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**International Accounting Standards and
Accounting Quality**

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Abstract

We examine whether application of International Accounting Standards is associated with higher accounting quality. The application of IAS reflects the combined effects of features of the financial reporting system, including standards, their interpretation, enforcement, and litigation. We find that firms applying IAS from 21 countries generally evidence less earnings management, more timely loss recognition, and more value relevance of accounting amounts than do a matched sample of firms applying non-US domestic standards. Differences in accounting quality between the two groups of firms in the period before the IAS firms adopt IAS do not account for the post-adoption differences. We also find that firms applying IAS generally evidence an improvement in accounting quality between the pre- and post-adoption periods. Although we cannot be sure that our findings are attributable to the change in the financial reporting system rather than to changes in firms' incentives and the economic environment, we include research design features to mitigate the effects of both.

1.   Introduction

The question we address is whether application of International Accounting Standards (IAS) is associated with higher accounting quality than application of non-US domestic standards.[1] In particular, we investigate whether accounting amounts of firms that apply IAS exhibit less earnings management, more timely loss recognition, and higher value relevance than accounting amounts of firms that apply domestic standards. The accounting amounts that we compare result from the interaction of features of the financial reporting system, which include accounting standards, their interpretation, enforcement, and litigation. Because our interest is in the quality of the accounting amounts that result from the financial reporting system, we make no attempt to determine the relative contribution of each of its features. We refer to the combined effect of the features of the financial reporting system as the effect of application of IAS. Our results indicate that firms applying IAS have higher accounting quality than firms that do not and that accounting quality improves after firms adopt IAS.

A goal of the International Accounting Standards Committee (IASC), and its successor body the International Accounting Standards Board (IASB), is to develop an internationally acceptable set of high quality financial reporting standards. To achieve this goal, the IASC and IASB have issued principles-based standards, and taken steps to remove allowable accounting alternatives and to require accounting measurements that better reflect a firm's economic position and performance. Accounting quality could increase if these actions by standard setters

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[1] IAS were issued by the International Accounting Standards Committee (IASC). The International Accounting Standards Board (IASB), the successor body to the IASC, issues International Financial Reporting Standards, which include standards issued not only by the IASB but also by the IASC, some of which have been amended by the IASB. With the exception of an amendment of IAS 19, relating to the asset ceiling test for employee benefits, our sample period pre-dates the mandatory effective dates of standards issued by the IASB. However, the IASB issued several amendments to IASs in December 2003 that firms could choose to implement before the mandatory effective dates.

limit management's opportunistic discretion in determining accounting amounts, e.g., managing earnings. Accounting quality also could increase because of changes in the financial reporting system contemporaneous with firms' adoption of IAS, e.g., more rigorous enforcement. Thus, we predict that accounting amounts based on IAS are of higher quality than those based on domestic standards.

However, there are at least two reasons why our predictions may not be borne out. First, IAS may be of lower quality than domestic standards. For example, limiting managerial discretion relating to accounting alternatives could eliminate the firm's ability to report accounting measurements that are more reflective of the firm's economic position and performance. In addition, the inherent flexibility in principles-based standards could provide greater opportunity for firms to manage earnings, thereby decreasing accounting quality. Second, the effects of features of the financial reporting system other than the standards themselves could eliminate any improvement in accounting quality arising from higher quality accounting standards. This could occur, for example, if enforcement of accounting standards is lax.

We interpret earnings that exhibit less earnings management as being of higher quality. Our metrics for 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. We interpret a higher variance of the change in net income, higher ratio of the variances of the change in net income and change in cash flows, less negative correlation between accruals and cash flows, and lower frequency of small positive net income as evidence of less earnings management. We also interpret earnings that reflect losses on a more timely basis as being of

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higher quality. Our metric for timely loss recognition is the frequency of large negative net income. We interpret a higher frequency as evidence of more timely loss recognition. Finally, we interpret accounting amounts that are more value relevant as being of higher quality. Our metrics for value relevance are the explanatory powers of net income and equity book value for prices, and stock return for earnings. We interpret higher explanatory power as evidence of more value relevance. All of our accounting quality metrics are based on those used in prior research.

We base our inferences on a sample of firms in 21 countries that adopted IAS between 1994 and 2003. Ideally, we would base on our inferences on a sample of firms that were randomly assigned to apply IAS. However, our sample period preceded the mandatory application of IAS for most sample firms, and thus firms may have adopted IAS in response to changed incentives. Thus, we could detect an improvement in accounting quality for firms that apply IAS that is attributable to changes in incentives and not to changes in the financial reporting system. To mitigate the effects of changes in incentives, when constructing our accounting quality metrics relating to earnings management and timely loss recognition, we include controls for factors that prior research identifies as associated with firms' voluntary accounting decisions, e.g., growth, leverage, and the need to access the capital markets. Our metrics of accounting quality also reflect the effects of the economic environment that are not attributable to the financial reporting system. The economic environment includes volatility of economic activity and information environment. To mitigate these effects, we use a matched sample design by selecting a firm that applies domestic standards in the same country as, and of similar size to, each sample firm that applies IAS. We compare accounting quality metrics for the two groups of firms. In addition, some of the controls we include when constructing our metrics also are proxies for economic environment. Although we include these research design

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features, we cannot be sure that our findings are attributable to the change in the financial reporting system rather than to changes in firms' incentives and the economic environment.

We begin by comparing accounting quality metrics for firms applying IAS to those applying non-US domestic standards in the period after the firms applying IAS adopt IAS, i.e., the post-adoption period. This permits us to test whether firms applying IAS have higher accounting quality than firms that do not. We find that in the post-adoption period firms applying IAS generally evidence less earnings management, more timely loss recognition, and more value relevance of accounting amounts than do firms not applying IAS. In particular, firms applying IAS have a higher variance of the change in net income, less negative correlation between accruals and cash flows, higher frequency of large negative net income, and higher value relevance of net income and equity book value for share prices, with each of these differences being significant. In addition, they have a higher ratio of the variances of change in net income and change in cash flow, lower frequency of small positive net income, and higher value relevance of net income for good news stock returns, although these differences are not significant.

Firms applying IAS and domestic standards could exhibit differences in accounting quality in the post-adoption period because they differed in the period before the firms applying IAS adopted IAS, i.e., the pre-adoption period. To determine whether this is the case, we compare accounting quality of the two groups of firms in the pre-adoption period. We find that differences in our accounting quality metrics in the pre-adoption period do not explain the differences in the post-adoption period. In the pre-adoption period, all but one of the quality metrics for firms that later apply IAS differ insignificantly from those for firms that do not apply IAS. The matched sample design might not fully control for differences in economic

environment. Thus, we also compare accounting quality metrics for firms applying IAS in the pre- and post-adoption periods, thereby effectively using each firm as its own control for these differences. We find that firms applying IAS exhibit higher accounting quality in the post-adoption period than they do in the pre-adoption period, with four of the eight differences being significant. Because the economic environment can change over time, we also test whether the increase in accounting quality for firms that apply IAS is greater than that for firms that do not. We find that generally the increase in accounting quality is greater for firms applying IAS, although almost all of the differences in changes in accounting quality metrics are not significant.

We contribute to the literature examining the quality of IAS-based accounting amounts in two ways. First, we use a broad sample of firms in many countries adopting IAS over several years. In contrast, prior research typically focuses on individual countries using data from limited time periods. Second, we use an array of quality metrics drawn from a common time period and use a common set of control variables. Findings from prior research comparing the quality of accounting amounts based on applying IAS and domestic standards are mixed, which could be attributable to using different metrics, drawing data from somewhat different time periods, and using different control variables.

The remainder of the paper is organized as follows. The next section develops the hypotheses and section three explains the research design. Section four describes the sample and data, and section five presents the results. Section six offers a summary and concluding remarks.

2.   *Hypothesis Development*

2.1   IAS AND ACCOUNTING QUALITY

The first IAS was published in 1975 by the IASC, which was formed in 1973. Since then, the process for setting international accounting standards has undergone substantial evolution, culminating in the 2001 restructuring of the IASC into the IASB. In recognition of the quality of the core set of IAS, in 2000 the International Organization of Securities Commissions recommended that the world's securities regulators permit foreign issuers to use IAS for cross-border offerings (IOSCO, 2000). As of 2005, almost all publicly listed companies in Europe and many other countries are required to prepare financial statements in accordance with International Financial Reporting Standards (IFRS). In addition, the Financial Accounting Standards Board has embarked on a comprehensive project aimed at convergence between IFRS and US standards.

A goal of the IASC and IASB is to develop an internationally acceptable set of high quality financial reporting standards. To achieve this goal, the IASC and IASB have issued principles-based standards, and taken steps to remove allowable accounting alternatives and to require accounting measurements that better reflect a firm's economic position and performance (IASC, 1989). Limiting alternatives can increase accounting quality because doing so limits management's opportunistic discretion in determining accounting amounts (Ashbaugh and Pincus, 2001). Accounting amounts that better reflect a firm's underlying economics, either resulting from principles-based standards or required accounting measurements, can increase accounting quality because doing so provides investors with information to aid them in making investment decisions. These two sources of higher accounting quality are related in that, all else equal, limiting opportunistic discretion by managers increases the extent to which the accounting amounts reflect a firm's underlying economics. Consistent with this line of reasoning, Ewert and Wagenhofer (2005) develops a rational expectations model that shows accounting standards that

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limit opportunistic discretion result in accounting earnings that are more reflective of a firm's underlying economics and, therefore, are of higher quality. Accounting quality could also increase because of changes in the financial reporting system contemporaneous with firms' adoption of IAS, e.g., more rigorous enforcement. Thus, we predict that accounting amounts resulting from application of IAS are of higher quality than those resulting from application of domestic standards.[2]

Although we predict that application of IAS is associated with higher accounting quality, there are at least two reasons why this may not be true. First, IAS may be of lower quality than domestic standards. For example, limiting managerial discretion relating to accounting alternatives could eliminate the firm's ability to report accounting measurements that are more reflective of its economic position and performance. In addition, the inherent flexibility in principles-based standards could provide greater opportunity for firms to manage earnings, thereby decreasing accounting quality. This flexibility has long been a concern of securities markets regulators, especially in international contexts (e.g., Breeden, 1994).[3]

Second, even if IAS are higher quality standards, the effects of features of the financial reporting system other than the standards themselves could eliminate any improvement in accounting quality arising from adopting IAS. Cairns (1999), Street and Gray (2001), Ball, Robin, and Wu (2003), and Burgstahler, Hail, and Leuz (2006) suggest that lax enforcement can result in limited compliance with the standards, thereby limiting their effectiveness. Cairns

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

[3] See Watts and Zimmerman (1986) for a discussion of the costs and benefits of managerial discretion in financial reporting.

(1999) and Street and Gray (2001) find substantial noncompliance with IAS among firms purportedly applying IAS. In particular, for the 279 firms that refer to application of IAS in their 1998 financial statements, Street and Gray (2001) examines disclosed accounting policies for consistency with major IAS pronouncements. The study finds that, in many cases, disclosed accounting policies are inconsistent with IAS. Ball, Robin, and Wu (2003) examines timely loss recognition for firms in Hong Kong, Malaysia, Singapore, and Thailand. In these countries, accounting standards are largely derived from common law and, therefore, likely are similar to IAS. Ball, Robin, and Wu (2003) finds that timely loss recognition for firms in these countries is no better than it is for firms in code law countries. Ball, Robin, and Wu (2003) attributes this finding to differing incentives of managers and auditors. Burgstahler, Hail, and Leuz (2006) finds that strong legal systems are associated with less earnings management. The study attributes this finding to different incentives created by market pressures and institutional factors to report earnings that reflect economic performance.

Findings in Bradshaw and Miller (2005) suggest that the regulatory and litigation environment also is important to the application of accounting standards. In particular, Bradshaw and Miller (2005) studies non-US firms that assert that their domestic standards-based financial statements are in accordance with US standards, and finds that firms claiming to comply with US standards report accounting amounts that are more similar to US firms than are those of other non-US firms. However, the characteristics of the domestic standards-based accounting amounts that non-US firms assert comply with US standards often differ from those of US firms. Consistent with Bradshaw and Miller (2005), findings in Lang, Raedy, and Wilson (2006) suggest that a similar litigation and regulation environment does not ensure accounting amounts of similar quality. In particular, Lang, Raedy, and Wilson (2006) finds that US

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standards-based earnings of firms that cross-list on US markets exhibit significantly more

earnings management than do earnings of US firms, despite the fact that cross-listed firms are

required to use US standards and in principle face a regulatory and litigation environment similar

to US firms.

We could observe differences in accounting quality for firms applying IAS for reasons

other than those relating to the financial reporting system, such as firms' incentives and

economic environments. Regarding incentives, because application of IAS was largely

voluntary during our sample period, incentives for firms that adopted IAS could have changed

between the pre- and post-adoption periods, which resulted in their decision to adopt IAS.[4] The

fact that firms might have adopted IAS as part of their response to changes in incentives could

indicate that either their domestic standards did not permit them to reveal their higher accounting

quality, or they adopted IAS to signal their higher accounting quality because they believe the

market perceives IAS are higher quality than domestic standards. Both of these explanations are

consistent with IAS being associated with higher accounting quality.[5]

Regarding economic environment, firms may have adopted IAS because they anticipated

IAS would become mandatory in the near future. If this were the case but application of IAS is

not associated with an improvement in accounting quality, then our tests will be biased against

finding that IAS-based accounting amounts are of higher quality. Also, Land and Lang (2002)

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[4] Daske et al. (2007) provides evidence that changing incentives could affect not only the decision to adopt IAS, but also the degree to which firms comply with IAS. In particular, Daske et al. (2007) examines the economic consequences of adopting international accounting standards, including liquidity and equity cost of capital. The study's findings indicate that economic benefits obtain only for those firms that can credibly signal a commitment to higher financial statement transparency.

[5] Some firms may have involuntarily adopted IAS as a consequence of other decisions they made in response to changes in incentives, e.g., the requirement to apply IAS of a stock exchange on which a firm decides to list securities. Any observed improvement in accounting quality could be attributable solely to the fact that the new exchange requires IAS, and even if the firm had not listed on the new exchange we might have observed an increase in quality under the firm's domestic standards. Untabulated findings reveal that eliminating cross-listed firms from the sample has no effect on our inferences.

shows that accounting quality is improving worldwide. Therefore, any improvement in

accounting quality we observe after firms adopt IAS could have obtained even if firms had not

adopted IAS. Section 3 discusses the research design features we incorporate to mitigate the

effects on our accounting quality comparisons arising from changing incentives and other

temporal economic changes.

2.2   IAS AND DOMESTIC STANDARDS COMPARISONS

Several studies compare accounting amounts based on, and the economic implications of,

applying IAS and domestic standards in Germany. Most of these studies find no significant

differences. Van Tendeloo and Vanstraelen (2005) finds that German firms applying IAS do not

exhibit differences in earnings management when compared to those applying German standards.

Daske (2006) finds no evidence of a reduction in cost of capital for German firms that apply IAS.

Hung and Subramanyam (2007) finds that accounting amounts based on German standards and

those based on IAS that are disclosed in accordance with requirements for first-time adopters of

IAS do not differ in value relevance.[6] In contrast, Bartov, Goldberg, and Kim (2005) provides

evidence that earnings based on IAS is more value relevant than earnings based on German

standards.

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[6] Leuz (2003) compares measures of information asymmetry, i.e., bid/ask spreads and trading volume, for German firms trading on Germany's New Market that apply US standards and those that apply IAS. The sample is comprised primarily of young firms in high technology industries that traded on the same stock exchange. As a result, the firms faced similar economic environments, incentives, and features of the financial reporting system other than accounting standards, which permits Leuz (2003) to attribute differences in information asymmetry to differences in accounting standards. Leuz (2003) finds little evidence of differences in information asymmetry for the two groups of firms. Our research question differs in three ways. First, the Leuz (2003) comparisons relate to firms applying US standards and IAS, whereas our comparisons relate to firms applying non-US domestic standards and IAS. Second, whereas we focus on differences in accounting quality, Leuz (2003) focuses on differences in information asymmetry, which is affected by a variety of factors in addition to accounting quality. Third, whereas Leuz (2003) focuses on differences in information asymmetry arising from differences in accounting standards, we focus on differences in accounting quality arising from the financial reporting system comprehensively, of which accounting standards are only one part.

Eccher and Healy (2003) compares accounting amounts based on IAS and Chinese standards and finds that those based on IAS are not more value relevant than those based on Chinese standards for firms that can be owned by foreign investors. However, the study finds that accounting amounts based on IAS are less value relevant than those based on Chinese standards for firms that can only be owned by domestic investors.

One explanation for the mixed findings in this individual country research is that firms preparing to adopt IAS likely transition gradually, changing accounting amounts based on domestic standards to be closer to those based on IAS. For example, Hung and Subramanyam (2007) finds few reconciling items related to earnings management, such as hidden reserves, which is surprising because the existence of such earnings management items is a common concern with application of German standards.[7] Another explanation is that developing economies lack the infrastructure to enforce the application of IAS. Eccher and Healy (2003) posits this as one reason for not finding IAS-based accounting amounts have higher value relevance. A third explanation is that the studies differ in the effectiveness of controls for incentives associated with a firm's use of a particular set of accounting standards and effects of the economic environment. A fourth explanation is that the studies use different metrics, draw data from somewhat different time periods, and use different control variables.

Our study differs from this individual country research in the following ways. First, our sample includes firms from 21 countries. There are advantages and disadvantages associated with focusing on individual countries relative to using a sample from many countries. For example, focusing on a particular country removes the need to control for potentially

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[7] The findings in Lang, Raedy, and Yetman (2003) provide support for this explanation in the context of firms cross-listing on US exchanges. In particular, the study finds that firms cross-listing on US exchanges report accounting amounts based on domestic standards that are close enough to those based on US standards to reduce the number of reconciling items.

confounding effects of country-specific factors unrelated to the financial reporting system. However, doing so makes it difficult to extrapolate to other countries inferences from such studies. Second, we use an array of metrics consistently derived over a single time period. Third, we develop empirical procedures, including use of a matched sample and multiple regression, to mitigate the effects on our inferences of factors unrelated to the financial reporting system, i.e., incentives and economic environment.

2.3   MEASURES OF ACCOUNTING QUALITY

Following prior research, we operationalize accounting quality using earnings management, timely loss recognition, and value relevance metrics. Consistent with the predictions in this prior research, we predict that firms with higher quality earnings exhibit less earnings management, more timely loss recognition, and higher value relevance of earnings and equity book value. However, as noted below, there are plausible reasons for making the opposite prediction for several of our metrics. This is because accounting quality can be affected by opportunistic discretion exercised by managers and non-opportunistic error in estimating accruals, and our metrics reflect these effects.

We examine two manifestations of earnings management, earnings smoothing and managing towards positive earnings. We expect IAS-based earnings to be less managed than domestic standards-based earnings because IAS limit management's discretion to report earnings that are less reflective of the firm's economic performance.[8] Regarding earnings smoothing, following prior research, we assume that firms with less earnings smoothing exhibit more earnings variability (Lang, Raedy, and Yetman, 2003; Leuz, Nanda, and Wysocki, 2003; Ball

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[8] As noted above, discretionary accounting choices can be used to reveal private information about the firm or can be opportunistic and possibly misleading about the firm's economic performance (Watts and Zimmerman, 1986). Our prediction assumes that the limitations on discretion have a greater effect on opportunistic discretion than on managers' ability to reveal private information about the firm.

and Shivakumar, 2005, 2006; Lang, Raedy, and Wilson, 2006). Thus, we predict that firms applying IAS exhibit more variable earnings than those applying domestic standards. Our prediction is supported by several studies. Ewert and Wagenhofer (2005) shows that applying accounting standards that limit management's discretion should result in higher variability in accounting earnings. Leuz, Nanda, and Wysocki (2003) finds that earnings smoothing is less pronounced in common law countries; IAS are based on a conceptual framework similar to those of common law countries. Ball and Shivakumar (2005, 2006) suggest that timely recognition of gains and losses, which is consistent with higher earnings quality, tends to increase the volatility of earnings relative to cash flows. To test our prediction, we use two metrics of earnings variability, variability of change in net income and variability of change in net income relative to variability of change in cash flow.

Although we predict that firms applying IAS have less earnings management and, thus, higher earnings variability, some studies (e.g., Healy, 1985) suggest that, in the case of "big baths," managers may use discretion in ways that result in higher earnings variability. Thus, firms applying domestic standards could have more discretion for this form of earnings management and thus could exhibit higher earnings variability. Also, higher earnings variability could be indicative of lower earnings quality because of error in estimating accruals. Thus, higher quality accounting can result in lower earnings variability.

We also assume that firms with more earnings smoothing exhibit a more negative correlation between accruals and cash flows (Lang, Raedy, and Yetman, 2003; Leuz, Nanda, and Wysocki, 2003; Ball and Shivakumar, 2005, 2006; Lang, Raedy, and Wilson, 2006). Land and Lang (2002) and Myers, Myers, and Skinner (2006), among others, interpret a more negative correlation as indicating earnings smoothing because managers respond to poor cash flow

outcomes by increasing accruals. Ball and Shivakumar (2005, 2006) show that timely gain and loss recognition, which is consistent with higher earnings quality, attenuates the negative correlation between accruals and current period cash flow. Thus, we predict that firms applying IAS exhibit a less negative correlation between accruals and cash flows than those applying domestic standards.

Although we predict higher quality accounting results in a less negative correlation between accruals and cash flows, the opposite could be true. In particular, Dechow (1994) suggests that the proper role of accruals in income measurement is to smooth variability in cash flows and, because accruals reverse over time, accruals and cash flows are expected to be negatively correlated. Thus, firms applying domestic standards could manage earnings to exhibit a less negative correlation between accruals and cash flows. Also, a less negative correlation between accruals and cash flows could be indicative of lower accounting quality because of error in estimating accruals. Thus, higher quality accounting can result in a more negative correlation between accruals and cash flows.

Regarding our second manifestation of earnings management, prior research identifies positive earnings as a common target of earnings management. Prior research uses the frequency of small positive net income as a metric to provide evidence of managing towards positive earnings (Burgstahler and Dichev, 1997; Leuz, Nanda, and Wysocki, 2003). The notion underlying this metric is that management prefers to report small positive net income rather than negative net income. Thus, we predict that firms applying IAS report small positive net income with lower frequency than those applying domestic standards.

Turning to timely loss recognition, we expect higher quality earnings exhibit a higher frequency of large losses. This is consistent with Ball, Kothari, and Robin (2000), Lang, Raedy,

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and Yetman (2003), Leuz, Nanda, and Wysocki (2003), Ball and Shivakumar (2005, 2006), and Lang, Raedy, and Wilson (2006) that suggest that one characteristic of higher quality earnings is that large losses are recognized as they occur rather than being 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 IAS report large losses with higher frequency than those applying domestic standards.

Although we predict higher quality accounting results in a higher frequency of larger losses, the opposite could be true. In particular, a higher frequency of large losses could be indicative of big bath earnings management. Also, a higher frequency of large losses could result from error in estimating accruals. Thus, higher quality accounting can result in a lower frequency of large losses.

Turning lastly to value relevance, we expect firms with higher quality accounting 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 accounting results from applying accounting standards that require recognition of amounts that are intended to faithfully represent a firm's underlying economics. Second, higher quality accounting is less subject to opportunistic managerial discretion. These two features of higher quality accounting are linked together by Ewert and Wagenhofer (2005), which shows that accounting standards that limit opportunistic discretion result in accounting earnings that have higher value relevance. Third, higher quality accounting has less non-opportunistic error in estimating accruals. Consistent with these three features of higher quality accounting, prior empirical research suggests that higher quality earnings are more value relevant (Lang, Raedy, and Yetman, 2003; Leuz, Nanda, and Wysocki, 2003; Lang, Raedy, and Wilson,

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2006). Accordingly, we predict that firms applying IAS exhibit higher value relevance of net income and equity book value than firms applying domestic standards.[9]

We test whether accounting quality for firms applying IAS is higher than that for firms applying domestic standards using several metrics relating to earnings management, timely loss recognition, and value relevance. One advantage of using several metrics is that, in principle, doing so permits us to determine the source of any accounting quality differences between firms that apply IAS and those that do not. Another advantage is that because there are plausible alternative predictions for some of our metrics, it is possible to rule these out for some of our metrics based on findings from other metrics. For example, suppose we find that firms applying IAS have higher earnings variability and a higher frequency of large losses. These two findings are consistent with our predictions indicating higher accounting quality. However, they also are consistent lower quality accounting resulting from error in estimating accruals and big bath earnings management. If we also find that firms applying IAS firms have higher value relevance than firms that do not, the error in estimating accruals and big bath earnings management explanations are ruled out.

3. Research Design

3.1 OVERVIEW

Our empirical metrics of accounting quality reflect the effects of the financial reporting system as well as those unattributable to the financial reporting system, including the economic

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[9] 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 or include controls for firm size, country, and industry. 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.

environment and incentives for firms to adopt IAS. Following prior research, we use two approaches to mitigate these effects. First, when comparing metrics for firms applying IAS, IAS firms, and firms applying non-US domestic standards, NIAS firms, we use a matching procedure to select our sample of NIAS firms. In particular, we match on country as a control for country-level differences in economic activity, and size as a control for size-related differences, such as information environment. Second, when constructing our accounting quality metrics relating to earnings management and timely loss recognition, we include controls for factors that prior research identifies as associated with firms' voluntary accounting decisions and controls for economic environment.

As is the case in prior research (e.g., Ashbaugh, 2001; Ashbaugh and Pincus, 2001; Lang, Raedy, and Yetman, 2003; Leuz, Nanda, and Wysocki, 2003; Lang, Raedy, and Wilson, 2006), there is no definitive way to determine the degree to which these research design features mitigate the effects of economic environment and incentives on our metrics. In addition, even though we intend for our matching procedure to control for economic differences and our control variables to capture firms' incentives to adopt IAS, each design feature can control for both of these confounding effects. Moreover, these two design features could also control for some effects attributable to the financial reporting system, such as enforcement and litigation. That is, matching IAS and NIAS firms and using control variables when constructing our metrics could mask differences in accounting quality attributable to the financial reporting system.

To construct the matched sample, consistent with Lang, Raedy, and Yetman (2003) and Lang, Raedy, and Wilson (2006) but modified to our context, we first identify each IAS firm's country and adoption year. We then identify all firms that do not apply IAS in any sample year that are in industries that have at least one IAS firm. We select as the matched NIAS firm the

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non-applying firm from the IAS firm's country whose equity market value is closest to the IAS firm's at the end of its adoption year. Once a non-applying firm is selected as a match, it is not considered as a potential match for other IAS firms. In a few cases, potential matching firms do not have market value of equity available in the adoption year. In those cases, we consider market value of equity for the two years before and after the adoption year.[10] Our analyses include all firm-years for which the IAS firm and its matched NIAS firm both have data. For example, if the IAS firm has data from 1994 through 2000, and its matched NIAS firm has data from 1995 through 2002, then our analysis includes data from 1995 through 2000 for the IAS firm and its matched NIAS firm.

As the primary test of our predictions, we compare accounting quality metrics for IAS firms and NIAS firms in the period after the IAS firms adopt IAS, i.e., the post-adoption period. This permits us to determine whether firms that apply IAS have higher accounting quality than firms that do not.

One potential problem with comparing IAS and NIAS firms in the post-adoption period is that the two groups of firms could exhibit differences in accounting quality in the post-adoption period because their economic characteristics differ. To determine whether this is the case, we compare IAS and NIAS firms' accounting quality before the IAS firms adopted IAS, i.e., the pre-adoption period. Finding IAS and NIAS firms exhibit similar differences in accounting quality in the pre- and post-adoption periods would make it difficult to attribute post-adoption differences in accounting quality to the change in financial reporting for IAS firms. Conversely, finding that accounting quality for IAS and NIAS firms is similar in the pre-

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[10] We also used other matching procedures, i.e., permitting an NIAS firm to be matched to more than one IAS firm and requiring NIAS firms to have market value of equity in the IAS firm's year of adoption. Using these alternative procedures has no effect on our inferences.

adoption period but is different in the post-adoption period would make it less likely that differences in accounting quality in the post-adoption period are attributable to differences in economic characteristics between the two groups of firms.

Next we compare accounting quality for IAS firms in the pre- and post-adoption periods to determine whether application of IAS is associated with higher accounting quality for IAS firms. We do this for two reasons. First, this comparison is an alternative approach to determining whether differences in accounting quality between IAS and NIAS firms in the post-adoption period are attributable to differences in economic characteristics between the two groups of firms. This is because comparing accounting quality for IAS firms in the pre- and post-adoption periods uses each IAS firm as its own control. Second, this comparison provides direct evidence on whether accounting quality for IAS firms improved between the pre- and post-adoption periods. Finding that accounting quality for IAS firms is higher in the post-adoption period would make it more likely that the improvement in accounting quality is attributable to the change in the financial reporting system.

A limitation of a comparing accounting quality of IAS firms in the pre- and post-adoption periods is that we could detect an improvement in accounting quality because of changes in the economic environment of IAS firms unattributable to the financial reporting system. The fact that IAS firms do not adopt IAS in the same calendar year mitigates the potential effect of changes in economic environment. Nonetheless, we examine whether NIAS firms exhibit similar changes in accounting quality between the two periods to provide additional evidence on whether changes in the economic environment result in a general change in accounting quality. In particular, we examine whether the change in accounting quality for IAS firms between the pre- and post-adoption periods is greater than that for NIAS firms. This question would arise in

19

the event that we find accounting quality for IAS firms improves from the pre- to post-adoption periods, and is greater than that for NIAS firms in both the pre- and post-adoption periods. In contrast, assume we find that accounting quality for IAS firms improves from the pre- to post-adoption periods, is greater than that for NIAS firms in post-adoption period, but is not different from that for NIAS firms in the pre-adoption period. This set of findings would make a comparison of changes in accounting quality differences logically redundant, and such a comparison potentially could suffer from a loss power arising from differencing metrics that have estimation error (Landsman and Magliolo, 1988).[11]

Failure to control for a firm's incentives to adopt IAS when making comparisons of accounting quality between IAS and NIAS firms in the post-adoption period and changes in accounting quality for IAS firms between the pre- and post-adoption periods can lead to us to infer that observed differences in accounting quality are attributable to differences in the financial reporting system when the quality differences are attributable to the effect of firms incentives. Although we include research design features to mitigate the effects of incentives, we cannot be sure that our findings are attributable to differences in the financial reporting system rather than to differences in firms' incentives.

Following prior research (Lang, Raedy, Yetman, 2003; Leuz, 2003; Lang, Raedy, Wilson, 2006), we construct our accounting quality metrics based on cross-sectional data. As with prior research, we interpret differences in various summary statistics (e.g., variances, correlations, and regression R^2s) relating to the metrics between two samples of firms being compared as evidence of differences in accounting quality. This approach to comparing

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[11] To see why such a comparison would be logically redundant, denote the quality of IAS and NIAS accounting amounts in the pre-adoption (post-adoption) period as I_{PRE} and N_{PRE} (I_{POST} and N_{POST}). If $I_{POST} > I_{PRE}$, $I_{POST} > N_{POST}$, and $I_{PRE} = N_{PRE}$, then $I_{POST} - I_{PRE} > N_{POST} - N_{PRE}$.

accounting quality metrics for two groups of firms assumes that the metrics for the firms within each group are drawn from the same distribution, and that the metrics for firms in different groups are potentially drawn from different distributions. To the extent that firms within each group differ in accounting quality as measured by each metric, the variance of the metric's distribution will be larger, thereby making it difficult to detect significant differences in summary statistics between the groups.[12]

With the exception of the tests for the frequency of small positive and large negative net income, for which we test for significance of regression coefficients, we test for differences in each metric using a t-test based on the empirical distribution of the differences. Specifically, for each test, we first randomly select, with replacement, firm observations that we assign to one or the other type of firm, depending on the test. For example, when comparing IAS firms and NIAS firms, we assign firm observations as either IAS or NIAS firms. We then calculate the difference between the two types of firms in the metric that is the subject of the particular test. We obtain the empirical distribution of this difference by repeating this procedure 1,000 times. An advantage of this approach to testing significance of the differences is that it requires no assumptions about the distribution of each metric. Another advantage is that it can be used for all of our metrics, even those with unknown distributions (e.g., the ratio of variability of change in net income to variability of change in cash flow).[13]

3.2 ACCOUNTING QUALITY METRICS

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[12] An alternative approach, used in some prior research (Dechow, 1994; Leuz, Nanda, and Wysocki, 2003), is to base comparisons on alternative metrics constructed using a time series of firm-specific data. Data limitations preclude this approach because it would require a time series of observations for each firm that is not overlapping for the pre- and post-adoption periods. Even if this approach were feasible, it is unclear whether this approach would result in more reliable inferences because firm-specific metrics would likely be based on a small number of observations, limiting power and introducing estimation error. The approach also requires assuming intertemporal stationarity of each metric.

[13] When applicable, we also test for significance using the Cramer (1987) test. In every case, that test results in the same inferences as the empirical distribution test.

3.2.1. Earnings Management. We use four earnings management metrics – three for earnings smoothing and one for managing earnings towards a target. Our first earnings smoothing metric is based on the variability of the change in net income scaled by total assets, ΔNI (Lang, Raedy, and Wilson, 2006).[14] We interpret a smaller variance of the change in net income as evidence of earnings smoothing. However, change in net income is likely to be sensitive to a variety of factors unattributable to the financial reporting system, i.e., economic environment and incentives to adopt IAS. Although our matching procedure mitigates the confounding effects of some of these factors, other effects likely remain. Thus, following Lang, Raedy and Yetman (2003) and Lang, Raedy and Wilson (2006), our earnings variability metric is the variance of the residuals from the regression of change in net income on variables identified in prior research as controls for these factors (Ashbaugh, 2001; Pagano, Röell, and Zechner, 2002; Lang, Raedy, and Yetman, 2003; Tarca, 2005; Lang, Raedy, and Wilson, 2006), ΔNI^{*}:[15]

$$
\begin{aligned}
\Delta NI_{it} = {}& \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 EISSUE_{it} + \alpha_4 LEV_{it} + \\
& \alpha_5 DISSUE_{it} + \alpha_6 TURN_{it} + \alpha_7 CF_{it} + \alpha_8 AUD_{it} + \alpha_9 NUMEX_{it} + \\
& \alpha_{10} XLIST_{it} + \alpha_{11} CLOSE_{it} + \varepsilon_{it}.
\end{aligned}
\tag{1}
$$

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

---

[14] 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. Using these alternative income measures has no effect on our inferences.

[15] Basing our inferences on the variance of residuals from equation (1) assumes that inclusion of the control variables effectively results in a measure of variability of change in net income that is unrelated to the controls. A more direct approach is to first compute variability of change in net income, and then use it as the dependent variable in equation (1). However, this approach is not feasible because it would require sufficient time series of firm-specific data to estimate variability of change in net income (see also footnote 12). Therefore, we cannot be sure that our approach effectively eliminates firm-specific differences in our accounting quality metrics.

liabilities, *TURN* is sales divided by end of year total assets, *CF* is annual net cash flow from operating activities, *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, *NUMEX* is the number of exchanges on which a firm's stock is listed, *XLIST* is an indicator variable that equals one if the firm is listed on any US stock exchange and WorldScope indicates that the US exchange is not the firm's primary exchange, and *CLOSE* is the percentage of closely held shares of the firm as reported by WorldScope.[16] Equation (1) also includes country and industry fixed effects, as do equations (2) through (8).[17]

We estimate equation (1) pooling observations that are relevant to the particular comparison we test. For example, when comparing IAS and NIAS firms in the post-adoption period, we pool all sample years in the post-adoption period. For this comparison, the variability of ΔNI^* is the variance of IAS and NIAS 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 variance of residuals for IAS firms in the post- and pre-adoption periods. We compare the difference in the variability of ΔNI^* between the post- and pre-adoption periods for IAS and NIAS firms as the difference between the resulting metrics for IAS and NIAS firms.

Our second earnings smoothing metric is based on the mean ratio of the variability of the change in net income, ΔNI, to the variability of the change in operating cash flows, ΔCF.

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[16] Excluding these controls from our tests has no effect on our inferences.
[17] Our design will detect differences between groups of firms in earnings smoothing, as measured by residual earnings variability, provided that the mean level of the residuals from equation (1) does not differ significantly between the two groups of firms. For all relevant comparisons of earnings variability, untabulated statistics reveal no significant differences in mean residuals for each group. In addition, the frequency with which the test observation's residual exceeds that of its matched control yields the same inference.

Firms with more volatile cash flows typically have more volatile net income, and our second metric attempts to control 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 unattributable to the financial reporting system. Therefore, we also estimate an equation similar to equation (1), but with ΔCF as the dependent variable:

$$
\begin{aligned}
\Delta CF_{it} = \alpha_0 &+ \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 EISSUE_{it} + \alpha_4 LEV_{it} + \\
&\alpha_5 DISSUE_{it} + \alpha_6 TURN_{it} + \alpha_7 CF_{it} + \alpha_8 AUD_{it} + \alpha_9 NUMEX_{it} + \\
&\alpha_{10} XLIST_{it} + \alpha_{11} CLOSE_{it} + \varepsilon_{it}
\end{aligned}
\tag{2}
$$

As with equation (1), we pool observations appropriate for the particular comparison.[18] The variability of ΔCF^* is the variance of groups of residuals from equation (2), where the composition of the groups depends on the particular comparison we test. Our resulting second metric is the ratio of the variability of ΔNI^* to variability of ΔCF^*.

Our third earnings smoothing metric is based on the Spearman correlation between accruals and cash flows. As with the two variability metrics based on equations (1) and (2), 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:

$$
\begin{aligned}
CF_{it} = \alpha_0 &+ \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 EISSUE_{it} + \alpha_4 LEV_{it} + \\
&\alpha_5 DISSUE_{it} + \alpha_6 TURN_{it} + \alpha_7 AUD_{it} + \alpha_8 NUMEX_{it} + \\
&\alpha_9 XLIST_{it} + \alpha_{10} CLOSE_{it} + \varepsilon_{it}
\end{aligned}
\tag{3}
$$

---

[18] For ease of exposition, we use the same notation for coefficients and error terms in each equation. In all likelihood they differ.

$$ACC_{it} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 EISSUE_{it} + \alpha_4 LEV_{it} +$$
$$\alpha_5 DISSUE_{it} + \alpha_6 TURN_{it} + \alpha_7 AUD_{it} + \alpha_8 NUMEX_{it} + \qquad (4)$$
$$\alpha_9 XLIST_{it} + \alpha_{10} CLOSE_{it} + \varepsilon_{it}$$

Our metric for managing towards positive earnings is the coefficient on small positive net income, *SPOS*, in the regressions given by equations (5) and (6). When comparing IAS firms and NIAS firms in the post-adoption (pre-adoption) period, we estimate equation (5) pooling observations from the post-adoption (pre-adoption) period.

$$IAS(0,1)_{it} = \alpha_0 + \alpha_1 SPOS_{it} + \alpha_2 SIZE_{it} + \alpha_3 GROWTH_{it} + \alpha_4 EISSUE_{it} +$$
$$\alpha_5 LEV_{it} + \alpha_6 DISSUE_{it} + \alpha_7 TURN_{it} + \alpha_8 CF_{it} + \alpha_9 AUD + \qquad (5)$$
$$\alpha_{10} NUMEX_{it} + \alpha_{11} XLIST + \alpha_{12} CLOSE_{it} + \varepsilon_{it}$$

$IAS(0,1)$ is an indicator variable that equals one for IAS firms and zero for NIAS firms, 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 negative coefficient on $SPOS$ indicates that

NIAS firms manage earnings toward small positive amounts more frequently than do IAS firms.

We base our inferences on the coefficient on *SPOS* from equation (5) rather than directly

comparing the IAS and NIAS firms' percentages of small positive income because the *SPOS*

coefficient reflects the effects of controls for factors unattributable to the financial reporting

system.

When comparing IAS firms in the post-adoption and pre-adoption periods, we estimate

equation (6) pooling IAS firm observations from all sample years.

$$POST(0,1)_{it} = \alpha_0 + \alpha_1 SPOS_{it} + \alpha_2 SIZE_{it} + \alpha_3 GROWTH_{it} + \alpha_4 EISSUE_{it} +$$
$$\alpha_5 LEV_{it} + \alpha_6 DISSUE_{it} + \alpha_7 TURN_{it} + \alpha_8 CF_{it} + \alpha_9 AUD_{it} + \qquad (6)$$
$$\alpha_{10} NUMEX_{it} + \alpha_{11} XLIST_{it} + \alpha_{12} CLOSE_{it} + \varepsilon_{it}$$

$POST(0,1)$ is an indicator variable that equals one for observations in the post-adoption period

and zero otherwise. A negative coefficient on $SPOS$ indicates that IAS firms manage earnings

toward small positive amounts more frequently in the pre-adoption period than they do in the post-adoption period.[19]

   3.2.2. Timely Loss Recognition. We measure timely loss recognition as the coefficient on large negative net income, *LNEG*, in the regressions given by equations (7) and (8) (Lang, Raedy, and Yetman, 2003; Lang, Raedy, and Wilson, 2006). When comparing IAS firms and NIAS firms in the post-adoption (pre-adoption) period, we estimate equation (7) pooling observations from the post-adoption (pre-adoption) period.

$$
\begin{aligned}
IAS(0,1)_{it} = \ &\alpha_0 + \alpha_1 LNEG_{it} + \alpha_2 SIZE_{it} + \alpha_3 GROWTH_{it} + \alpha_4 EISSUE_{it} + \\
&\alpha_5 LEV_{it} + \alpha_6 DISSUE_{it} + \alpha_7 TURN_{it} + \alpha_8 CF_{it} + \alpha_9 AUD_{it} + \\
&\alpha_{10} NUMEX_{it} + \alpha_{11} XLIST_{it} + \alpha_{12} CLOSE_{it} + \varepsilon_{it}
\end{aligned} \tag{7}
$$

LNEG is an indicator variable that equals 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* indicates that IAS firms recognize large losses more frequently than NIAS firms. As with equation (5), we use the coefficient on *LNEG* from equation (7) rather than directly comparing IAS and NIAS firms' frequencies of large losses to assess whether IAS firms are less likely to manage earnings.

   When comparing IAS firms in the post-adoption and pre-adoption periods, we estimate equation (8) pooling IAS firm observations from all sample years.

$$
\begin{aligned}
POST(0,1)_{it} = \ &\alpha_0 + \alpha_1 LNEG_{it} + \alpha_2 SIZE_{it} + \alpha_3 GROWTH_{it} + \alpha_4 EISSUE_{it} + \\
&\alpha_5 LEV_{it} + \alpha_6 DISSUE_{it} + \alpha_7 TURN_{it} + \alpha_8 CF_{it} + \alpha_9 AUD_{it} + \\
&\alpha_{10} NUMEX_{it} + \alpha_{12} XLIST_{it} + \alpha_{12} CLOSE_{it} + \varepsilon_{it}
\end{aligned} \tag{8}
$$

---

[19] Following Lang, Raedy, and Wilson (2006), in the analyses of small positive and large negative net income, we report results from OLS estimation rather than from logit estimation because Greene (1993) reports that logit models are extremely sensitive to the effects of heteroscedasticity.

A positive coefficient on *LNEG* indicates that IAS firms recognize large losses more frequently in the post-adoption period than they do in the pre-adoption period.

 3.2.3. Value Relevance. The first value relevance metric is based on the explanatory power from a regression of stock price on net income and equity book value. To obtain a measure of price that is unaffected by mean differences across countries and industries, which could affect our comparisons of explanatory power, we first regress stock price, *P*, on country and industry fixed effects.[20] We regress the residuals from this regression, *P**, on equity book value per share, *BVEPS*, and net income per share, *NIPS*, separately for IAS and NIAS 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; Lang, Raedy, and Wilson, 2006). Our first value relevance metric is the adjusted R^2 from the regression given by equation (9).

$$P^*_{it} = \beta_0 + \beta_1 BVEPS_{it} + \beta_2 NIPS_{it} + \varepsilon_{it} \qquad (9)$$

 Our second and third value relevance metrics 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 net income as the dependent variable, where one is for good news firms and the other is for bad

---

[20] In principle, we could permit the *BVEPS* and *NIPS* coefficients to reflect cross-industry differences in the relation between price and accounting amounts (Barth, Konchitchki, and Landsman, 2007). However, small sample sizes in many of our industries make this impractical. We do not permit the *BVEPS* and *NIPS* coefficients to vary by country because, as with all other metric comparisons, we match on country when selecting the NIAS firms.

news firms. As with the first value relevance metric, to obtain good and bad news value relevance metrics that are unaffected by mean differences across countries and industries, 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, 2006). Our second and third value relevance metrics are the R^2s from the regression given by equation (10) estimated for good news and bad news firms.

$$[NI/P]^*_{it} = \beta_0 + \beta_1 RETURN_{it} + \varepsilon_{it} \qquad (10)$$

As with equation (9), we estimate equation (10) separately for IAS and NIAS firms in both the post- and pre-adoption periods.

4.   Data

Our sample comprises 1,896 firm year observations for 327 firms that adopted IAS between 1994 and 2003 for which DataStream data are available from 1990 through 2003. Obtaining data beginning in 1990 provides us with a minimum of four years of pre-adoption period data. We obtain our sample of IAS firms from Worldscope, which identifies the set of accounting standards a firm uses to prepare its financial statements.[21] We gather financial and accounting data from DataStream. The sample size reflects our having winsorized at the 5% level all variables used to construct our metrics to mitigate the effects of outliers on our inferences.

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[21] In particular, the two Worldscope standards categories that we code as IAS based on the Worldscope Accounting Standards Applied data field are "international standards" and "IASC." Daske et al. (2007) reports that this data field in Worldscope has classification error. However, any classification error in our study biases against finding differences in accounting quality in each of our comparisons.

Table 1, panel A, presents the country breakdown of our sample. In general, the sample is from many countries, with greatest representation from Switzerland, China, and Germany.[22] Panel B of table 1 presents the sample industry breakdown. The sample comprises a range of industries, with most in manufacturing, finance, insurance and real estate, or services. Panel C of table 1 presents a sample breakdown by IAS adoption year, and reveals variation across years.

Table 2 presents descriptive statistics relating to variables used in our analyses. Table 2 reveals that IAS firms have significantly fewer incidents of small positive earnings and insignificantly more incidents of large negative earnings than do NIAS firms.[23] Although these descriptive statistics do not control for other factors, they suggest that IAS firms are less likely than NIAS firms to manage earnings towards a target and more likely to recognize losses in a timely manner. In terms of control variables, although IAS firms have higher growth than do NIAS firms, the difference is not significant. Despite the size match, IAS firms are significantly larger than NIAS firms. Further, there is some evidence that IAS firms are more likely to issue debt (mean but not median difference is significant), more likely to issue equity (median but not mean difference is significant), and are less highly levered (mean but not median difference is significant). Relating to the last four control variables, on average, IAS firms trade on more exchanges than NIAS firms, are more likely to be audited by one of the large auditing firms, are more likely to list on a US stock exchange, and have a smaller percentage of closely held shares. All of these differences are significant.

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[22] Our sample of Chinese and German firms includes some firms that are required to apply IAS. These include Chinese B share firms and German New Market firms. We perform all of our comparisons omitting these firms. None of the inferences differs from those obtained from the tabulated results. The table 1, panel A, country classification includes firms from the listed country that are incorporated off-shore, e.g., in Bermuda. The off-shore incorporation permits these firms to use IAS rather than domestic standards. For example, four UK firms are headquartered and operate in the UK, but are incorporated in Bermuda.

[23] With the exception of the descriptive statistics in table 2 for which statistical significance is assessed using a two-sided alternative, throughout we use a 5% significance level to assess statistical significance based on a one-sided alternative.

5. *Results*

Table 3 presents results comparing quality of accounting amounts for IAS and NIAS firms in the post-adoption period. It reveals that firms applying IAS generally evidence less earnings management, more timely loss recognition, and more value relevance of accounting amounts than do firms not applying IAS.

The first finding relating to earnings management indicates that IAS firms exhibit a significantly higher variability of change in net income, ΔNI^*, 0.0026 versus 0.0021. This difference of residual variances of 0.0005 represents 14 percent of the total variance of the change in net income, ΔNI ($0.0005/0.06^2$), and approximately 21 percent of the residual variance ($0.0005/0.00235$), using the midpoint between the two residual variances.[24] The second finding is consistent with the first in that it indicates that the ratio of the variance of change in net income, ΔNI^*, to the variance of change in cash flow, ΔCF^*, is higher for IAS firms than for NIAS firms, although the difference is not significant. In particular, the ratios are 1.1084 and 1.0367 for IAS and NIAS firms, suggesting that the difference in net income variability is not solely a result of a difference in cash flow variability. Consistent with the first two metrics, the third finding indicates that the correlation between accruals, *ACC**, and cash flow, *CF**, for IAS firms, –0.5437, is significantly less negative than for NIAS firms, –0.5618. This finding indicates that IAS firms smooth earnings less than NIAS firms. Finally, the coefficient on *SPOS*, –0.0438, is negative, although not significantly so, which suggests that NIAS firms more

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[24] Although the order of magnitude of the residual variances is similar to that in Lang, Raedy, and Wilson (2006), the variances are not directly comparable between the two studies because our change in net income regression includes four additional control variables not included in the prior study – *AUD*, *NUMEX*, *XLIST*, and *CLOSE*. Untabulated results indicate that each of the four variables provides incremental explanatory power to the model, thereby reducing unexplained variance.

frequently report small positive earnings, consistent with managing earnings towards an earnings target.

The next finding in table 3 relates to timely loss recognition. The significantly positive coefficient on *LNEG*, 0.1323, indicates that, incremental to effects associated with our control variables, IAS firms recognize large losses more frequently than NIAS firms. This finding suggests that relative to IAS firms, NIAS firms smooth earnings by delaying the effects of large negative outcomes. In particular, one interpretation of the results relating to *SPOS* and *LNEG* taken together is that managers of NIAS firms smooth away from large negative earnings and toward small positive net income, resulting in less timely recognition of losses.

The final set of findings in table 3 relates to value relevance of accounting amounts. First, regressions of price on net income and equity book value for IAS and NIAS firms reveal that the R^2 for IAS firms is significantly greater than that for NIAS firms, 40.10% versus 30.16%. Untabulated regression summary statistics indicate that, as expected, the coefficients on net income and equity book value are significantly positive for both IAS and NIAS firms, and that both coefficients are smaller for NIAS firms. Consistent with predictions, the R^2 for good news IAS firms is greater than that for good news NIAS firms (3.88% versus 0.01%). Contrary to predictions, the R^2 for bad news IAS firms is lower than that for bad news NIAS firms (6.21% versus 7.39%). However, for both comparisons, the difference is not significant.[25] Thus, although the price regression findings indicate that accounting amounts are more value relevant for IAS than NIAS firms, the returns regression findings do not.

5.2 PRE-ADOPTION PERIOD

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[25] The fact that we do not find significantly greater explanatory power for bad news IAS firms is somewhat surprising given previous evidence on timely loss recognition (Ball, Robin, and Wu, 2003). The finding is also contrary to our finding that IAS firms have a greater frequency of large negative net income than NIAS firms.

Table 4 presents findings for earnings management, timely loss recognition, and value relevance for IAS and NIAS firms in the pre-adoption period. It reveals that with the exception timely loss recognition, IAS and NIAS firms exhibit no significant differences in accounting quality in the pre-adoption period. Thus, differences in accounting quality between IAS and NIAS firms in the pre-adoption period generally do not explain post-adoption period differences.

The first finding relating to earnings management suggests that in the pre-adoption period IAS firms exhibit a lower variance of the change in net income, ΔNI^*, than do NIAS firms, 0.0016 versus 0.0018. Although this difference is not significant, this finding contrasts with that from the post-adoption period in which IAS firms have a significantly higher variance of ΔNI^*. These results indicate that the higher ΔNI^* variance for IAS firms in table 3 in the post-adoption period is not a result of higher ΔNI^* variance for IAS firms in the pre-adoption period. The second finding indicates that the ratio of the variance of change in net income, ΔNI^*, to the variance of the change in cash flow, ΔCF^*, is insignificantly higher for NIAS firms than for IAS firms, 0.6661 versus 0.6194. This result suggests that IAS firms evidence more earnings smoothing than NIAS firms in the pre-adoption period. This finding also contrasts with the finding for the post-adoption period, in which NIAS firms have an insignificantly lower ratio of the two variances. The third finding indicates that the correlation between accruals, ACC^*, and cash flow, CF^*, is insignificantly more negative for IAS firms than for NIAS firms, –0.6073 versus -0.5726. This finding also contrasts with the finding for the post-adoption period, in which IAS firms have a significantly less negative correlation between accruals and cash flows.

Finally, the coefficient on $SPOS$, -0.0713, is insignificantly different from zero in the pre-adoption period, which suggests that NIAS and IAS firms report small positive net income with frequencies that do not differ in the pre-adoption period. However, unlike the findings for

the first three metrics in which there is suggestive evidence that IAS firms have lower accounting quality in the pre-adoption period and higher quality in the post-adoption period, there is no such reversal for the *SPOS* coefficient between the two periods.

The next finding in table 4 relates to timely loss recognition. It indicates that the *LNEG* coefficient, 0.3094, is significantly larger for IAS firms than for NIAS firms. This result indicates that IAS firms recognize losses more frequently even in the pre-adoption period. Thus, differences in accounting quality as reflected in our timely loss recognition metric in the post-adoption period could be attributable to differences in economic characteristics between the two groups of firms.

The final set of findings in table 4 relates to value relevance. Regressions of price on net income and equity book value for IAS and NIAS firms reveal that the R^2 for IAS firms is insignificantly larger than that for NIAS firms, 28.03% versus 27.18%, in the pre-adoption period. In the post-adoption period, this R^2 is significantly larger for IAS firms. These findings indicate that the higher value relevance for IAS firms as evidenced by the price regressions in the post-adoption period is not attributable to higher value relevance in the pre-adoption period. The R^2 from a regression of net income on returns for good (bad) news IAS firms, 2.24% (4.64%), is insignificantly smaller (larger) than that for good (bad) news NIAS firms, 2.99% (1.84%). As in the post-adoption period, these findings suggest that there are no value relevance differences between IAS and NIAS firms in the pre-adoption period as evidenced by the good and bad news regressions.

5.3 COMPARISON OF POST- AND PRE-ADOPTION PERIODS FOR IAS FIRMS

Overall, results for the pre-adoption period provide little evidence that differences in accounting quality in the post-adoption period are attributable to differences in economic

characteristics between IAS and NIAS firms. Table 5 presents a comparison of our quality

metrics for IAS firms before and after they adopt IAS.[26] Tests for all metrics are consistent with

improvements in accounting quality with application of IAS, with four of the eight differences

being significant.

Table 5 reveals that variability of change in net income increases significantly from

0.0017 to 0.0024, and variability of change in net income relative to that of cash flow also

increases significantly from 0.7442 to 0.9900. The correlation between accruals and cash flows

after adoption, -0.5445, is less negative than before adoption, -0.5726, but insignificantly so.

Similarly, as indicated by the *SPOS* coefficient of -0.0640, the frequency of small positive net

income decreases after adoption, although this decrease is insignificant. Regarding timely loss

recognition, as indicated by the significant *LNEG* coefficient of 0.1536, the frequency of large

negative net income is significantly higher post-adoption than pre-adoption. The R^2s from the

price regressions and from the good and bad news returns regressions also increase from 28.20%,

2.24%, and 4.64% in the pre-adoption period to 40.10%, 3.88%, and 6.21% in the post-adoption

period, although the increase is significant only for the price regression.

5.4 DIFFERENCE IN CHANGES FOR IAS AND NIAS FIRMS

Our final analysis examines whether change in accounting quality for IAS firms between

the pre- and post-adoption periods is greater than that for NIAS firms. However as section 3.1

explains, the tables 3, 4, and 5 findings make comparison of changes in accounting quality

differences logically redundant. This is because the findings indicate that accounting quality for

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[26] Although this analysis has the advantage of using each firm as its own control, three caveats apply. First, because there are different numbers of pre- and post-adoption years for firms in our sample, the pre- and post-adoption panels are unbalanced in terms of number of observations. Second, if firms transition gradually to IAS, some of the observations before and after adoption will be confounded, potentially weakening our results. Third, some of the effects of IAS also could manifest in NIAS firms because of, for example, domestic standards changing to be more similar to IAS, potentially understating the differences between accounting quality for IAS and NIAS firms.

IAS firms improves from the pre- to post-adoption periods, is greater than that for NIAS firms in post-adoption period, but is not different from that for NIAS firms in the pre-adoption period.

The results in table 6 generally suggest that IAS firms experience a greater improvement in accounting quality than do NIAS firms between the pre- and post-adoption periods. Differences in changes for three of the four earnings management metrics and two of the three R^2 metrics are in the predicted direction, although only the difference in changes for the variability of ΔNI^* is significant. Managing to a target, timely loss recognition, and bad news R^2 differences in changes results are contrary to predictions, although none of these differences is significant. Also as explained in section 3.1, given the findings in tables 3, 4, and 5, the general lack of significance in table 6 stems from a loss of power arising from differencing metrics that have estimation error (Landsman and Magliolo, 1988).

6. *Summary and Concluding Remarks*

Our results indicate accounting amounts of firms that apply International Accounting Standards are of higher quality than those of non-US firms that do not. The accounting amounts we compare result from the interaction of features of the financial reporting system, which include accounting standards, their interpretation, enforcement, and litigation. Generally, we find that firms applying IAS exhibit less earnings smoothing, less managing of earnings towards a target, more timely recognition of losses, and a higher association of accounting amounts with share prices and returns. Although we include research design features to mitigate the effects of incentives and the economic environment, we cannot be sure that our findings are attributable to the change in the financial reporting system rather than to changes in firms' incentives and the economic environment.

Our inferences are based on comparisons of accounting quality metrics for a broad sample of firms in 21 countries that adopted IAS between 1994 and 2003. In particular, we compare accounting quality metrics for firms that apply IAS to those for a matched sample of non-US firms that do not in the period after the IAS firms adopt IAS. We generally find that IAS firms have higher accounting quality than firms that do not apply IAS. Differences in accounting quality between the two groups of firms in the period before the IAS firms adopt IAS do not account for the post-adoption differences. We also compare accounting quality metrics for IAS firms in the periods before and after they adopt IAS. We generally find that IAS firms evidence an improvement in accounting quality between the pre- and post-adoption periods.

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TABLE 1

Descriptive Statistics Relating to Application of IAS

Panel A: Country Breakdown

	Number of Firm-Year Observations	Percentage of Firm-Year Observations	Number of IAS Firms	Percentage of IAS Firms
Australia	2	0.11	1	0.31
Austria	111	5.85	17	5.20
Belgium	23	1.21	5	1.53
China	430	22.68	90	27.52
Czech Republic	8	0.42	2	0.61
Denmark	28	1.48	4	1.22
Finland	37	1.95	3	0.92
Germany	340	17.93	65	19.88
Greece	12	0.63	2	0.61
Hong Kong	53	2.80	10	3.06
Hungary	59	3.11	10	3.06
Poland	4	0.21	1	0.31
Portugal	6	0.32	1	0.31
Russian Federation	2	0.11	2	0.61
Singapore	27	1.42	8	2.45
South Africa	66	3.48	8	2.45
Spain	3	0.16	1	0.31
Sweden	3	0.16	1	0.31
Switzerland	594	31.33	79	24.16
Turkey	84	4.43	16	4.89
United Kingdom	4	0.21	1	0.31
Total	1,896	100.00	327	100.00

TABLE 1
Descriptive Statistics Relating to Application of IAS

Panel B: Industry Breakdown

	Number of Firm-Year Observations	Percentage of Firm-Year Observations	Number of IAS Firms	Percentage of IAS Firms
Agriculture, Forestry and Fishing	3	0.16	1	0.31
Mining	124	6.54	21	6.42
Construction	147	7.75	20	6.12
Manufacturing	959	50.58	156	47.71
Utilities	107	5.64	18	5.51
Retail Trade	55	2.90	8	2.45
Finance, Insurance and Real Estate	296	15.61	51	15.60
Services	185	9.76	48	14.68
Public Administration	20	1.05	4	1.22
Total	1,896	100.00	327	100.00

Panel C: Year Breakdown

	Number of Firm-Year Observations	Percentage of Firm-Year Observations	Number of IAS Firms	Percentage of IAS Firms
1994	278	14.66	24	7.34
1995	127	6.70	16	4.89
1996	110	5.80	17	5.20
1997	187	9.86	30	9.17
1998	197	10.39	29	8.87
1999	275	14.50	60	18.35
2000	349	18.41	76	23.24
2001	149	7.86	28	8.56
2002	110	5.80	24	7.34
2003	114	6.01	23	7.03
Total	1,896	100.00	327	100.00

Sample of firms that adopted International Accounting Standards (IAS) between 1994 and 2003.

TABLE 2
Descriptive Statistics Relating to Variables used in Analyses

	IAS (N = 1,896)			NIAS (N = 1,896)		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
Test Variables						
ΔNI	0.00	0.00	0.06	0.00	0.00	0.06
ΔCF	0.01	0.01	0.07	0.00	0.00	0.07
ACC	0.04	0.04	0.06	0.04*	0.03*	0.06
CF	0.07	0.07	0.07	0.07*	0.06*	0.07
SPOS	0.13	0.00	0.34	0.17*	0.00*	0.37
LNEG	0.03	0.00	0.16	0.02	0.00	0.14
RETURN	0.02	0.00	0.41	0.02	0.02	0.39
NI/P	0.08	0.06	0.16	0.08	0.06	0.16
P	1.14	1.00	0.58	1.11	1.00	0.54
BVEPS	0.27	0.13	0.42	0.30	0.13	0.44
NIPS	0.06	0.05	0.12	0.05	0.05	0.11
Control Variables						
LEV	3.01	1.44	4.64	3.60*	1.55	5.33
GROWTH	0.18	0.07	0.51	0.15	0.06	0.48
EISSUE	0.17	0.07	0.50	0.15	0.05*	0.49
DISSUE	0.22	0.06	0.94	0.18	0.06	0.63
TURN	0.79	0.73	0.53	0.77	0.67*	0.55
SIZE	12.05	12.12	1.63	11.58*	11.60*	1.63
CF	0.07	0.07	0.07	0.07	0.06	0.07
NUMEX	2.13	2.00	1.45	2.00*	2.00*	1.44
AUD	0.78	1.00	0.42	0.68*	1.00*	0.47
XLIST	0.06	0.00	0.24	0.03*	0.00*	0.18
CLOSE	46.02	46.11	27.03	54.53*	56.54*	24.87

* Significantly different from IAS and NIAS at the 0.05 levels respectively (two-tailed).

Sample of firms that adopted International Accounting Standards (IAS) between 1994 and 2003 (IAS firms) and matched sample of firms that did not (NIAS firms). Tabulated statistics are from the years after IAS firms adopted IAS, i.e., the post-adoption period, which ends in 2003.

NI is the change in annual earnings, where earnings is scaled by end-of-year total assets; *CF* is the change in annual net cash flow, *CF*, where cash flow is scaled by end-of-year total assets; *ACC* is earnings less cash flow from operating activities, scaled by end-of-year total assets; *CF* is annual net cash flow from operating activities, scaled by end-of-year total assets; *SPOS* is an indicator that equals 1 for observations with annual earnings scaled by total assets between 0.00 and 0.01; *LNEG* is an indicator that equals 1 for observations with annual earnings scaled by total assets less than 0.20, *RETURN* is annual stock return from nine months prior to three

months after the firm's fiscal year end; *P* is price as of six months after fiscal year-end; *NI/P* is earnings per share scaled by beginning of year price; *BVEPS* is book value of equity per share; *NIPS* is net income per share.

LEV is end-of-year total liabilities divided by end-of-year book value of equity, *GROWTH* is annual percentage change in sales; *EISSUE* is annual percentage change in common stock; *DISSUE* is annual percentage change in total liabilities; *TURN* is sales divided by end-of-year total assets; *SIZE* is the natural logarithm of market value of equity in millions of dollars as of the end of the year; *NUMEX* is number of exchange listings; *AUD* is an indicator that equals 1 if the auditor is one of the large international accounting firms; *XLIST* is an indicator that equals 1 if the firm is listed on any US stock exchange and WorldScope indicates that the US exchange is not the primary exchange; *CLOSE* as the percentage of closely held shares as reported by WorldScope.

TABLE 3

Comparison of IAS and NIAS Firms' Accounting Quality in the Period After IAS Firms Adopt IAS

Earnings Management Metric	Prediction	IAS (N = 1,310)	NIAS (N = 1,310)
Variability of ΔNI^*	IAS > NIAS	0.0026	0.0021*
Variability of ΔNI^* over ΔCF^*	IAS > NIAS	1.1084	1.0367
Correlation of ACC^* and CF^*	IAS > NIAS	−0.5437	−0.5618*
Small Positive NI (*SPOS*)	−	−0.0438	

Timely Loss Recognition Metric			
Large Negative NI (*LNEG*)	+	0.1323#	

Value Relevance Regression Adjusted R^2			
Price	IAS > NIAS	0.4010	0.3016*
Good News	IAS > NIAS	0.0388	0.0001
Bad News	IAS > NIAS	0.0621	0.0739

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

Sample of firms that adopted International Accounting Standards (IAS) between 1994 and 2003 (IAS firms) and matched sample of firms that did not (NIAS firms). The periods after IAS firms adopted IAS, i.e., the post-adoption period, ends in 2003.

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 that equals 1 for IAS firms and 0 for NIAS firms on *SPOS* (*LNEG*) and control variables. *SPOS* (*LNEG*) is an indicator that equals 1 when annual net income scaled by total assets is between 0 and 0.01 (less than –0.20) and 0 otherwise; the coefficient on the indicator variable is tabulated.

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 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 equity per share, and $NIPS$ is net income per share. The good/bad news regression is based on a two-stage regression. In the first stage, NI/P is regressed on industry and country fixed-effect indicator variables. The second stage regression is $NI/P^* = \beta_1\ RETURN + \varepsilon$, where NI/P^* is the residual from the first stage regression, and $RETURN$ is stock return computed over the twelve months ending three months after year-end. Good (bad) news observations are those for which $RETURN$ is nonnegative (negative). Adjusted R^2 is from the second-stage regressions.

TABLE 4

Comparison of IAS and NIAS Firm's Accounting Quality in the Period Before IAS Firms Adopt IAS

Earnings Management	IAS	NIAS
Metric	(N = 587)	(N = 587)
Variability of ΔNI^*	0.0016	0.0018
Variability of ΔNI^* over ΔCF^*	0.6194	0.6661
Correlation of ACC^* and CF^*	−0.6073	−0.5726
Small Positive NI (*SPOS*)	−0.0713	
Timely Loss Recognition		
Metric		
Large Negative NI (*LNEG*)	0.3094#	
Value Relevance		
Regression Adjusted R^2		
Price	0.2803	0.2718
Good News	0.0224	0.0299
Bad News	0.0464	0.0184

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

Sample of firms that adopted International Accounting Standards (IAS) between 1994 and 2003 (IAS firms) and matched sample of firms that did not (NIAS firms). The period before IAS firms adopted IAS, i.e., the pre-adoption period, begins in 1990.

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 that equals 1 for IAS firms and 0 for NIAS firms on *SPOS* (*LNEG*) and control variables. *SPOS* (*LNEG*) is an indicator that equals 1 when annual net income scaled by total assets is between 0 and 0.01 (less than −0.20) and 0 otherwise; the coefficient on the indicator variable is tabulated.

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 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 equity per share, and $NIPS$ is net income per share. The good/bad news regression is based on a two-stage regression. In the first stage, NI/P 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 stock return computed over the twelve months ending three months after year-end. Good (bad) news observations are those for which $RETURN$ is nonnegative (negative). Adjusted R^2 is from the second-stage regressions.

TABLE 5

Comparison of IAS Firms' Accounting Quality Before and After They Adopt IAS

Earnings Management Metric	Prediction	PRE (N = 587)	POST (N = 1,310)
Variability of ΔNI^*	POST > PRE	0.0017	0.0024*
Variability of ΔNI^* over ΔCF^*	POST > PRE	0.7442	0.9900*
Correlation of ACC^* and CF^*	POST > PRE	−0.5726	−0.5445
Small Positive NI (*SPOS*)	−	−0.0640	
Timely Loss Recognition Metric			
Large Negative NI (*LNEG*)	+	0.1536#	
Value Relevance Regression Adjusted R^2			
Price	POST > PRE	0.2820	0.4010*
Good News	POST > PRE	0.0224	0.0388
Bad News	POST > PRE	0.0464	0.0621

*Significantly different between pre- and post-adoption periods at the 0.05 level (one-sided).
#Significantly different from zero at the 0.05 level (one-sided).

Sample of firms that adopted International Accounting Standards (IAS) between 1994 and 2003 (IAS firms) and matched sample of firms that did not (NIAS firms). The period before IAS firms adopt IAS, i.e., pre-adoption period, begins in 1990. The period after IAS firms adopt IAS, i.e., the post-adoption period, ends in 2003.

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 that equals 1 for IAS firms and 0 for NIAS firms on *SPOS* (*LNEG*) and control variables. *SPOS* (*LNEG*) is an indicator that equals 1 when annual net income scaled by total assets is between 0 and 0.01 (less than –0.20) and 0 otherwise; the coefficient on the indicator variable is tabulated.

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 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 equity per share, and $NIPS$ is net income per share. The good/bad news regression is based on a two-stage regression. In the first stage, NI/P 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 stock return computed over the twelve months ending three months after year-end. Good (bad) news observations are those for which $RETURN$ is nonnegative (negative). Adjusted R^2 is from the second-stage regressions.

TABLE 6

Comparison of IAS and NIAS Firms' Change in Accounting Quality From the Period Before IAS Firms Adopt IAS to After

Earnings Management Metric	Prediction	Post − Pre IAS	Post − Pre NIAS	Difference
Variability of *ΔNI**	IAS > NIAS	0.0007	0.0001	0.0006*
Variability of *ΔNI** over *ΔCF**	IAS > NIAS	0.2538	0.1041	0.1497
Correlation of *ACC** and *CF**	IAS > NIAS	0.0177	−0.0263	−0.0440
Small Positive NI (*SPOS*)	−	−0.0645	−0.0908	0.0263
Timely Loss Recognition Metric				
Large Negative NI (*LNEG*)	+	0.1805	0.2099	−0.0294
Value Relevance Regression Adjusted R^2				
Price	IAS > NIAS	0.1202	0.0318	0.0885
Good News	IAS > NIAS	0.0265	−0.0086	0.0351
Bad News	IAS > NIAS	0.0157	0.0556	−0.0399

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

Sample of firms that adopted International Accounting Standards (IAS) between 1994 and 2003 (IAS firms) and matched sample of firms that did not (NIAS firms). The periods after IAS firms adopted IAS, i.e., the post-adoption period, ends in 2003. The pre-adoption period begins in 1990 and the post-adoption period ends in 2003. The sample comprises 1,298 (587) IAS and NIAS firms in the post- (pre-) adoption period.

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 that equals 1 for IAS firms and 0 for NIAS firms on *SPOS* (*LNEG*) and control variables. *SPOS* (*LNEG*) is an indicator that equals 1 when annual net

income scaled by total assets is between 0 and 0.01 (less than –0.20) and 0 otherwise; the coefficient on the indicator variable is tabulated.

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 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 equity per share, and $NIPS$ is net income per share. The good/bad news regression is based on a two-stage regression. In the first stage, NI/P 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 stock return computed over the twelve months ending three months after year-end. Good (bad) news observations are those for which $RETURN$ is nonnegative (negative). Adjusted R^2 is from the second-stage regressions.