Domestic Accounting Standards, International Accounting Standards, and the Predictability of Earnings

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Abstract

We investigate (1) whether the variation in accounting standards across national boundaries relative to International Accounting Standards (IAS) has an impact on the ability of financial analysts to forecast non-US firms' earnings accurately, and (2) whether analyst forecast accuracy changes after firms adopt IAS. IAS are a set of financial reporting policies that typically require increased disclosure and restrict management's choices of measurement methods relative to the accounting standards of our sample firms' countries of domicile. We develop indexes of differences in countries' accounting disclosure and measurement policies relative to IAS, and document that greater differences in accounting standards relative to IAS are significantly and positively associated with the absolute value of analyst earnings forecast errors. Further, we show that analyst forecast accuracy improves after firms adopt IAS. More specifically, after controlling for changes in the market value of equity, changes in analyst following, and changes in the number of news reports, we find that the convergence in firms' accounting policies brought about by adopting IAS is positively associated with the reduction in analyst forecast errors.

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1. Overview

We investigate the impact of differences in countries' accounting standards relative to International Accounting Standards (IAS) on the accuracy of financial analyst earnings forecasts for a sample of non-US firms before and after they adopt IAS. IAS are a set of accounting standards promulgated by the International Accounting Standards Committee (IASC). The IASC's goal is to develop an internationally acceptable set of reporting standards that would generate more comparable financial information across national boundaries by minimizing, if not eliminating, differences in countries' domestic generally accepted accounting principles (domestic-GAAP) (FASB [1996]). For most of the firms included in our sample, IAS adoption leads to increased disclosure and/or a restricted set of measurement methods. To the extent this causes an IAS adopter's financial information to become more predictable, we expect improved accuracy of analysts' earnings forecasts. However, there is some controversy regarding the degree of stringency of IAS (Davis-Friday and Rueschoff [1998]) and firms' compliance with IAS (Street, Gray, and Bryant [1999]). Moreover, it is unclear how changing accounting polices, as implied by IAS adoption, impacts the ability of analysts to accurately forecast earnings (e.g., Brown [1983]; Elliott and Philbrick [1990]). For

example, if managers were trying to smooth earnings, adoption of IAS might reduce their ability to do so, in turn leading to more volatile earnings and analyst forecast errors.

We develop indexes that reflect differences in countries' measurement and disclosure policies relative to IAS. We then test whether (1) differences in countries' accounting policies relative to IAS and (2) the subsequent accounting standard convergence brought about by firms' IAS adoptions affect analyst earnings forecast accuracy. We use a sample of non-US firms that adopted IAS during the 1990-1993 period. We focus on these firms and this period for several reasons. First, a surge of voluntary IAS adoptions occurred during this period. While Ashbaugh [1999] finds that firms are more likely to use IAS when their securities are traded on more foreign exchanges and when they engage in seasoned equity offerings, the specific costs and benefits associated with firms' voluntary adoptions of IAS remain unclear. Finding a statistically reliable association between changes in accounting policies due to IAS adoption and improvements in analysts forecast accuracy provides some evidence of the benefits firms receive from adopting IAS. Specifically, after firms adopt IAS, financial analysts are better able to predict a variable highly relevant to firm valuation. Second, studying firms that have voluntarily adopted IAS is particularly interesting since many countries and securities exchanges recently have given firms the option of preparing IAS financial reports; e.g., Germany (Eggert [1998]). Third, the set of

policies comprising IAS was relatively static during the 1990-1993 period. Since then, however, the IASC has completed two major overhauls of IAS,[1] and many countries now base their reporting standards on IAS (IASC [1998]).

Our indexes of differences in countries' measurement and disclosure standards relative to IAS are positively associated with analyst earnings forecast errors. This evidence is consistent with the claim that the variation in accounting standards across national borders impacts the predictions of financial analysts. We also document that, on average, the absolute value of analyst forecast errors decreases following firms' adoptions of IAS.

Ashbaugh [1999] provides evidence that large firms are more likely to use IAS, and that firms typically issue additional shares of stock within a year or two of adopting IAS. We posit that IAS adoption is part of a concerted effort by managers to satisfy the increased demand for information that typically occurs as firms issue additional equity. In support of this claim, we find that our sample firms issue additional stock in the year of or the year following IAS adoption. We also detect a significant increase in the number of news reports about our sample firms in the year following IAS adoption. Thus, several endogenous events that likely affect a firm's information environment, such as the issuance of equity shares and an increase in news reports, often occur when a

firm adopts IAS. We posit that the adoption of IAS is a response to an anticipated or realized shift in the firm's environment.

Accordingly, we control for changes in (1) market capitalization, (2) analyst following, and (3) news reports in our empirical analyses. We find that the improved forecast accuracy following IAS adoptions is significantly associated with changes in firms' accounting policies. Specifically, the more changes in measurement and disclosure reporting standards implied by moving from firms' domestic-GAAPs to IAS, the larger the reduction in analyst earnings forecast errors. This enhanced forecast accuracy associated with IAS adoptions suggests that investors can more accurately predict a key variable, i.e., earnings, which is relevant to firm valuation.

2. Hypotheses

Prior research suggests that the differences in countries' accounting standards affect the informativeness of reported financial information (Alford et al. [1993]). However, the empirical evidence is mixed with regard to whether the convergence of countries' accounting standards increases the informativeness of firms' financial reports (Joos and Lang [1994]; Auer [1996]).

Our first hypothesis relates the differences in countries' accounting standards relative to IAS to the accuracy of analysts' earnings forecasts. We focus on the period prior to IAS adoption since firms, in this time period, are reporting in accordance with

their domestic-GAAP, which reflect a variety of disclosure requirements and measurement methods. To the extent greater differences in domestic-GAAPs relative to IAS result in more variation in the information reflected in firms' financial reports, we expect such reporting differences to impair the ability of analysts to forecast earnings. Our first hypothesis is:

H_1: The absolute values of analyst earnings forecast errors are positively associated with greater differences in countries' accounting measurement and disclosure standards relative to IAS.

Our second hypothesis examines the impact of IAS adoptions. Switching to IAS typically increases the type and quantity of financial information a firm discloses. Lang and Lundholm [1996] document that analysts' forecast accuracy improves as firms' disclosure levels increase. Adopting IAS generally also restricts a firm's choices of accounting measurement methods. With fewer measurement rules to deal with, analysts should be better able to master the existing set. Hence, restrictions on measurement methods as well as expanded disclosures that result from adopting IAS should enable analysts to more accurately predict firms' earnings.

However, while firms' choices of measurement methods under IAS generally are restricted as compared to their domestic-GAAP, some degree of flexibility may remain. This suggests that some firms can adopt IAS without changing many (or any)

accounting measurement methods.[2] Alternatively, if adopting IAS requires a firm to change its measurement methods, analysts' abilities to accurately forecast earnings might be impaired. Brown [1983] and Elliott and Philbrick [1990] report evidence consistent with this possibility for US firms. One plausible explanation for reduced forecast accuracy concerns earnings volatility. The restricted set of measurement method choices under IAS might require firms to report more volatile earnings series as compared to the earnings series generated when using the accounting methods that are acceptable under their domestic-GAAP. That is, since the manager's choice is constrained, there are fewer ways for managers to disguise volatility.

Yet another factor that may hamper forecast accuracy is the extent to which analysts rely more on public rather than private information. Barron et al. [1998] model how analyst earnings forecasts are related to analysts' public and private information, and how these two types of information map differently into forecast errors. The common component of forecast error arises from errors in public information while the idiosyncratic component of forecast error is due to errors in the private information analysts hold. Relevant to our study is the result that the mean forecast error primarily reflects common error since idiosyncratic error can be diversified away as more forecasts are made. Thus, if under IAS errors in public information increase, we expect analyst forecast accuracy to decrease following IAS adoptions.

Because *a priori* arguments can be made for either enhanced or impaired forecast accuracy following the adoption of IAS, our second hypothesis is non-directional. It is:

H_2: The accuracy of analyst earnings forecasts changes after firms adopt IAS.

A firm may adopt IAS in anticipation of or concurrent with an increase in the demand for more information about the firm. For example, in addition to adopting IAS, a firm might provide additional voluntary disclosures as part of the process of raising capital in the equity markets. Firms might also change their operating activities at the same time they are adopting IAS, and such operating changes might impact the ability of analysts to forecast earnings. Consequently, several endogenous factors, in addition to the adoption of IAS, may impact the ability of analysts to predict a firm's earnings. We consider such factors in our empirical analyses.

3. Sample and Data

We identify non-US firms using IAS and their year of adoption based on a list provided by the IASC.[3] The IASC list identified 163 firms that adopted IAS by 1993.[4] We eliminated seven firms from Italy and 22 firms from South Africa since firms from these countries could use IAS selectively rather than fully adopt IAS when their domestic-GAAP was silent on an accounting measurement or disclosure issue. In addition, we deleted one firm from Bermuda because Bermuda did not have a set of

domestic-GAAP to benchmark to IAS. We deleted 53 of the remaining 133 firms voluntarily using IAS in 1993 because they were missing data (specifically analyst earnings forecasts) in the Historical *I/B/E/S* International database.[5] The final sample consists of 80 firms, 64% of which are engaged in manufacturing. Two percent of the sample adopted IAS in 1990, 50 percent in 1991, 33 percent in 1992, and 15 percent in 1993. Table 1 reports the distribution of sample firms across countries. The countries most highly represented in the sample are Switzerland (28.75%), France (21.25%), and Canada (15.00%).

We use three indexes to capture differences in countries' accounting standards relative to IAS. Table 2 summarizes the differences in disclosure requirements (DISCLOSE) and measurement methods (METHODS) of IAS versus sample firms' domestic-GAAPs (see Appendix A for details). Table 2 also presents IASSET, which is the summary measure of potential disclosure and measurement policy changes a firm in a given country commits to by adopting IAS. The larger an index value, the greater the potential difference between a firm's domestic-GAAP and the reporting requirements of IAS. We use DISCLOSE, METHODS, and IASSET to test whether reporting standard differences relative to IAS impair analyst forecast accuracy prior to IAS adoption. After adopting IAS, however, the differences in accounting regimes should be immaterial. Hence, we use the change in disclosure policies

(CHDISCLOSE), the change in measurement methods (CHMETHODS), and the change in reporting policies taken as a whole (CHIASSET) to investigate the impact of IAS adoption on analyst forecast errors. The change in each index equals the negative of the pre-change index value (e.g., CHIASSET = 0 - IASSET).

We define forecast error (FERROR) as the absolute value of the difference between a firm's reported earnings per share in year t and the median analyst forecast of earnings per share for year t, deflated by the firm's stock price at the beginning of year t (Lang and Lundholm [1996]).[6] We obtain actual and forecasted earnings, as well as share prices, shares outstanding, and analyst following from the *I/B/E/S* database.

Table 3 presents descriptive statistics of firm characteristics for the 80 sample firms. Compared to our sample firms' domestic-GAAPs, IAS requires additional disclosures in approximately three reporting areas (i.e., mean DISCLOSE = 3.12 and median = 2) and restricts management's choices of measurement standards in an average of two areas (i.e., mean METHODS = 2.45 and median = 2). There is a correlation of 0.78 between DISCLOSE and METHODS (not reported), suggesting that countries' disclosure and measurement standards tend to be similar in rigor relative to IAS. Overall, as reflected in IASSET, sample firms make approximately six (median = 7.00) disclosure and/or measurement method changes (out of the 12 financial reporting areas we consider) when adopting IAS.

In the year preceding IAS adoption, the average number of analysts following a firm (NUM) is approximately 14. In the year after IAS adoption, the mean (median) number of analysts following a firm rises to approximately 17 (15). The increases in NUM are significant at conventional levels. We define firm size as the log of market value of equity (MVE) measured in millions of US dollars at calendar year-end. We calculate this variable by using share price and shares outstanding from *I/B/E/S* and exchange rates from *Worldscope*. We find that firm size increases significantly from the pre-IAS period to the post-IAS adoption period. Expressed in millions of US dollars (not reported), mean (median) market value of equity increases from $2,069 ($530) million in the year prior to IAS adoption to $2,925 ($886) million in the year after adoption.[7] Ashbaugh [1999] documents that firms adopt IAS in anticipation of engaging in seasoned equity offerings, and we find that firms in our sample have significantly more shares outstanding after adopting IAS (not reported). In particular, our sample firms have, on average, 1.2 million additional shares outstanding one year after IAS adoption compared to the year preceding adoption (with 78% of sample firms having more shares outstanding). Table 3 also indicates that the average number of foreign listings increases slightly from the year prior to IAS adoption to the year following adoption, although the median sample firm's equity shares are traded in two foreign equity markets during both the pre- and post-IAS adoption periods.

To investigate whether sample firms' operating environments change in the years surrounding IAS adoption, we calculate the number of business and geographic segments in which they operate. Of the 80 sample firms, 64 firms have segment data in the *Worldscope* database. For this sub-sample of firms, we find no significant difference in the number of business segments or geographic segments in the year following IAS adoption relative to the year preceding adoption (see Table 3). Furthermore, the percentage of foreign sales, defined as a firm's foreign sales divided by its total sales, also does not change over the analysis period. To the extent that changes in business and geographic segments and foreign sales reflect changes in sample firms' overall operating activities, the lack of significant changes in these variables suggests an absence of operational changes that potentially impact analysts' abilities to forecast earnings.

4. Empirical Design and Results

4.1 THE IMPACT OF DOMESTIC-GAAP DIFFERENCES FROM INTERNATIONAL ACCOUNTING STANDARDS ON ANALYST FORECAST ERRORS

To test H_1, i.e., whether differences in domestic accounting standards relative to IAS adversely affect analyst earnings forecast accuracy, we estimate the following regression model:

$$FERROR_{it-1} = \alpha + \beta_1 NUM_{it-1} + \beta_2 MVE_{it-1} + \beta_3 X_i + \varepsilon_{it-1} \quad (1)$$

where

t-1 = the year prior to IAS adoption;

$FERROR_{it-1}$ = $|EPS_{it-1}$ – Median Analyst $Forecast_{it-1}| / Price_{it-1}$;

NUM_{it-1} = the number of analysts providing earnings forecasts of firm i for year t-1;

MVE_{it-1} = the natural log of firm i's market value of equity at December 31 of year t-1, measured in millions of US dollars;

X_i = the index of differences in firm i's disclosure polices (DISCLOSE), measurement methods (METHODS), or overall reporting standards (IASSET) relative to IAS.

Prior research examining analyst earnings forecast accuracy argues for controlling for differences in disclosure levels across firms. Following Lang and Lundholm [1996], we use the extent of analyst following (NUM) to control for differences in firms' disclosure practices that can impact analyst earnings forecasts. A negative coefficient on NUM suggests that analyst earnings forecast accuracy improves (i.e., forecast errors fall in absolute value) as more analysts follow a firm. We use MVE to control for differential information due to firm size (Lang and Lundholm [1993]). A negative coefficient on MVE suggests that analysts can predict the earnings of larger firms more accurately.

Our test of H_1 focuses on the coefficient of X in equation (1), which represents the coefficient on DISCLOSE, METHODS, and IASSET. If accounting standard differences hamper the ability of analysts to accurately predict firms' earnings, the coefficient (β_3) should be reliably positive; i.e., larger earnings forecast errors (in absolute value) will be associated with greater differences between IAS and domestic-GAAPs.[8]

Table 4 reports the results of the estimations of equation (1).[9] The models have adjusted R^2s of 19.40%, 16.32%, and 18.87% for the disclosure, measurement, and overall accounting policy differences, respectively.[10] The coefficients on NUM are not significantly different from zero in any of the regressions, while the coefficients on MVE are negative, as expected, and significant. The coefficient on DISCLOSE is reliably positive (t = 2.909, one-tail *p-value* < .01). This result suggests that analysts earnings forecast accuracy declines as firms provide fewer disclosures in accordance with their domestic-GAAPs relative to those required under IAS. Likewise, the positive and significant coefficient (t = 2.313, one-tail *p-value* < .05) on METHODS indicates that the absolute value of analyst forecast errors increases as the flexibility in the choices of measurement methods under firms' domestic-GAAPs increases. Finally, considering the set of disclosure and measurement policies as a whole, the positive coefficient on IASSET (t = 2.811, one-tail *p-value* < .01) documents that analyst earnings forecast

errors are higher the more firms' domestic-GAAPs depart from IAS. When we use mean analysts forecasts in place of median forecasts to compute FERROR, the results (not reported) are similar.[11] Thus, the results support the hypothesis that analyst earnings forecast accuracy is impaired by cross-country differences in accounting standards relative to IAS.

4.2 THE IMPACT OF IAS ADOPTIONS ON ANALYST FORECAST ACCURACY

For descriptive purposes, we calculate the unconditional change in analyst forecast accuracy after firms adopt IAS. Panel A of Table 5 indicates that the absolute value of forecast errors falls significantly, from a mean of 3.58% (median = 1.28%) in the year prior to IAS adoption to a mean of 1.73% (median = 0.76%) in the year following adoption. We also separate the sample into two groups: the 68 firms whose accounting policies should be affected most by the adoption of IAS (i.e., firms for which CHIASSET < 0); and the 12 Canadian firms whose CHIASSET = 0. For the former group of firms, forecast errors are reliably smaller after IAS adoption. Specifically, Panel B of Table 5 shows that the mean FERROR is 1.82% in year t+1 as opposed to 3.97% in year t-1, and the median is 0.72% in year t+1 versus 1.60% in year t-1. For the Canadian firms, mean and median FERROR remain essentially unchanged over the adoption period (see Panel C of Table 5). In addition, we note that the standard

deviation of analyst forecast errors for both the Canadian firms and for the CHIASSET < 0 group is approximately cut in half in the year following IAS adoption relative to the pre-IAS period. Hence, both subsamples reflect reductions in the standard deviation of FERROR, while only the CHIASSET < 0 group exhibits a significant reduction in the average absolute value of forecast errors.

To formally test H_2, and thus examine the relation between IAS adoptions and changes in analyst forecast errors, we use our sample of 80 firms and estimate the following regression:

$$CHFERROR_i = \alpha + \beta_1 CHNUM_i + \beta_2 CHMVE_i + \beta_3 CHX_i + \varepsilon_i \qquad (2)$$

where

$CHFERROR_i = FERROR_{it} - FERROR_{it-1}$;

$CHNUM_i$ = the change in the number of analysts providing earnings forecasts of firm i in year t+1 relative to year t-1 ;

$CHMVE_i$ = the change in the natural log of firm i's market value of equity at December 31 of year t+1 versus December 31 of year t-1, measured in millions of US dollars;

CHX_i = the change in the index of differences in firm i's disclosure polices ($CHDISCLOSE_i$), measurement methods ($CHMETHODS_i$), or overall reporting standards ($CHIASSET_i$) relative to IAS (i.e., $CHX_i = 0 - X_i$).

The variables used to test H_2 are CHDISCLOSE, CHMETHODS, and CHIASSET, which are represented by CHX in equation (2). Recall that H_2 is a non-directional hypothesis, and thus predicts that $\beta_3 \neq 0$; i.e., that change in analyst forecast errors is related to changes in, respectively, disclosure policies, measurement methods, or accounting standards taken as a whole.[12] Changes in market value and analyst following are expected to be negatively related to CHFERROR.

Table 6 reports the results of estimating equation (2). Adjusted R^2s are approximately 10-11%. The coefficients on CHNUM are not significant, while the coefficients on CHMVE are negative and significant, indicating that as firms grow in market value, analysts forecast errors decrease. Turning to the variables of primary interest, we find that the coefficients on CHDISCLOSE and CHMETHODS are positive and significant (t = 1.823 and 1.952, respectively, two-tail *p-values* < .10), as is the coefficient on CHIASSET (t = 2.029, two-tail *p-value* < .05). These results indicate that analyst forecast errors decrease as the number of accounting policy differences from IAS decrease as a result of firms adopting IAS.[13] This suggests that firms domiciled in countries with accounting standards that require less disclosure and/or have more measurement method choices as compared to IAS benefit relatively more from adopting IAS because sophisticated users of their financial reports are now able to predict with greater accuracy a key valuation-relevant factor.[14]

4.3 THE IMPACT OF CHANGES IN NEWS REPORTS

We posit that IAS adoptions are part of a broader strategy by firms to expand their financial disclosures. For instance, at the same time they adopt IAS, firms may also increase press releases or more generally promote greater news coverage of their earnings-related activities. If so, an increase in news reports, rather than the adoption of IAS, might explain the improvement in analyst forecast accuracy.

We investigate this possibility by collecting news reports from the *Financial Times Index* for our sample firms in the years surrounding IAS adoption. We find news items for all but three sample firms in the *Index*. Table 7 reports the change from year t-1 to year t+1 in the average number of earnings-related news reports (CHEA) and of all news reports (CHTOT) for the firms having CHIASSET < 0 and for the Canadian firms. Both subsamples reflect a reliable increase in news reports over the period surrounding IAS adoption, with firms having CHIASSET < 0 exhibiting a larger increase in overall news reports. To assess the impact of the increase in news items on the test of H_2, we augment equation (2) with the change in news reports. The results (not reported) indicate that the coefficient on CHTOT is insignificant, while the coefficient on CHIASSET continues to be significant.

5. Conclusion

In this study we investigate whether differences in countries' accounting measurement and disclosure standards relative to IAS affect analyst forecast accuracy of non-US firms' annual earnings. In addition, we examine whether adoption of IAS changes the absolute value of analyst forecast errors.

Using a sample of 80 non-US firms, we find that, prior to adopting IAS, the extent of differences in countries disclosure and measurement policies relative to IAS is positively associated with analysts' earnings forecast errors. We also document a decrease in the absolute value of analyst forecast errors after firms adopt IAS. We find no evidence of significant changes in adopting firms' business and geographic segments and extent of foreign sales, but we observe increases in firms' market capitalizations and analyst following. After controlling for changes in market capitalization and analyst following, the results indicate that analyst earnings forecast errors decrease when the differences in accounting measurement and disclosure policies decline as a result of firms' adoptions of IAS. Furthermore, this result holds after controlling for the concurrent growth in news reports.

Choi and Levich [1992] argue that differences in domestic-GAAPs contribute to a continuum of information sets reported by firms. Our results indicate that those differences in reporting standards across countries relative to the benchmark of IAS

affect the ability of financial analysts to accurately forecast non-US firms' earnings. Prior studies report mixed results regarding whether the convergence of countries' accounting standards to a more uniform set of standards increases the informativeness of firms' financial reports (Joos and Lang [1994]; Auer [1996]). Our results are consistent with firms' financial information becoming more predictable following their adoptions of IAS and the consequent reduction in the variation in measurement and disclosure practices.

Appendix A

The tables included in this Appendix provide additional details about the calculation of DISCLOSE, METHODS, and IASSET, which capture, respectively, the differences in financial reporting standards across countries relative to IAS due to the differences in disclosure requirements, measurement method restrictions, and reporting standards overall (see Ashbaugh [1999]). Table A1 compares eight IAS disclosure requirements in force in 1993 to the 1993 disclosure requirements of the domestic-GAAPs of the sample firms' countries of domicile. A domestic-GAAP's disclosure requirement is considered less demanding than IAS if (1) there is no domestic-GAAP requirement or (2) the requirement is for less disclosure than IAS.

Table A2 compares four IAS measurement rules in force in 1993 to the 1993 domestic-GAAP measurement rules for countries where firms in our sample are domiciled. IAS are considered to be more restrictive than domestic-GAAP when IAS has fewer acceptable accounting methods for an economic event relative to the methods acceptable under domestic-GAAP.

The IASSET index values presented in Table 2 of the text equal the sum of the additional disclosure requirements (i.e., DISCLOSE) reported in Table A1 and the measurement choice restrictions (i.e., METHODS) reported in Table A2.

TABLE A1

DISCLOSE: Variation in Disclosure Standards of IAS versus Domestic-GAAPs. X = when a domestic-GAAP has no disclosure requirement or the domestic-GAAP requires less disclosure than IAS. Comparisons are based on standards in effect as of January 1, 1993. Disclosure items are as follows: (1) providing a statement of cash flows; (2) disclosure of accounting policies; (3) disclosure of the effect of a change in accounting policy; (4) disclosure of the effect of a change in accounting estimate; (5) disclosure of prior period adjustments; (6) disclosure of post balance sheet events; (7) disclosure of related party transactions; and (8) disclosure of segment information. The countries examined are based on where the firms used in the empirical analysis are domiciled.

	Disclosure Items								
Country	1	2	3	4	5	6	7	8	Total
Australia					X				1
Canada									
0									
Denmark					X	X			2
Finland	X		X	X	X	X	X		6
France	X			X	X	X			4

Hong Kong	X			X		X		3
Japan			X	X				2
Malaysia	X		X					2
Norway	X	X	X	X	X	X	X	7
Singapore	X		X					2
Spain			X	X		X		3
Sweden	X		X	X	X		X	5
Switzerland	X		X	X			X	4

TABLE A2

METHODS: Variation in Measurement Methods of IAS versus Domestic-GAAPs. X = when IAS restricts the accounting measurement methods relative to the measurement methods available under domestic-GAAP. Comparisons are based on standards in effect as of January 1, 1993. The countries examined are based on where the firms used in the empirical analysis are domiciled.

	Measurement Method Restrictions				
Country	Additional Depreciation	Accounting for Leases	Accounting for Pensions	Research & Development	Total
Australia			X	X	2
Canada					
0					
Denmark		X		X	2
Finland	X	X	X	X	4
France	X	X	X		3
Hong Kong				X	1
Japan		X	X		2
Malaysia					0
Norway			X		1

Singapore					0
Spain			X		1
Sweden		X	X		2
Switzerland	X	X	X	X	4

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TABLE 1

Distribution Across Countries of the Sample of 80 Non-US Firms that Adopted International Accounting Standards Between 1990 and 1993. We identify non-US firms using IAS and their year of adoption based on a list provided by the IASC of 163 firms that adopted IAS by 1993. We eliminated seven firms from Italy and 22 firms from South Africa since firms from these countries could adopt IAS selectively rather than fully adopt IAS when their domestic-GAAP was silent on an accounting measurement or disclosure issue, one firm from Bermuda because Bermuda did not have a set of domestic-GAAP to benchmark to IAS, and 53 firms with missing data (analyst earnings forecasts as well as actual earnings, share prices, shares outstanding, and analyst following) in the Historical I/B/E/S International database.

Country	Number	Percent
Australia	5	6.25
Canada	12	15.00
Denmark	2	2.50
Finland	6	7.50
France	17	21.25

Hong Kong	2	2.50
Japan	3	3.75
Malaysia	4	5.00
Norway	1	1.25
Singapore	1	1.25
Spain	2	2.50
Sweden	2	2.50
Switzerland	23	28.75
Total	80	100.00

TABLE 2

Variation in Accounting Standards: IAS versus Domestic-GAAPs. DISCLOSE and METHODS are the sum of the additional IAS disclosure requirements and measurement method restrictions, respectively, relative to the accounting policies of firms' domestic-GAAPs (see Appendix A). IASSET is the sum of DISCLOSE and METHODS. Comparisons are based on standards in effect as of January 1, 1993.

Country	DISCLOSE	METHODS	IASSET
Australia	1	2	3
Canada	0	0	0
Denmark	2	2	4
Finland	6	4	10
France	4	3	7
Hong Kong	3	1	4
Japan	2	2	4
Malaysia	2	0	2
Norway	7	1	8
Singapore	2	0	2

Spain	3	1	4
Sweden	5	2	7
Switzerland	4	4	8

TABLE 3

Descriptive Statistics of Firm Characteristics. A sample firm appears once in the pre-IAS adoption period and once in the post-IAS adoption period. In the pre-IAS adoption period, DISCLOSE and METHODS are indexes reflecting the differences in disclosure requirements and measurement choices of firms' domestic-GAAPs, respectively, relative to IAS (see Appendix A). IASSET is the overall index of accounting standard differences and equals the sum of DISCLOSE and METHODS. In the post-IAS adoption period, the accounting difference indexes equal zero. NUM is the number of analysts providing an annual earnings forecast for the month of the firm's fiscal year-end, obtained from I/B/E/S. MVE is the log of the firm's market value of equity measured in millions of US dollars at calendar year-end in the pre- and post-IAS adoption years. We calculate this variable by using share price and shares outstanding from I/B/E/S and exchange rates from Worldscope. Foreign listings are the number of foreign exchanges on which a firm's shares trade as reported in the Bloomberg database at the end of a firm's fiscal years in the pre- and post-adoption years. Foreign sales as well as the number of business segments and geographic segments are collected from the Worldscope database for the pre- and post-IAS adoption years. The % Foreign

Sales is calculated by dividing a firm's foreign sales by its total sales. The sample is 80 firms adopting IAS in 1990, 1991, 1992, or 1993.

		Pre-IAS Adoption			Post-IAS Adoption		
Variable	N	Mean	Standard deviation	Median	Mean	Standard deviation	Median
DISCLOSE	80	3.12	1.79	2.00	0	0	0
METHODS	80	2.45	1.55	2.00	0	0	0
IASSET	80	5.56	3.16	7.00	0	0	0
NUM	80	13.79	7.83	13.50	17.11***	8.80	15.00###
MVE	80	13.24	1.37	13.14	13.67**	1.24	13.66##
Foreign listings	80	2.16	1.66	2.00	2.20*	1.68	2.00
Business segments	64	3.74	2.62	3.00	3.91	2.26	3.00
Geographic segments	64	3.20	2.52	3.00	3.56	2.47	3.00
% Foreign sales	54	59	29	64	56	30	59

*, **, *** A t-test of paired differences rejects the hypothesis of no difference from zero (two-tail *p-value* < .10, < .05, and < .01, respectively).

##, ### A Wilcoxon rank sum test rejects the hypothesis of no difference in the distributions (two-tail *p-value* < .05 and < .01, respectively).

TABLE 4

Results of Testing H_1: The Impact of Differences in Domestic-GAAPs Relative to IAS on Analyst Earnings Forecast Accuracy. FERROR is the absolute value of the difference between actual earnings per share and the median analyst forecast of earnings per share for the year, deflated by stock price (all data obtained from I/B/E/S). NUM is the number of analysts providing an annual earnings forecast for the month of the firm's fiscal year end (obtained from I/B/E/S). MVE is the log of the firm's market value of equity measured in millions of US dollars at calendar year-end. We calculate this variable by using share price and shares outstanding from I/B/E/S and exchange rates from Worldscope. DISCLOSE and METHODS are the sum of the additional IAS disclosure requirements and measurement method restrictions, respectively, relative to the accounting policies of firms' domestic-GAAPs (see Appendix A). IASSET is the overall accounting standard index for the firm's country of domicile (reported in Table 2). All regression variables are winzorized to the 1st and 99th percentile values. The sample is 80 firms adopting IAS in 1990, 1991, 1992, or 1993 and t-1 is the year prior to IAS adoption.

(a) Disclosure model: $FERROR_{it-1} = \alpha + \beta_1 NUM_{it-1} + \beta_2 MVE_{it-1} + \beta_3 DISCLOSE_i + \varepsilon_{it-1}$

(b) Methods model: $FERROR_{it-1} = \alpha + \beta_1 NUM_{it-1} + \beta_2 MVE_{it-1} + \beta_3 METHODS_i + \varepsilon_{it-1}$

(c) Set model: $FERROR_{it-1} = \alpha + \beta_1 NUM_{it-1} + \beta_2 MVE_{it-1} + \beta_3 IASSET_i + \varepsilon_{it-1}$

	Predicted	Model		
	Sign	(a)	(b)	(c)
α	?	0.1192	0.1356	0.1187
		(2.088)**	(2.349) **	(2.055)**
NUM_{it-1}	-	-0.0008	-0.0008	-0.0008
		[-0.876]	[-0.821]	[-0.883]
MVE_{it-1}	-	-0.0077	-0.0083	-0.0076
		[-1.725]*	[-1.842] *	[-1.694]*
$DISCLOSE_i$	+	0.0094		
		[2.909]***		
$METHODS_i$	+		0.0088	
			[2.313]**	
$IASSET_i$	+			0.0052
				[2.811]***
N		80	80	80
Adj.R^2		19.40	16.32	18.87

t-statistics are in brackets for one-tail tests; *, **, *** one-tail *p-value* < .10, < .05 and < .01, respectively.

t-statistics are in parentheses for two-tail tests; ** two-tail *p-value* < .05.

TABLE 5

Univariate Tests of Change in Analysts' Forecast Errors. FERROR is the absolute value of the difference between actual earnings per share and the median analyst forecast of earnings per share for the year, deflated by stock price. Year t-1 (t+1) is the year prior to (post) IAS adoption. CHIASSET = 0 – IASSET; i.e., the change in differences in domestic-GAAP vis-à-vis IAS where IASSET is the accounting standard index for the firm's country of domicile (reported in Table 2).

Year	N	Mean	Median	Std Dev	Minimum	Maximum
Panel A: All Firms (Variable = FERROR)						
t-1	80	0.0358	0.0128	0.0566	0.0000	0.2870
t+1	80	0.0173	0.0076	0.0281	0.0000	0.1567
t-statistic		-3.135***				
z-statistic			-2.592###			
Panel B: Firms for which CHIASSET < 0 (Variable = FERROR)						
t-1	68	0.0397	0.0160	0.0601	0.0001	0.2870
t+1	68	0.0182	0.0072	0.0302	0.0001	0.1567
t-statistic		-3.154***				
z-statistic			-2.944 ###			

Panel C: Canadian Firms (CHIASSET = 0) (Variable = FERROR)

t-1	12	0.0141	0.0087	0.0196	0.0000	0.0673
t+1	12	0.0123	0.0123	0.0098	0.0000	0.0307
t-statistic		-0.270				
z-statistic			0.375			

*** A t-test of paired differences rejects the hypothesis of no difference from zero (two-tail *p-value* < .01).

A Wilcoxon rank sum test rejects the hypothesis of no difference in the distributions (two-trail *p-value* < .01).

TABLE 6

Results of Testing H_2: The Impact of IAS Adoptions on Analyst Earnings Forecast Accuracy. Changes are calculated from the year prior to IAS adoption (t-1) to the year post-IAS adoption (t+1). CHFERROR is the change in the absolute value of the difference between actual earnings per share and the median analyst forecast of earnings per share for the year, deflated by stock price. CHNUM is the change in the number of analysts providing an annual earnings forecast for the month of the firm's fiscal year end. CHMVE is the change in the log of the firm's market value of equity measured in millions of US dollars at calendar year-end. CHDISCLOSE is zero minus DISCLOSE, the differences in disclosures required under IAS vis-à-vis a firm's domestic-GAAP. CHMETHODS is zero minus METHODS, the difference in measurement method restrictions under IAS vis-à-vis a firm's domestic-GAAP. CHIASSET is zero minus IASSET, the overall accounting standard index for the firm's country of domicile in the pre-IAS adoption period reported in Table 2.

(a) Change in disclosure: $CHFERROR_i = \alpha + \beta_1 CHNUM_i + \beta_2 CHMVE_i + \beta_3 CHDISCLOSE_i + \varepsilon_i$

(b) Change in methods: $CHFERROR_i = \alpha + \beta_1 CHNUM_i + \beta_2 CHMVE_i + \beta_3 CHMETHODS_i + \varepsilon_i$

(c) Change in policies: $CHFERROR_i = \alpha + \beta_1 CHNUM_i + \beta_2 CHMVE_i + \beta_3 CHIASSET_i + \varepsilon_i$

	Predicted Sign	Model (a)	Model (b)	Model (c)
α	?	0.0008	0.0007	0.0023
		(0.093)	(0.077)	(0.260)
$CHNUM_i$	-	0.0018	0.0013	0.0017
		[1.454]	[1.171]	[1.429]
$CHMVE_i$	-	-0.0180	-0.0189	-0.0184
		[-1.939]**	[-2.093]**	[-1.896]*
$CHDISCLOSE_I$	-/+	0.0055		
		(1.823)*		
$CHMETHODS_I$	-/+		0.0061	
			(1.952)*	
$CHIASSET_i$	-/+			0.0033
				(2.029)**
N		80	80	80
Adj.R^2		10.18	10.73	11.07

All regression variables are winzorized to the 1st and 99th percentile values.

t-statistics are in brackets for one-tail tests; *, ** one-tail *p-value* < .10 and .05, respectively.

t-statistics are in parentheses for two-tail tests; *, ** two-tail *p-value* < .10 and < .05, respectively.

TABLE 7

Univariate Tests of Changes in News Reports. Changes are calculated from the year prior to IAS adoption (t-1) to the year after IAS adoption (t+1). CHTOT is the change in the total number of news reports about the firm, and CHEA is the change in the number of earnings-related news reports about the firm (both obtained from the Financial Times Index).

Variable	N[1]	Mean	Std.Dev.	Minimum	Maximum
Firms for which CHIASSET < 0:					
CHTOT	65	4.2461***	12.8938	-23.0000	42.0000
CHEA	65	1.8000***	4.7374	- 5.0000	15.0000
Canadian Firms (CHIASSET = 0):					
CHTOT	12	2.5000	4.9810	-2.0000	15.0000
CHEA	12	2.3333*	3.7979	-1.0000	10.0000

[1] Three firms for which CHIASSET < 0 were not covered in the *Financial Times Index*.

*, *** A t-test rejects the hypothesis of no difference from zero (two-tail *p-value* < .10 and .05 respectively).

Changes are calculated from the year prior to IAS adoption (t-1) to the year after IAS adoption (t+1). CHTOT is the change in the total number of news reports about the firm, and CHEA is the change in the number of earnings-related news reports about the firm (both obtained from the *Financial Times Index*).

ENDNOTES

[1] Specifically, the IASC's 1995 Comparability Project and 1998 Core Project.

[2] Firms comply with IAS measurement standards in various ways, depending upon their domestic-GAAPs (Ashbaugh [1999]). Firms domiciled in countries where in 1993 there were relatively few accounting measurement choice restrictions (e.g., Switzerland) were able to implement IAS without violating their domestic-GAAPs. Alternatively, some domestic-GAAPs were quite similar to IAS. Thus, Canadian firms were able to meet the requirements of their domestic-GAAP and IAS by choosing measurement methods that satisfied both sets of standards. Some countries (e.g., France) permitted a firm to use domestic-GAAP in the parent company's financial statements and IAS in its consolidated statements. Finally, in other countries, accounting standards and tax laws were highly aligned (e.g., Finland, Sweden), and firms typically used footnote reconciliations to meet IAS measurement requirements.

[3] A similar list is on the IASC's Web site (IASC [1999]). On a random basis, we examined more than half of our sample firms' 1990-1994 annual reports to verify their year of adoption.

[4] Since 1994, many countries have adopted IAS as their national financial accounting standards or as the basis for their reporting standards (IASC [1998]). Prior to that,

Italy and South Africa were among the few countries that used IAS as a basis for their national GAAP (Coopers & Lybrand [1993]).

[5] We gratefully thank *I/B/E/S* International, Inc., for providing us with earnings forecast data.

[6] The time between non-US firms' fiscal year-ends and the public reporting of annual earnings varies due to differences in reporting or filing requirements across national boundaries and equity markets (e.g., Alford et al. [1993]; Frost and Kinney [1996]). As a consequence, the forecast horizon and thus the number of forecasts of annual earnings can vary by firm. To standardize, the median analyst forecast of earnings per share for year t is calculated using consensus forecasts in the six-month period prior to firms' fiscal year-ends. As a sensitivity check, we repeat the analysis using analyst forecasts starting in the first month they become available on I/B/E/S in the year for which the forecasts are being made; i.e., we allow forecast horizons to vary by firm. The results are similar.

[7] Changes in exchange rates between firms' domestic currencies and the US dollar may influence the measurement of non-US firms' market values at two points in time. To investigate whether such changes might confound the measurement of changes in market values, we calculate a firm's market value of equity using a constant exchange rate; specifically, the exchange rate in effect at the end of the year prior to the firm's IAS

adoption. We find this measure of change in market value is highly correlated (0.98) with our original measure, and there is a significant increase in average market value even when controlling for exchange rate changes. Similarly, the results of our regression analyses based on our original MVE measures (reported below) are qualitatively unchanged when substituting the change in MVE variable that reflects a constant exchange rate.

[8] Pearson (Spearman) correlations between FERROR and, respectively, DISCLOSE, METHODS, and IASSET are 0.37 (0.48), 0.32 (0.38), and 0.37 (0.44).

[9] The extremely high correlation (0.78) between DISCLOSE and METHODS (and CHDISCLOSE and CHMETHODS) means that if both variables were included in the same regression, inferences about their marginal effects would be suspect.

[10] We winzorize all variables in the regression analyses to their 1st and 99th percentile values. The results are virtually identical if variables are not winsorized.

[11] We also perform standard collinearity diagnostics (Belsey, Kuh, and Welsch [1980]) and find no evidence that multicollinearity is a serious problem in our regression analyses.

[12] Pearson (Spearman) correlations between CHFERROR and, respectively, CHDISCLOSE, CHMETHODS, and CHIASSET are 0.25 (0.20), 0.28 (0.25), and 0.28 (0.23).

[13] We winzorize all variables in the regression analyses to their 1st and 99th percentile values. When we do not winzorize variables, two-tail *p-values* are .20, .16, and .15, respectively, for the t-statistics on the coefficients for CHDISCLOSE, CHMETHODS, and CHIASSET.

[14] Sixteen firms that adopted IAS were listed on a US stock exchange that required the firms to file US-GAAP data in supplemental filings with the Securities and Exchange Commission. These firms are from Australia (3), Canada (9), Finland (1), France (2) and Spain (1). We include them in our sample since analysts typically do not forecast alternative earnings measures included in supplemental reports. We conduct sensitivity tests excluding these 16 firms and find that the results are at least as significant as the results based on the full sample.