferences. This suggests that the relative quality of IAS and US accounting amounts is similar throughout the sample period.

We also compare characteristics of accounting amounts for firms that apply IAS to a sample of non-US firms that cross-list on US exchanges and reconcile accounting amounts from domestic GAAP to US GAAP. Results from this comparison reveal no clear pattern of differences in quality between IAS and reconciled US GAAP accounting amounts. In particular, consistent with higher quality, IAS firms have a higher variance of the change in net income, a higher ratio of the variances of the change in net income and change in cash flows, and a higher value relevance of earnings and equity book value in a price regression and of earnings in a bad news return regression. However, consistent with lower quality, IAS firms have a significantly more negative correlation between accruals and cash flows, and a significantly higher frequency of small positive net income.

Our study contributes to the regulatory debate over accounting standards by providing evidence on the characteristics of accounting amounts resulting from applying IAS relative to those resulting from applying US GAAP. The SEC has indicated that its decision on whether to permit non-US firms to file financial statements based on IAS without reconciling to US GAAP depend on the SEC's assessment of whether applying IAS results in accounting amounts of sufficiently high quality. Answering this policy question is beyond the scope of this study. However, our findings suggest that although US GAAP applied by US firms evidences higher accounting quality than does IAS applied by non-US firms, US GAAP amounts presented in non-US firms' Form 20-F reconciliations do not. Thus, requiring cross-listed firms that apply IAS to reconcile accounting amounts to US GAAP may be unwarranted.

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TABLE 1
Frequencies of IAS Adopters

Panel A: IAS Adopters, by Country

	Number of Firm-Year Observations	Percentage of Firm-Year Observations	Number of Unique Adoption Firms	Percentage of Unique Adoption Firms
Australia	2	0.08	1	0.23
Austria	193	7.53	34	7.93
Belgium	26	1.01	5	1.17
Canada	5	0.20	1	0.23
China	471	18.38	93	21.68
Czech Republic	52	2.03	8	1.86
Denmark	45	1.76	6	1.40
Finland	39	1.52	4	0.93
Germany	593	23.15	100	23.31
Greece	10	0.39	2	0.47
Hong Kong	47	1.83	12	2.80
Hungary	95	3.71	15	3.50
Mexico	2	0.08	1	0.23
Norway	2	0.08	1	0.23
Poland	17	0.66	5	1.17
Portugal	7	0.27	2	0.47
Russian Federation	4	0.16	2	0.47
Singapore	34	1.33	9	2.10
South Africa	104	4.06	9	2.10
Spain	3	0.12	1	0.23
Sweden	5	0.20	2	0.47
Switzerland	702	27.40	96	22.38
Turkey	94	3.67	16	3.73
United Kingdom	10	0.39	4	0.93
Totals	2,562	100.00	429	100.00

TABLE 1
Frequencies of IAS Adopters

Panel B: IAS Adopters, by Industry

	Number of Firm-Year Observations	Percentage of Firm-Year Observations	Number of Unique Adoption Firms	Percentage of Unique Adoption Firms
Agriculture, Forestry and Fishing	5	0.20	2	0.47
Mining	176	6.87	27	6.29
Construction	174	6.79	25	5.83
Manufacturing	1254	48.95	192	44.76
Utilities	187	7.30	26	6.06
Gas Distribution	1	0.04	1	0.23
Retail Trade	54	2.11	11	2.56
Finance, Insurance and Real Estate	383	14.95	60	13.99
Services	299	11.67	78	18.18
Public Administration	29	1.13	7	1.63
Totals	2,562	100.00	429	100.00

TABLE 1
Frequencies of IAS Adopters

Panel C: IAS Adopters, by Year

	Number of Firm-Year Observations	Percentage of Firm-Year Observations	Number of Unique Adoption Firms	Percentage of Unique Adoption Firms
1994	317	12.37	31	7.23
1995	126	4.92	16	3.73
1996	150	5.85	23	5.36
1997	190	7.42	31	7.23
1998	263	10.27	36	8.39
1999	338	13.19	64	14.92
2000	491	19.16	99	23.08
2001	236	9.21	45	10.49
2002	256	9.99	48	11.19
2003	195	7.61	36	8.39
Totals	2,562	100.00	429	100.00

TABLE 2
Descriptive Statistics: IAS Firms and Matched US Firms

	IAS Firms (N = 3,088)			US Firms (N = 3,088)		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
Test Variables						
ΔNI	0.00	0.00	0.13	0.01	0.01	0.16
ΔCF	0.01	0.01	0.11	0.02	0.01	0.13
ACC	−0.05	−0.04	0.08	−0.06	−0.04	0.11
CF	0.07	0.07	0.09	0.02	0.06	0.19
SPOS	0.14	0.00	0.35	0.06	0.00	0.24
LNEG	0.03	0.00	0.18	0.13	0.00	0.34
RETURN	0.04	0.00	0.36	0.01	0.00	0.17
NI/P	0.05	0.06	0.24	−0.04	0.04	0.28
P	1.50	1.02	3.19	14.72	11.00	12.83
BVEPS	0.40	0.14	1.31	8.41	6.56	7.35
NIPS	0.06	0.05	0.36	0.55	0.46	1.31
Control Variables						
LEV	3.18	1.47	5.01	1.92	0.99	3.15
GROWTH	0.29	0.07	0.96	0.18	0.08	0.58
EISSUE	0.29	0.07	0.98	0.16	0.07	0.64
DISSUE	0.40	0.06	1.30	0.23	0.05	0.77
TURN	0.83	0.76	0.59	0.99	0.88	0.74
SIZE	11.94	11.99	1.81	11.94	11.98	1.81
CF	0.07	0.07	0.09	0.02	0.06	0.19
AUD	0.77	1.00	0.42	0.83	1.00	0.38

[a] We define *ΔNI* as the change in annual earnings, where earnings is scaled by end-of-year total assets; *ΔCF* as the change in annual net cash flow from operating activities, where cash flow is scaled by end-of-year total assets; *ACC* as earnings less cash flow from operating activities, scaled by end-of-year total assets; *CF* as annual net cash flow from operating activities, scaled by end-of-year total assets; *SPOS* as an indicator set to 1 for observations for which annual earnings scaled by total assets is between 0 and 0.01; *LNEG* as an indicator set to 1 for observations for which annual earnings scaled by total assets is less than –0.20, *RETURN* as the annual return from nine months prior to three months after the fiscal year end; *P* as price as of six months after the fiscal year-end; *NI/P* as earnings per share scaled by price per share at the beginning of the year; *LEV* as end-of-year total liabilities divided by end-of-year total equity, *GROWTH* as percentage change in sales; *EISSUE* as percentage change in common stock; *DISSUE* as the percentage change in total liabilities during the period; *TURN* as sales divided by end-of-year total assets; *SIZE* as the natural log of market value of equity in thousands of dollars as of the end of the year; *BVEPS* as book value of shareholders' equity per share; *NIPS* as net income per share; *AUD* as an indicator taking on a value 1 if the auditor is one of the large international accounting firms.

TABLE 3

Accounting Quality Analysis of IAS Firms and Matched US Firms in the Post-adoption Period

Earnings management Measure	IAS Firms (N = 1,538)	US Firms (N = 1,538)
Variability of *ΔNI**	0.0065	0.0095*
Variability of *ΔNI** over *ΔCF**	1.1994	1.2836^
Correlation of *ACC** and *CF**	−0.2833	−0.1394*
Small Positive NI (*SPOS*)	0.0623	
Timely loss recognition Measure		
Large Negative NI (*LNEG*)	−0.2182#	
Value Relevance Regression Adjusted R^2		
Price	0.2480	0.3888*
Good News	0.0106	0.0227
Bad News	0.0363	0.0331

*Significantly different between IAS firms and US firms at the 0.05 level (one-sided).
#Significantly different from zero at the 0.05 level (one-sided).
^ No test of significance is conducted for comparison of Variability of *ΔNI** over *ΔCF** between IAS and US firms.

We base the analysis on industry and country fixed-effect regressions including controls as defined in table 2. We define variability of *ΔNI** (*ΔCF**) as the variance of residuals from a regression of the *ΔNI* (*ΔCF)* on the control variables, and the variability of *ΔNI** over *ΔCF** as the ratio of the variability of *ΔNI** divided by the variability of *ΔCF**. Correlation of *ACC** and *CF** is the partial Spearman correlation between the residuals from the *ACC* and *CF* regressions; we compute both sets of residuals from a regression of each variable on the control variables. *ΔNI, ΔCF*, *ACC*, and *CF* are defined in table 2.

We regress an indicator variable set to 1 for IAS firms and 0 for US firms on *SPOS* (*LNEG*) and control variables. *SPOS* (*LNEG*) is an indicator set to 1 for observations for which annual net income for ordinary shares scaled by total assets are between 0 and 0.01 (less than –0.20) and set to 0 otherwise; the coefficient on the indicator variable is reported.

The price regression is based on a two-stage regression. In the first stage, *P* is regressed on industry and country fixed-effect indicator variables, where *P* is stock price as of six months after the fiscal year-end. The second stage regression is $P^* = \beta_0 + \beta_1 BVEPS + \beta_2 NIPS + \varepsilon$, where *P** is the residual from the first stage regression, *BVEPS* is book value of shareholders' equity per share, and *NIPS* is net income per share. The good/bad news regression also is based

on a two-stage regression. In the first stage, net income divided by beginning of year price is regressed on industry and country fixed-effect indicator variables. The second stage regression is $NI/P^* = \beta_0 + \beta_1 RETURN + \varepsilon$, where NI/P^* is the residual from the first- stage regression, and *RETURN* is the stock return computed over the twelve months ending three months after year-end. Good news observations are those for which *RETURN* is nonnegative. Bad news observations are those for which *RETURN* is negative.

Incremental adjusted R^2 is determined from the second stage regressions.

All variables in each of the regressions used in this table are winsorized at the 5% level to control for the effect of outliers.

TABLE 4

Accounting Quality Analysis of IAS and US Firms in the Pre-adoption Period and Differences

Panel A: Pre-adoption Period			
Earnings Management Measure	IAS Firms (N=1,024)		US Firms (N=1,024)
Variability of *ΔNI**	0.0026		0.0045*
Variability of *ΔNI** over *ΔCF**	0.5968		0.7751^
Correlation of *ACC** and *CF**	–0.4390		–0.2843*
Small Positive NI (*SPOS*)		0.1611#	
Timely Loss Recognition Measure			
Large Negative NI (*LNEG*)		−0.2450#	
Value Relevance Regression Adjusted R^2			
Price	0.2171		0.4494*
Good News	0.0096		0.0218
Bad News	0.0480		0.0217

Panel B: Differences			
Earnings Management Measure	Diff Pre IAS−US	Diff Post IAS−US	Change Post−Pre
Variability of *ΔNI**	−0.0019	−0.0030	−0.0011
Variability of *ΔNI** over *ΔCF**	−0.1783	−0.0842	0.0942
Correlation of *ACC** and *CF**	−0.1547	−0.1440	0.0107
Small Positive NI (*SPOS*)	0.1611	0.0623	−0.0987
Timely Loss Recognition Measure			
Large Negative NI (*LNEG*)	−0.2450	−0.2182	0.0268
Value Relevance Regression Adjusted R^2			
Price	−0.2323	−0.1408	0.0914
Good News	−0.0122	−0.0121	0.0001
Bad News	0.0263	0.0032	−0.0231

*Significantly different between IAS firms and US firms at the 0.05 level (one-sided).
Significantly different from zero at the 0.05 level (one-sided).

^ No test of significance is conducted for comparison of Variability of ΔNI^* over ΔCF^* between IAS and US firms.

We base the analysis on industry and country fixed-effect regressions including controls as defined in table 2. We define variability of ΔNI^* (ΔCF^*) as the variance of residuals from a regression of the ΔNI (ΔCF) on the control variables, and the variability of ΔNI^* over ΔCF^* as the ratio of the variability of ΔNI^* divided by the variability of ΔCF^*. Correlation of ACC^* and CF^* is the partial Spearman correlation between the residuals from the ACC and CF regressions; we compute both sets of residuals from a regression of each variable on the control variables. ΔNI, ΔCF, ACC, and CF are defined in table 2.

We regress an indicator variable set to 1 for IAS firms and 0 for US firms on *SPOS* (*LNEG*) and control variables. *SPOS* (*LNEG*) is an indicator set to 1 for observations for which annual net income for ordinary shares scaled by total assets are between 0 and 0.01 (less than –0.20) and set to 0 otherwise; the coefficient on the indicator variable is reported.

The price regression is based on a two-stage regression. In the first stage, P is regressed on industry and country fixed-effect indicator variables, where P is stock price as of six months after the fiscal year-end. The second stage regression is $P^* = \beta_0 + \beta_1 BVEPS + \beta_2 NIPS + \varepsilon$, where P^* is the residual from the first stage regression, *BVEPS* is book value of shareholders' equity per share, and *NIPS* is net income per share. The good/bad news regression also is based on a two-stage regression. In the first stage, net income divided by beginning of year price is regressed on industry and country fixed-effect indicator variables. The second stage regression is $NI/P^* = \beta_0 + \beta_1 RETURN + \varepsilon$, where NI/P^* is the residual from the first- stage regression, and *RETURN* is the stock return computed over the twelve months ending three months after year-end. Good news observations are those for which *RETURN* is nonnegative. Bad news observations are those for which *RETURN* is negative.

Incremental adjusted R^2 is determined from the second stage regressions.

All variables in each of the regressions used in this table are winsorized at the 5% level to control for the effect of outliers.

TABLE 5
Accounting Quality Analysis of IAS and US Firms,
Post-2001 Comparison

Earnings management Measure	IAS Firms (N=951)	US Firms (N=951)
Variability of *ΔNI**	0.0097	0.0147*
Variability of *ΔNI** over *ΔCF**	1.4609	1.4936^
Correlation of *ACC** and *CF**	−0.2123	−0.0742*
Small Positive NI (*SPOS*)	0.0356	
Timely loss recognition Measure		
Large Negative NI (*LNEG*)	−0.1632#	
Value Relevance Regression Adjusted R^2		
Price	0.2764	0.4849*
Good News	0.0038	0.0176
Bad News	0.0310	0.0665

*Significantly different between post-adoption period and pre-adoption period at the 0.05 level (one-sided).
#Significantly different from zero at the 0.05 level (one-sided).
^ No test of significance is conducted for comparison of Variability of *ΔNI** over *ΔCF** between pre- and post-adoption periods.

We base the analysis on industry and country fixed-effect regressions including controls as defined in table 2. We define variability of *ΔNI** (*ΔCF**) as the variance of residuals from a regression of the *ΔNI* (*ΔCF)* on the control variables, and the variability of *ΔNI** over *ΔCF** as the ratio of the variability of *ΔNI** divided by the variability of *ΔCF**. Correlation of *ACC** and *CF** is the partial Spearman correlation between the residuals from the *ACC* and *CF* regressions; we compute both sets of residuals from a regression of each variable on the control variables. *ΔNI, ΔCF*, *ACC*, and *CF* are defined in table 2.

We regress an indicator variable set to 1 for IAS firms and 0 for US firms on *SPOS* (*LNEG*) and control variables. *SPOS* (*LNEG*) is an indicator set to 1 for observations for which annual net income for ordinary shares scaled by total assets are between 0 and 0.01 (less than –0.20) and set to 0 otherwise; the coefficient on the indicator variable is reported.

The price regression is based on a two-stage regression. In the first stage, *P* is regressed on industry and country fixed-effect indicator variables, where *P* is stock price as of six months after the fiscal year-end. The second stage regression is $P^* = \beta_0 + \beta_1 BVEPS + \beta_2 NIPS + \varepsilon$,

where P^* is the residual from the first stage regression, *BVEPS* is book value of shareholders' equity per share, and *NIPS* is net income per share. The good/bad news regression also is based on a two-stage regression. In the first stage, net income divided by beginning of year price is regressed on industry and country fixed-effect indicator variables. The second stage regression is $NI/P^* = \beta_0 + \beta_1 RETURN + \varepsilon$, where NI/P^* is the residual from the first- stage regression, and *RETURN* is the stock return computed over the twelve months ending three months after year-end. Good news observations are those for which *RETURN* is nonnegative. Bad news observations are those for which *RETURN* is negative.

Incremental adjusted R^2 is determined from the second stage regressions.

All variables in each of the regressions used in this table are winsorized at the 5% level to control for the effect of outliers.

TABLE 6
Descriptive Statistics: 20-F Firms

	20-F Firms (N=477)		
	Mean	Median	Standard Deviation
Test Variables			
ΔNI	−0.01	0.00	0.08
ΔCF	0.00	0.00	0.08
ACC	−0.07	−0.06	0.09
CF	0.10	0.10	0.09
SPOS	0.06	0.00	0.24
LNEG	0.04	0.00	0.21
RETURN	0.03	0.02	0.13
NI/P	0.03	0.05	0.12
P	27.43	21.88	20.36
BVEPS	13.45	11.19	9.48
NIPS	1.21	1.02	1.63
Control Variables			
LEV	1.63	1.12	1.95
GROWTH	0.12	0.08	0.32
EISSUE	0.10	0.05	0.37
DISSUE	0.15	0.06	0.47
TURN	0.77	0.71	0.43
SIZE	15.07	15.42	1.99
CF	0.10	0.10	0.09
AUD	0.86	1.00	0.35

[a] We define *ΔNI* as the change in annual earnings, where earnings is scaled by end-of-year total assets; *ΔCF* as the change in annual net cash flow, where cash flow is scaled by end-of-year total assets; *ACC* as earnings less cash flow from operating activities, scaled by end-of-year total assets; *CF* as annual net cash flow from operating activities, scaled by end-of-year total assets; *SPOS* as an indicator set to 1 for observations for which annual earnings scaled by total assets is between 0 and 0.01; *LNEG* as an indicator set to 1 for observations for which annual earnings scaled by total assets is less than –0.20, *RETURN* as the annual return from nine months prior to three months after the fiscal year end; *P* as stock price as of six months after the fiscal year-end; *NI/P* as earnings per share scaled by price per share at the beginning of the year; *LEV* as end-of-year total liabilities divided by end-of-year total equity, *GROWTH* as percentage change in sales; *EISSUE* as percentage change in common stock; *DISSUE* as the percentage change in total liabilities during the period; *TURN* as sales divided by end-of-year total assets; *SIZE* as the natural log of market value of equity in thousands of dollars as of the end of the year; *BVEPS* as book value of shareholders' equity per share; *NIPS* as net income per share; *AUD* as an indicator taking on a value 1 if the auditor is one of the large international accounting firms.

TABLE 7

Accounting Quality Analysis of IAS Firms and 20-F Firms in the Post-adoption Period

Earnings management Measure	IAS Firms (N=1,538)		20-F Firms (N=477)
Variability of *ΔNI**	0.0044		0.0041
Variability of *ΔNI** over *ΔCF**	1.1965		1.0305^
Correlation of *ACC** and *CF**	−0.4142		−0.3148*
Small Positive NI (*SPOS*)		0.0449#	
Timely loss recognition Measure			
Large Negative NI (*LNEG*)		−0.0450	
Value Relevance Regression Adjusted R^2			
Price	0.2480		0.1561*
Good News	0.0106		0.0120
Bad News	0.0363		0.0116*

*Significantly different between IAS firms and 20-F firms at the 0.05 level (one-sided).
#Significantly different from zero at the 0.05 level (one-sided).
^ No test of significance is conducted for comparison of Variability of *ΔNI** over *ΔCF** between IAS and US firms.

We base the analysis on industry and country fixed-effect regressions including controls as defined in table 2. We define variability of *ΔNI** (*ΔCF**) as the variance of residuals from a regression of the *ΔNI* (*ΔCF)* on the control variables, and the variability of *ΔNI** over *ΔCF** as the ratio of the variability of *ΔNI** divided by the variability of *ΔCF**. Correlation of *ACC** and *CF** is the partial Spearman correlation between the residuals from the *ACC* and *CF* regressions; we compute both sets of residuals from a regression of each variable on the control variables. *ΔNI, ΔCF*, *ACC*, and *CF* are defined in table 2.

We regress an indicator variable set to 1 for IAS firms and 0 for US firms on *SPOS* (*LNEG*) and control variables. *SPOS* (*LNEG*) is an indicator set to 1 for observations for which annual net income for ordinary shares scaled by total assets are between 0 and 0.01 (less than –0.20) and set to 0 otherwise; the coefficient on the indicator variable is reported.

The price regression is based on a two-stage regression. In the first stage, *P* is regressed on industry and country fixed-effect indicator variables, where *P* is stock price as of six months after the fiscal year-end. The second stage regression is $P^* = \beta_0 + \beta_1 BVEPS + \beta_2 NIPS + \varepsilon$, where *P** is the residual from the first stage regression, *BVEPS* is book value of shareholders'

equity per share, and *NIPS* is net income per share. The good/bad news regression also is based on a two-stage regression. In the first stage, net income divided by beginning of year price is regressed on industry and country fixed-effect indicator variables. The second stage regression is $NI/P^* = \beta_0 + \beta_1 RETURN + \varepsilon$, where NI/P^* is the residual from the first- stage regression, and *RETURN* is the stock return computed over the twelve months ending three months after year-end. Good news observations are those for which *RETURN* is nonnegative. Bad news observations are those for which *RETURN* is negative.

Incremental adjusted R^2 is determined from the second stage regressions.

All variables in each of the regressions used in this table are winsorized at the 5% level to control for the effect of outliers.