The measurement of quarterly earnings: Integral versus discrete method

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Abstract

For nearly fifty years, U.S. GAAP has required an overall integral approach for quarterly earnings that smooths expected annual costs over the year, but the more recent IFRS standard requires a discrete approach. We consider under what conditions these divergent approaches lead to differences in the usefulness of quarterly earnings. We predict that integral method earnings better predict earnings four quarters ahead when shocks fully reverse by year-end. However, discrete method earnings should better predict earnings four quarters ahead when shocks do not reverse. We find results consistent with our predictions in our main tests of earnings predictability. Market tests are consistent with the earnings tests when annual earnings predictability is high, but we find mixed evidence for firms with low earnings predictability.

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1. Introduction

For nearly fifty years, U.S. GAAP has specified an overall integral approach for quarterly earnings that smooths expected annual costs over the year except for certain transitory events. When the Accounting Principles Board promulgated Opinion No. 28 (APB 28) in 1973, U.S standard setters compromised on an "integral method" approach with "discrete method" exceptions.[1] In contrast, the IASB adopted the discrete method for almost all transactions; in most respects, the IFRS method in IAS 34 treats interim periods as independent reporting periods. Little empirical research exists to shed light on the strengths and weaknesses of the current divergent approaches. We compare these alternative measurement approaches to interim reporting to learn which quarterly earnings measures best predict annual earnings and four-quarters-ahead earnings. Such an examination is relevant because interim reporting is an area in which International Financial Reporting Standards (IFRS) and U.S. GAAP diverge, as the SEC (2011) acknowledges.

The integral method measures earnings for the quarter using estimates of expected annual amounts. Managers should defer or accrue expenses that benefit the full year, allocating expenditures across the quarters, and should ignore temporary variances that are expected to reverse. The adoption of the integral method reflects U.S. standard-setters' belief that "The usefulness of [quarterly earnings] information rests on the relationship that it has to the annual results of operations." Researchers acknowledge the impact of the integral approach on U.S. quarterly earnings properties (e.g., Collins, Hopwood and

[1] APB 28 was incorporated into FASB ASC topic 270, Interim Reporting. See also SFAS 3 (FASB 1977) and FIN No. 18 (FASB 1977).

McKeown 1984, Rangan and Sloan 1998, Brown and Pinello 2007, Durtschi and Easton 2009). However, prior research does not provide evidence on relative costs and benefits of alternative approaches to interim reporting. The U.S. GAAP integral approach includes a compromise to account for some transactions on a discrete basis and results in a hybrid method that Bratten, Gleason, Larocque, and Mills (2017, 22) conclude "provides neither a forecast of the annual [earnings] nor complete information about quarterly events." Broadly, our study aims to provide evidence on the usefulness of GAAP's integral method.

We predict that integral method quarterly earnings will have higher explanatory power for predicting annual earnings than will discrete method earnings, to the extent the reversing errors that the integral method ignores are consequential. Thus, we predict that integral method quarterly earnings will predict four-quarters-ahead quarterly earnings better than does discrete method quarterly earnings, when annual earnings are highly predictable (suggesting most quarterly shocks reverse). In contrast, if annual earnings are not as predictable, suggesting shocks do not reverse by year-end, we expect discrete quarterly earnings will be more predictive of year-ahead quarterly earnings.

To compare integral to discrete methods, we use a matched sample of U.S. GAAP and IFRS firms drawn from 2009 to 2016 Compustat Global quarterly data. We match U.S. and international firms on size, industry, and annual earnings predictability. We exclude U.S. firms that use LIFO for comparability. An implicit assumption in our comparison is that U.S. and IFRS firms have similar incentives and opportunities to report conservatively or to manage quarterly earnings.[2] We compare the predictive value of U.S. GAAP quarterly

[2] As we discuss in the conclusion, the usefulness of quarterly earnings for contracting is an important consideration we do not address in our analysis. Our focus on the usefulness of quarterly earnings for

earnings to the predictive value of IFRS's quarterly earnings. We use annual earnings predictability as a proxy for the likelihood shocks reverse within the year.

We perform two broad sets of regressions, evaluating the explanatory power of 1) quarterly earnings for four-quarters-ahead quarterly earnings, and 2) quarterly earnings for same-year annual earnings. We also perform price-level and return regressions as alternative tests of the usefulness of GAAP and IFRS quarterly earnings.

As predicted, GAAP quarterly earnings predicts four-quarters-ahead quarterly earnings better (significantly higher R^2) than IFRS in all four quarters, but only in the partition that has high annual earnings predictability. GAAP quarterly earnings is also a better predictor of *Street* earnings and cash flows four quarters ahead for firms with high annual earnings predictability. In contrast, we find IFRS has better quarterly earnings predictability than GAAP for the firms with the lowest annual earnings predictability.

In terms of quarterly earnings predicting annual earnings for the same year, GAAP does better (or no worse) in the first three quarters of the year and IFRS does better in the fourth quarter, in both partitions of annual earnings predictability. This result is consistent with the intent of the integral method expressed in APB 28. We do not view this success as a sufficient test of interim reporting usefulness, however, because modern financial statement users are also concerned with predicting future years' earnings.

We find GAAP earnings has higher explanatory power for price-levels and for returns for firms with high annual earnings predictability, consistent with our earnings predictability tests. We find IFRS earnings has higher or similar explanatory power for

valuation also assumes firms face similar contracting considerations, which could impact the timing of when firms recognize quarterly earnings shocks.

price-levels and returns compared to GAAP earnings for firms with lower annual earnings predictability. However, the explanatory power of IFRS earnings for price-levels and returns is does not dominate that of GAAP earnings as convincingly as GAAP dominates IFRS in the high predictability partition, although IFRS has consistently higher predictive power for firms with low annual earnings predictability.

Next, we examine a large sample of U.S. firms to investigate the predictability of earnings under the integral method required by GAAP and earnings excluding discrete items. We hold the firm constant to eliminate the potential for differences in earnings management or bias in estimation to influence our inferences. We find that quarterly earnings excluding discrete items and GAAP earnings have the same predictive ability for annual GAAP earnings even though annual earnings include the discrete items by definition. This limitation of GAAP quarterly earnings is noteworthy since the predictability of annual earnings was an explicit objective of standard setters in designing quarterly earnings accounting standards.

We end by explaining how our evidence contributes to prior literature about interim accounting for discrete items. The events and transactions accounted for on a discrete basis in the U.S. have significant overlap with items termed "special" or "transitory" in the existing accounting literature. Research documents the increasing frequency of these charges (Donelson, Jennings and McInnis 2011; Elliott and Hanna 1996) and the frequency with which they recur (Cready, Lopez, and Sisneros 2010). Burgstahler, et al. (2002) find reductions in quarterly earnings predictability when special items are present.[3] Studies

[3] Black, Christensen, Ciesielski, and Whipple (2017) review a large literature that examines discretion in the reporting of pro-forma earnings.

also document the statistically significant, but economically small, predictive power of special items for future earnings and cash flows (e.g., Dechow and Ge 2006; Jones and Smith 2011; Hsu and Kross 2011). Our evidence suggests the current treatment of discrete items in quarterly reporting may fuel demand for non-GAAP disclosures that exclude these items (Bradshaw and Sloan 2002; Black et al. 2020).

2. Motivation and Research Question

2.1. Background: Interim reporting standards

2.1.1. U.S. GAAP

The foundations of quarterly reporting have been in place since 1970 when the SEC required firms to file Form 10-Q. Codified in ASC 270, current U.S. GAAP for quarterly reporting largely reflects the original 1973 APB 28, Interim Financial Reporting. Although quarterly disclosure requirements have significantly increased since 1973, the measurement of transaction amounts is largely unchanged.

ASC 270 emphasizes the view that intra-period earnings are an integral part or component of annual earnings. The APB reasoned "interim financial information is essential to provide investors and others with timely information as to the progress of the enterprise. The usefulness of such information rests on the relationship that it has to the annual results of operations. Accordingly, the Board concluded that each interim period should be viewed primarily as an integral part of the annual period" (para 9).

ASC 270 describes the integral approach in terms similar to annualizing normal events and operations and recognizing a fraction (i.e., 1/4) of them in the quarter. For example, one quarter of the cost of the financial statement audit is allocated to each fiscal quarter. Although advertising is expensed on an annual basis, advertising costs "may be

deferred within a fiscal year if the benefits of an expenditure made clearly extend beyond the interim period" (16d), permitting firms to spread the cost evenly over the quarters. [4] Accounting for income taxes also uses an integral approach. Tax expense each quarter is determined by applying "the best estimate of the effective tax rate expected to be applicable for the full fiscal year" to year-to-date pretax income (19).[5]

In the background section (ASC 270-5.2), the FASB acknowledges that determining income on a meaningful basis for intervals smaller than a year is inherently difficult because some entities have more seasonal income than others and some costs and expenses occur infrequently. Further, the speed of quarterly earnings releases requires many entities to rely on estimates.

ASC 270 also details exceptions to the integral approach. Certain transactions "shall be recognized in the interim period" and "should not be prorated over the balance of the fiscal year." Practitioners call the exceptions "discrete" items because they are recorded in the discrete period in which they occur.

Interestingly, the references to "discrete period" are all in the qualifications and dissenting opinions to the standard. Mr. Norr's qualification indicates he "also believes that in most circumstances each interim period is a discrete period and that the Opinion

[4] ASC 270 requires managers to make a significant number of estimates. Cohen, Mashruwala and Zack (2010) examine whether this discretion over the advertising expense permits managers to manage earnings through real earnings management of quarterly advertising expenditures.

[5] Special rules apply to interim reporting for income taxes (ASC 740-270). Section 30-1 provides guidance that includes the use of an estimated annual effective tax rate (ETR) applied to ordinary income or loss to determine the interim period income tax expense or benefit. The estimated annual effective tax rate shall include the tax effect of any valuation allowance expected to be necessary at year-end (30-7) and anticipated credits, foreign tax rates and other tax planning. However, "no effect shall be included for the tax related to significant unusual or infrequently occurring items that will be separately reported." The FASB also lists items that are always excluded from the estimated annual ETR: "the effects of changes in judgment about beginning-of-year valuation allowances and effects of changes in tax laws or rates" (30-11).

encourages normalizing and smoothing income, concealing the actual level of activity." Messrs. Halvorson, Hayes and Watt dissent because they believe "financial statements for any period (which is necessarily both a discrete period and a segment of a larger period) should reflect the events of that period. In their view the Opinion encourages normalizing income by arbitrarily normalizing expenses, thereby concealing actual results of operations in an interim period."

The standard specifies that losses on long-term contracts (para 11), losses from inventory market declines that are not clearly temporary (14c), unplanned or unanticipated variances (14d), costs and expenses that "cannot be readily identified with other interim periods" (15b), gains and losses (15d), the change in a deferred tax asset valuation allowance (20), the effect of tax law changes on deferred tax assets and liabilities (20), extraordinary items, disposals of units, unusual and infrequent items (21), and changes in methods (24) should be treated as discrete events.

2.1.2. IFRS

In contrast to U.S. GAAP, in 1998 the IASB adopted the view that interim periods are individual accounting periods. IFRS interim reporting guidance more closely resembles U.S. GAAP's exception rather than its general rule. This view of interim periods as individual accounting periods is generally termed the discrete method. Although disclosures help bridge the gap between these two methods of measuring income for the quarter, the methods differ fundamentally.

IAS 34 requires firms to recognize events in the period (quarter) in which they

occur.[6] For example, firms recognize expenses for audit work performed or the advertising that occurred during the quarter. However, IAS 34 also notes that unusual items or seasonality require additional explanation. For example, Paragraph 16A, Other Disclosures, specifically requires "explanatory comments about the seasonality or cyclicality of interim operations," and information about "the nature and amount of items affecting assets, liabilities, equity, net income or cash flows that are unusual because of their nature, size or incidence." IAS 34 also requires firms to use their best estimate of the annual effective tax rate in accounting for income taxes, similar to U.S. GAAP.

To sum up, the SEC describes differences between U.S. GAAP and IFRS in its 2011 release (pages 14 and 15): "Conceptually, IFRS tends to consider interim periods as discrete accounting periods, while U.S. GAAP considers interim periods as a component of an annual period."

2.2 Motivating framework, literature and research question

Recently issued Statement of Financial Accounting Concepts No. 8 (CON8, FASB 2018) describes the objective of financial reporting and the qualitative characteristics of useful financial information. Although CON8 does not explicitly discuss interim reporting, it lays out several principles relevant for our evaluation of quarterly reporting. Most relevant to our inquiry is the CON8's inclusion of the predictive power of financial information as a desirable attribute. As defined in CON 8, predictive power means that the information can "make a difference in decisions" (QC7), and "can be used as an input to processes employed by users to predict future outcomes" (QC8). However, the FASB cautions that predictive

[6] Some international firms, particularly in Europe, only report semi-annually, in which case the transactions in the first six months would be recorded in the semi-annual period discretely. We exclude firms who only report semi-annually from our analysis.

value "is not the same as predictability and persistence as used in statistics" (BC 3.16). Earnings persistence tests used in financial accounting research are closer to the FASB's meaning rather than a purely statistical characteristic.[7]

A large body of literature examines quarterly earnings predictability. Early research (e.g., Watts 1975, Foster 1977, Griffin 1977, and Brown and Rozeff 1979) focused on modeling the properties of earnings primarily with Box-Jenkins autoregressive moving average (ARIMA) time series models. More recently, researchers have shifted to using analysts' forecasts as the preferred proxy for expected earnings (see the discussion in Kothari 2001).[8]

Our study differs from prior work in that we examine the usefulness of the method for interim reporting under U.S. GAAP—the integral method. Dichev and Tang (2008) show earnings predictability varies with the quality of the match between expenses and revenues.[9] To the extent the integral and discrete methods differ in the quality of matching between revenues and expenses, we expect differences in their informativeness for future earnings.

We focus on predictability for future earnings as our measure of decision usefulness because APB 28 specifically mentions predictability of annual earnings as an objective in measuring quarterly earnings.[10] We believe we can best test whether interim reporting

[7] See Dechow, Ge, and Schrand's (2010) review of the accounting literature on earnings quality links to earnings persistence and decision usefulness.
[8] Although empirical evidence is contradictory (Brown et al. 1987a and 1987b; O'Brien 1988), using analysts' forecasts has become the common practice.
[9] See also research on quarterly earnings patterns in Brown and Pinello (2007), Jacob and Jorgensen (2007), Das et al. (2009), and Gunney et al. (2013).
[10] An alternative benchmark for evaluating alternative methods of measuring quarterly earnings is the usefulness of contracting. Dichev and Skinner (2002) examine balance sheet covenants, which are the most frequent cause of technical defaults. Although earnings-based measures are common, they are often annual or rolling-four-quarters. However, we believe this is a fruitful area for further research.

standards align with the conceptual framework definition of "predictive power" by testing how well earnings predict future earnings. Thus, our research question is whether U.S. GAAP or IFRS quarterly earnings is more predictive of future earnings.

A strength of predictability is that it is conceptually and empirically well defined. In addition to predicting annual earnings, we focus on earnings four-quarters-ahead because this time period parallels models of the quarterly earnings generation process (Foster 1977). Analysts forecast both horizons, suggesting each is important to financial statement users. We consider GAAP-based measures of earnings as well as, in supplemental tests, Street earnings and cash flows from operations because these latter measures are frequently used to measure the quality or informativeness of earnings. Our inclusion of Street earnings stems in part from recent evidence that investors' view non-GAAP earnings as more important for valuation (Bradshaw et al. 2018).

Although we focus on the predictive power of earnings, CON8 enumerates other important attributes of useful financial information, including enabling users to understand the return (i.e., profit) the entity produced on its economic resources (i.e., net assets) (SFAC 8, OB16). Additionally, "[i]nformation about a reporting entity's past financial performance … usually is helpful in predicting the entity's future returns on its economic resources." SFAC 8, OB 17 also argues that accrual accounting provides a better basis for assessing past and future performance than does cash flow by depicting the effects of transactions in the periods in which they occur. Integral and discrete methods are both accrual-based, but can differ on when to depict the effects of transactions.

The FASB also continues to emphasize the importance of qualitative characteristics of useful information including being relevant and representationally faithful, as well as

comparable, verifiable, timely and understandable (SFAC8, QC4). Schipper and Vincent (2003) note that although predictive ability is conceptually well defined, it can be disconnected from the representational faithfulness of reported earnings to economic performance (e.g., firms can have difficult-to-predict earnings due to their business model and faithful representation results in low earnings predictability). Thus, we also test the value relevance of GAAP and IFRS quarterly earnings using both price-levels and returns tests to triangulate our predictability evidence. However, we acknowledge our tests of predictive power may also reflect other differences between GAAP and IFRS in the attributes of earnings information.

2.3. Conditions that predict decision usefulness of integral versus discrete methods.

Under what conditions should the integral (GAAP) method produce quarterly earnings with more predictive ability than discrete (IFRS) methods? The two methods differ in their treatment of shocks to earnings. We consider two types of shocks: shocks that reverse fully within the fiscal year and shocks that do not reverse within the year and recur in the subsequent year, consistent with a random walk.

We first consider shocks that reverse during the year. Under the integral method, firms ignore quarterly shocks to earnings that they expect to reverse. In contrast, under the discrete method, managers must record shocks in the quarter they occur. Recording the impact of transitory, reversing shocks in quarterly earnings when they occur and when they reverse should decrease the predictive power of earnings four-quarters-ahead. Thus, we predict that when transitory shocks fully reverse during the year, the integral method of GAAP has higher earnings predictability four quarters hence than does IFRS. We also expect GAAP quarterly earnings will better predict annual earnings than will IFRS

quarterly earnings.

Our prediction that U.S. GAAP has higher earnings predictability for four-quarter ahead and annual earnings assumes managers of U.S. GAAP firms correctly predict the likelihood shocks will reverse. If GAAP managers incorrectly assume shocks will not reverse during the fiscal year, then they will recognize both the shock and the reversal in the quarters in which they occur. In this case, we expect no difference between GAAP and IFRS firms.

Next, we consider shocks that do not reverse during the year. Such shocks would affect subsequent year's earnings if annual earnings follow any degree of random walk. Initially we assume managers correctly estimate the likelihood the shock does not reverse in the current year and the likelihood of recurrence. Recording shocks fully in the quarter they occur will improve the usefulness of earnings in predicting four-quarters-ahead earnings. Thus, we expect GAAP earnings and IFRS earnings have similar predictive power in this case.

If GAAP managers incorrectly assume shocks will reverse and they do not, then managers will have to recognize the shock in the fourth quarter when it is clear the shock is not reversing. In this case, assuming the shock recurs next year and the recurrence is in the same fiscal quarter, both the shock quarter and fourth-quarter GAAP earnings will have less predictive power for four-quarter ahead earnings than IFRS quarterly earnings. If the recurrence of the shock is randomly distributed in one of the four fiscal quarters, then GAAP and IFRS quarterly earnings would have similar predictive power for four-quarter ahead earnings. We also expect that the predictive power of both GAAP and IFRS quarterly earnings for annual earnings should be similar in this case.

To summarize, we predict that GAAP quarterly earnings has higher or similar quarterly earnings predictability compared to IFRS quarterly earnings when managers correctly estimate the likelihood shocks will reverse fully by year-end. In contrast, we predict GAAP quarterly earnings has lower quarterly earnings predictability compared to IFRS when managers incorrectly estimate whether shocks will reverse during the year.[11]

3 U.S. GAAP integral method versus IFRS discrete method

3.1. Predictive value tests

We first evaluate decision usefulness by testing how quarterly earnings measured under U.S. GAAP and IFRS perform predicting year-over-year quarterly earnings. We estimate the following ordinary least squares regression model of earnings predictability for four-quarters-ahead quarterly earnings:

$$Earnings_{i,q+4} = \alpha + \beta Earnings_{i,q} + \varepsilon_{i,q+4} \quad (1)$$

We use the R^2 from the regressions to test which measures of income provide higher predictability. $Earnings_{i,q+4}$ equals U.S. GAAP or IFRS income before extraordinary items (IBQ) in quarter *q+4* for firm *i* (we exclude the firm subscript hereafter). $Earnings_q$ equals either as-reported GAAP or IFRS earnings or earnings excluding U.S. discrete items. We measure U.S. discrete items using special items (SPIQ) from Compustat and Compustat Global. These special item designations overlap with ASC 270's discrete items (Johnson et al. 2011). Specifically, they include in-process R&D expense, restructuring costs, write-

[11] In an earlier version we used Monte Carlo simulation to hold the underlying economic activities constant and directly compare the integral and discrete methods. Regressions estimated using the simulated data support our predictions and are available on request from the authors: 1) the integral method produces quarterly earnings with higher predictability for four-quarters-ahead quarterly earnings when shocks reverse during the year, but 2) the discrete method produces quarterly earnings with higher predictability when shocks to costs that are allocated evenly across the quarters persist into the next year.

downs, gains and losses, settlements, other special items, acquisitions, goodwill impairment, and extinguishment of debt. We analyze each quarter separately, based on prior research that identifies differences in fourth-quarter earnings relative to the first three quarters (e.g., Collins, Hopwood and McKeown 1984). We scale all earnings variables by the average of beginning and ending quarterly assets and winsorize variables at the top and bottom 1 percentile.

We partition the sample into terciles of annual earnings predictability. Each firm's annual earnings predictability is the R^2 from the regression of annual GAAP or IFRS earnings before extraordinatry items (IB) on the prior year's annual earnings. We scale earnings by the average of beginning and ending annual assets and winsorize at the top and bottom 1 percentile. Firms must have at least four years of data to calculate annual earnings predictability, which measures a firm's contemporaneous earnings predictability over the sample period. We acknowledge that this requirement imposes survivorship bias, and that by using data across all periods our market tests do not generate a trading strategy. However, this measure helps ensure that matched IFRS and GAAP firms face similar levels of earnings shocks.

When shocks reverse during the year annual earnings are more persistent. We predict that the GAAP integral method is more useful for these firms assuming managers correctly anticipate the reversal and thus avoid including the shock in quarterly earnings. Thus, we expect on average the GAAP integral method will outperform the discrete method for firms with highly predictable annual earnings (top tercile). For firms with low annual earnings predictability (bottom tercile), we expect the IFRS discrete method will perform better or similar to GAAP earnings in predicting earnings four-quarters ahead.

3.2. Sample description IFRS versus U.S. GAAP

Table 1, Panel A describes our GAAP and IFRS samples. We obtain GAAP firms from Compustat and IFRS firms from Compustat and Compustat Global. Our sample runs from 2009 to 2016.[12] We limit our sample to firms with greater than $100 million of average quarterly assets. We require firms to have revenues, earnings, cash flows, assets, and I/B/E/S actual earnings. The initial sample contains 26,650 IFRS-firm-quarters and 74,566 GAAP-firm-quarters. We exclude GAAP firms that use the LIFO inventory valuation method. We also exclude IFRS and GAAP firm-quarters lacking data for all four quarters of a fiscal year and firms without at least four years of data to calculate annual earnings predictability. We match IFRS firms to GAAP firms on size quintile, Fama-French 12 industry, and annual earnings predictability to obtain 11,836 IFRS firm-quarters and 11,836 GAAP firm-quarters. Untabulated descriptive statistics indicate GAAP and IFRS firms have similar earnings predictability (mean firm predictability: GAAP = 0.62, IFRS = 0.62) when annual earnings predictability is high. When earnings predictability is low, GAAP firms have lower annual earnings predictability (0.022) compared to IFRS firms (0.023). This difference, although not economically significant, is statistically significant at $p<0.05$, suggesting that our matching addresses concerns about differences in the predictability of GAAP and IFRS earnings.[13]

[12] Compustat's database generally contains Canadian firms reporting under IFRS. Compustat Global's database generally contains non-North American IFRS firms. We stop in 2016 to avoid the effects of the Tax Cuts and Jobs Act of 2017. The Act impacted reported tax expense in both 2017 and 2018. Although the impact of the Act was frequently excluded from non-GAAP earnings numbers it was not identified as a special item in Compustat.

[13] We considered several alternatives to using matched U.S. and IFRS firms for testing differences in IFRS versus GAAP quarterly earnings predictability. Prior to 2005, firms included a reconciliation to U.S. GAAP on Form 20-F for annual reporting. If 20-F data were available quarterly one could hold the firm and quarter constant and compare differences in quarterly earnings predictability across method. However, 20-F

Table 1, Panel B describes the countries included in our IFRS sample. Requiring firms to report quarterly earnings yields a sample that is dominated by Canada and Nordic countries, which in total comprise approximately 60% of the sample. Thus the majority of sample firms have developed economies similar to the U.S., increasing the comparability of earnings.

Table 2, Panel A describes our U.S. GAAP sample and shows tests of differences between our GAAP and IFRS firms, described in Panel B. On average, GAAP firms are smaller than IFRS firms. However, IFRS firms have less revenue per quarter than GAAP firms, relative to the firm's average total assets. GAAP firms report significantly more discrete items as defined by U.S. GAAP (*Indicator* DI_q). The magnitude of these U.S.-defined discrete items is economically similar, although the difference is statistically significant. Neither GAAP nor IFRS reporting requirements permit us to undo accounting differences to generate completely comparable quarterly earnings numbers. However, to improve the comparability of the reporting choices, we include an alternate quarterly earnings measure that adjusts both GAAP and IFRS income for discrete items as defined under U.S. GAAP and proxied by SPI in either Compustat or Compustat Global.[14]

reconciling information was not reported on a quarterly basis. We also considered holding the country constant and comparing across time periods. For example, pre-IFRS, Canadian GAAP was relatively similar to U.S. GAAP for interim reporting. However, the industry composition of the population of Canadian firms changes significantly post-IFRS adoption and the financial crisis impacts earnings predictability in the post-adoption period. Thus, we hold the time period constant and match firms to control for differences in earnings predictability. See the Appendix for illustration of certain differences in Compustat variables between GAAP and IFRS.

[14] Prior to 2015, GAAP required firms to show extraordinary items separately in the income statement after income from continuing operations. In our sample, only four firm-quarters have extraordinary items. In 2015, FASB eliminated the concept of extraordinary items from GAAP, consistent with IFRS.

3.3. Usefulness of U.S. integral approach relative to IFRS fully discrete approach and other measures

3.3.1. Matched U.S. GAAP and IFRS Sample for four-quarters-ahead earnings and high annual earnings predictability

Panel A of Table 3 summarizes the βs and R^2s of the usefulness regressions for four-quarters-ahead earnings by quarter for firms with high annual earnings predictability.[15] The usefulness of revenues provides a benchmark against which to compare the usefulness of earnings, because revenues are relatively unaffected by differences in the discrete and integral methods. Importantly, revenues for GAAP firms are either equivalently or less predictive relative to revenues for IFRS firms in all quarters. The lower predictive ability of GAAP revenues implies GAAP quarterly earnings are handicapped relative to IFRS. Thus, if we find GAAP quarterly earnings outperform IFRS earnings, that outperformance cannot be driven by more predictive revenues.

For both GAAP and IFRS firms, the predictive ability of revenue for four-quarters-ahead revenue is higher than the predictive ability of earnings for four-quarters-ahead revenues. The average R^2 for GAAP and IFRS revenues across all quarters (untabulated) is 91% and 92%.[16] The average R^2 for GAAP and IFRS earnings is only 61% and 48% (untabulated). Thus, we attribute the relatively weak power of earnings to predict future earnings to the complexity of measuring quarterly costs, not estimating revenues.

As predicted, we find that in all quarters GAAP earnings outperform IFRS earnings in predicting as-reported earnings when annual earnings are highly predictable. The

[15] Firms in the upper tercile of earnings predictability have an average R2 of 62 percent while firms in the bottom tercile have R2 of 2.2 percent (untabulated). The range of R^2 we observe in our sample period is consistent with the range of 0.031 to 0.704 reported in Table 2 of Dichev and Tang (2009).
[16] These high R^2 values suggest differences in revenue accounting between GAAP and IFRS have few implications for our research design.

difference in R^2 is most apparent in the fourth fiscal quarter, consistent with our intuition that within-year errors that reverse in the fourth quarter decrease the usefulness of IFRS earnings for predicting earnings four quarters ahead. We attribute the differences in predictability to differences in IFRS's fully discrete and GAAP's integral method because the superiority of GAAP earnings predictability is not due to differences in revenue predictability.

We find that the usefulness of quarterly earnings for GAAP firms does not decline much over the year, falling from 58% in quarter 1 to 56% in quarter 4. In contrast, the decision usefulness of quarterly earnings for IFRS firms declines from 49% in quarter 1 to 38% in quarter 4. This pattern is also consistent with the discrete method's treatment of reversing shocks increasing the noise in fourth quarter earnings for IFRS firms.

In addition, we find GAAP earnings excluding U.S. discrete items have significantly higher decision usefulness than IFRS earnings excluding U.S. discrete items in all quarters (untabulated p-values < 0.01). Thus, the higher predictability of GAAP earnings relative to IFRS earnings is not solely attributable to U.S. discrete items. Further, GAAP and IFRS earnings excluding U.S. discrete items are not significantly more predictive of four-quarters-ahead earnings than as-reported GAAP and IFRS earnings, for high predictability firms except for GAAP in the first quarter (untabulated p-value = 0.07).

3.3.2. Matched U.S. GAAP and IFRS Sample, for four-quarters-ahead earnings and low annual earnings predictability

Panel B of Table 3 shows the decision usefulness of quarterly earnings for firms with

low annual earnings predictability.[17] We find that IFRS quarterly earnings are significantly more predictive of four-quarters-ahead earnings than GAAP quarterly earnings in quarters 1, 3, and 4 (untabulated p-values < 0.01). IFRS earnings excluding U.S. discrete items are also significantly more predictive than GAAP earnings excluding U.S. discrete items in quarters 1, 3, and 4. This difference again appears to be due to differences in cost measurement rather than differences in revenue predictability. The revenue predictability in quarters 1, 2, and 3 is not significantly different (untabulated p-values > 0.10). IFRS revenue predictability (90.5%) exceeds GAAP revenue predictability (88.4%) in quarter 4 (p-value < .05), although the magnitude of the difference is small. Overall, the results suggest that the discrete method of IFRS generates more useful quarterly earnings when annual earnings exhibit low predictability.

Intuitively, allocating costs and thus shocks to those costs evenly over the year results in lower predictability for GAAP when shocks are transitory because spreading the shock results in errors in more quarters.

3.3.3. Matched U.S. GAAP and IFRS Sample for annual earnings

We next consider how U.S. GAAP and IFRS quarterly earnings perform predicting annual earnings. Improved predictability of annual earnings was the primary selling point of the integral method. Because GAAP permits managers to ignore shocks that reverse during the year, it should have higher predictability if managers correctly estimate the persistence of shocks. We estimate the following ordinary least squares regression:

$$Earnings_y = \alpha + \beta Earnings_q + \varepsilon_y \quad (2)$$

[17] We focus on the top and bottom terciles of annual earnings predictability in our tabulation. In untabulated analysis we find no significant difference in the decision usefulness of GAAP and IFRS earnings for firms in the middle tercile.

where $Earnings_y$ equals U.S. GAAP or IFRS income before extraordinary items (IB) in year y. As in equation 1, $Earnings_q$ equals either as-reported GAAP or IFRS earnings (IBQ) in quarter q or earnings excluding U.S. discrete items. We again scale variables by the average of beginning and ending quarterly assets.

Table 4 shows results of our tests of how well quarterly earnings predict annual earnings. We focus on quarters 1-3 because fourth quarter earnings, together with the previously announced quarterly earnings, perfectly reveal this year's annual earnings. Panel A includes firms with high annual earnings predictability. We find GAAP's quarterly earnings in quarter 1 are more predictive of annual earnings than IFRS quarterly earnings (p-value < 0.10). GAAP and IFRS firms have similar predictive ability in quarter 2 and 3 (p-value > 0.10).

Panel B includes firms with low annual earnings predictability. GAAP quarterly earnings in quarters 1, 2, and 3 are more predictive of annual earnings than IFRS earnings (Q1 and Q2 p-values < 0.01 and Q3 p-value < 0.05). The integral method largely achieves the APB's objective to provide useful information about annual earnings.

3.3.4. Additional tests of predicting cash flows from operations and Street earnings

In additional tests, we examine the ability of GAAP and IFRS quarterly earnings to predict cash flows from operations (CFO) and analysts' Street earnings (*Street)* defined as I/B/E/S actual earnings for the same quarter a year ahead or for the current year. Table 5 shows the predictive power of quarterly as-reported earnings, earnings excluding U.S. discrete items, and CFO for four-quarters-ahead Street earnings and CFO. For brevity, we only tabulate the R^2 of the regressions. In Panel A, we examine firms with high annual earnings predictability. When predicting four-quarters-ahead Street earnings, GAAP

earnings have significantly greater predictive power (p-values < 0.01) in quarters 1, 2, and 4. In all quarters, GAAP earnings excluding U.S. discrete items outperform IFRS earnings excluding U.S. discrete items in predicting Street earnings. Additionally, CFO is more predictive of four-quarters-ahead CFO than earnings, measured under either IFRS or GAAP (untabulated). This result is consistent with recent evidence on the superior predictive ability of cash flows (Ball et al. 2016). Overall, for firms with high annual earnings predictability, we do not find IFRS earnings provide greater predictive power than GAAP earnings for four-quarters-ahead Street earnings or CFO.

For firms with low annual earnings predictability, Panel B shows that IFRS earnings have higher predictive power than GAAP earnings for four-quarters-ahead Street earnings only in quarter 1. IFRS earnings excluding U.S. discrete items have greater or equivalent predictive power than GAAP earnings excluding U.S. discrete items for Street earnings. Excluding U.S. discrete items results in GAAP and IFRS earnings numbers with higher predictive power for CFO and Street earnings than either as-reported GAAP or IFRS earnings.

Table 6 shows the predictive power of as-reported earnings, earnings excluding U.S. discrete items, and CFO for annual Street earnings and CFO. Consistent with the quarterly results, Panel A shows GAAP earnings excluding U.S. discrete items provide equal or better predictive power than IFRS earnings excluding U.S. discrete items for firms with high annual earnings predictability. For firms with low annual earnings predictability (Panel B) we find IFRS earnings have significantly greater predictive power than GAAP earnings for annual Street earnings in all quarters and for annual CFO in quarters 1, 2, and 3. We conclude the GAAP integral method results in superior predictive power for firms with high

annual earnings predictability. However, for the one-third of firms at the bottom of the annual earnings predictability distribution, the discrete method required under IFRS results in more predictive quarterly earnings for Street and CFO.

4. Value relevance of U.S. GAAP integral approach relative to IFRS discrete approach

We use the value relevance of quarterly earnings estimated using both stock price and stock returns as alternative measures of the decision usefulness of GAAP and IFRS quarterly earnings (Barth, Landsman, Lang and Williams 2012). We compare the increase in explanatory power from nested baseline models to the explanatory power of the model including either quarterly earnings or earnings surprises. We first estimate a price-levels regression:

$$Prc_q = \alpha + \beta_1 BVE_q + \beta_2 EPS_q + \sum \beta_j Industry + \varepsilon_q \quad (3)$$

where Prc_q equals the stock price the day after the quarterly earnings announcement. BVE_q equals the book value of equity measured as common shareholders' equity (CEQQ) divided by common shares outstanding (CSHOQ) at the end of the fiscal quarter. EPS_q equals income before extraordinary items (IBQ) divided by common shares outstanding. We include Fama-French 12 industry fixed effects.

Our first value relevance metric is the difference between the adjusted R^2 from the full model that includes quarterly earnings (equation 3) and the nested model that includes only book value of equity and industry fixed effects. We then compare the increase in adjusted R^2 for GAAP versus IFRS firms to test which accounting earnings provides greater information to investors.

Second, we estimate the value relevance of earnings surprises with the following return regression:

$$Ret_q = \alpha + \beta_1 Earnings_q + \beta_2 UE\_Earnings_q + \beta_3 Loss_q + \beta_4 Loss_q \times Earnings_q + \beta_5 Loss_q \times UE\_Earnings_q + \sum \beta_j Industry + \varepsilon_q \quad (4)$$

Ret_q equals 90-day stock returns beginning three days after the prior quarter earnings release. $Earnings_q$ equals income before extraordinary items (IBQ) divided by beginning of quarter market value of equity. $UE\_Earnings_q$ equals unexpected earnings measured as the seasonal change in accounting earnings with or without a growth factor. Without a growth factor, the seasonal change in accounting earnings equals the current quarterly income before extraordinary items (IBQ) minus four-quarters-prior quarterly earnings scaled by beginning of quarter market value of equity. For expected seasonal earnings growth, we multiply the seasonal change in accounting earnings by the prior quarterly earnings divided by five-quarters-prior quarterly earnings. $Loss_q$ is an indicator variable equal to 1 if earnings are negative and 0 otherwise. We interact $Loss_q$ with $Earnings_q$ and $UE\_Earnings_q$, and include Fama-French 12 industry fixed effects.

Our second value relevance metric is the difference between the adjusted R^2 from the full model including quarterly earnings (equation 4) and the adjust R^2 from a model that includes only industry fixed effects. We test for significant differences in the change in GAAP R^2 minus the change in IFRS R^2 using the empirical distribution of the differences from a bootstrapping procedure.[18]

[18] In the bootstrapping procedure, we randomly assign firm-quarters as either IFRS or US observations. We randomly match designated IFRS observations to designated US observations within each fiscal quarter and annual earnings predictability subsample and calculate the change in GAAP R^2 minus change in IFRS R^2 using the same sample size. Specifically, we randomly select IFRS or US observations from its fiscal quarter and annual earnings predictability subsample until the bootstrap sample size matches the regression test sample size. We obtain an empirical distribution of the change in GAAP R^2 minus change in IFRS R^2 by repeating the procedure 1,000 times with replacement. We report a difference as significant at the 0.10, 0.05, and 0.01 levels if the difference exceeds 900, 950, and 990 of the differences calculated from the procedure.

Our sample for this analysis starts with all firm-year observations in the earnings predictability tests (i.e., 3,616 firm-quarters in GAAP and IFRS each for high annual earnings predictability and 3,800 firm-quarters in GAAP and IFRS each for low annual earnings predictability in Tables 3 and 4). For price-level regressions, we require observations to have stock prices on the day after the quarterly earnings release, which yields 3,573 GAAP firm-quarters and 2,787 IFRS firm-quarters for high annual predictability and 3,771 GAAP firm-quarters and 3,018 IFRS firm-quarters for low annual predictability. For return regressions, we require observations to have 90-day stock returns starting 3 days after the prior-quarter earnings release and unexpected accounting earnings. We have 3,359 (3,551) GAAP firm-quarters and 2,713 (2,906) IFRS firm-quarters for high (low) annual predictability when unexpected earnings is measured without a growth factor. We have 3,206 (2,708) GAAP firm-quarters and 3,409 (2,901) IFRS firm-quarters for high (low) annual predictability when unexpected earnings is measured with a growth factor. Earnings, stock price and returns data are not available for all firm-quarters so the number of observations varies by quarter.

Table 7 reports results for price-level regressions. Table 7, Panel A shows results for the high annual earnings predictability setting. For IFRS firms, fixed effects and earnings explain a higher proportion of the variation in price than for GAAP firms. However, the increase in the adjusted R^2 for GAAP firms relative to IFRS firms from including earnings in the model indicates that GAAP firms' earnings capture more information that explains price, relative to IFRS firms' earnings across all four fiscal quarters.

Panel B shows that for firms with low annual earnings predictability, fixed effects and earnings explain a lower proportion of the variation in price for IFRS firms than for

GAAP firms. This contrasts with the high-predictability partition. We also find IFRS firms' earnings capture significantly more information that explains price in quarters 1 and 3. The explanatory power of GAAP and IFRS are not different in quarters 2 and 4. Consistent with our predictions, in the low-predictability setting GAAP earnings is less or similarly informative compared to IFRS earnings.

We corroborate this evidence with the returns regressions reported in Table 8. We report regressions using both the seasonal change in quarterly earnings and seasonal changes adjusted for growth to estimate expected earnings. Panel A shows that for firms with high annual earnings predictability abnormal GAAP earnings explain quarterly returns better than IFRS, but only in in quarters 1 and 2. In quarters 3 and 4, IFRS earnings better explain returns. For high predictability firms, GAAP earnings are smoothed, such that the early quarters provide a clear picture of annual earnings. In contrast, IFRS firms report deviations that subsequently reverse during the year. Thus the reversals in quarter 3 and 4 provide new information to the market.

For firms with low annual earnings predictability (Table 8 Panel B), IFRS earnings have significantly more explanatory power in quarter 4. Neither IFRS nor GAAP earnings yields consistently superior value relevance in quarters 1-3. This is consistent with our prediction that when mangers have difficulty estimating the likelihood of reversals, the two methods often yield similar predictive power. The superiority in quarter 4 is consistent with our expectations that the concentration of four-quarter adjustments under U.S. GAAP leads to lower informativeness in this quarter.

Overall, our value relevance tests confirm the benefits of the integral method approach for high predictability firms consistent with Table 3, Panel A. However, for low

predictability firms, the value relevance tests suggest the benefit to market participants from adopting a fully discrete approach may be modest.

5. Comparing frequency of discrete items, and cost behavior for U.S. GAAP and IFRS firms

In this section, we compare the frequency of U.S. discrete items and cost behavior for the full sample of GAAP and IFRS firms.

5.1. Frequency of U.S. Discrete Items under GAAP and IFRS

We first examine the frequency of exceptions to the GAAP integral method (*U.S. Discrete Items)* for both U.S. and IFRS firms as certain discrete items could be more common under U.S. GAAP or IFRS (e.g., fair value adjustments under IFRS). Table 9, Panel A reports a 2×2 matrix for GAAP firms and separately for IFRS firms that classifies observations based on both the presence of *U.S. Discrete Items* and whether Street earnings are equal to the firm's reported earnings. To increase comparability, we limit our classification of *U.S. Discrete Items* to firm quarters where the absolute amount of the discrete item is greater than $0.001 per share. Consistent with Table 2, U.S. GAAP firm-quarters (56.0%) are significantly more likely than IFRS firm-quarters (35.8%) to have *U.S. Discrete Items*. For lower predictability firms, we generally find that IFRS earnings has higher four-quarter-ahead predictability. This finding is inconsistent with IFRS firms having more discrete, one-time items but is consistent with the higher predictive power of IFRS earnings we observe in the low-predictability partition.

Panel A also compares sell-side analysts' adjustments for transitory items in GAAP and IFRS to determine whether the difference in the incidence of *U.S. Discrete Items* is due in part to their Compustat identification. For firm-quarters with *U.S. Discrete Items*, we find

that 64.7% of Street earnings do not equal GAAP earnings (4,294/6,633), but only 52.1% of Street earnings do not equal IFRS earnings (2,208/4,235). We conjecture the difference in the incidence of U.S. Discrete Items may be due, in part, to Compustat Global identifying fewer disclosed, discrete items for IFRS firms. Consistent with our conjecture, 44.8% (1,792/4,000) of IFRS firms with analyst-identified adjustments to earnings do not have discrete items, which is significantly larger than the 22.9% (1,276/5,570) of U.S. GAAP firms with analyst adjustments that do not have discrete items in Compustat.

Panel B of Table 9 similarly shows that for the full sample, the mean difference between Street and GAAP earnings (0.066) for U.S. firms is significantly greater than the mean difference of Street and IFRS earnings (0.029). Overall, earnings for IFRS firms have fewer analyst adjustments than do earnings for U.S. firms under GAAP. Although the IASB directs firms to disclose unusual interim items, our analysis suggests these disclosures do not lead to higher frequency or larger adjustments by analysts. However, our main analysis matched IFRS and GAAP firms on annual earnings predictability to control for these differences.

5.2. GAAP and IFRS Cost Behavior

We also examine differences in cost behavior for our full sample of GAAP and IFRS firms. Table 9, Panel C shows COGS and SG&A as a percent of sales for the same quarter and as a percent of total COGS or SG&A for the year. We partition the sample into terciles based on annual earnings predictability. Across all three predictability terciles, we find costs for both GAAP and IFRS behave as if they were a margin of sales, with an adjustment in the fourth quarter. For GAAP firms, quarterly COGS and SG&A are approximately one quarter of annual totals. However, for IFRS firms, SG&A as a percent of the annual total is

significantly different from 25% in Q1-Q3. This difference is consistent with the integral method permitting U.S. GAAP firms to smooth periodic costs by allocating them over the year while IFRS firms record the costs in the quarter they occur resulting in a more variable cost pattern.

6. Usefulness of U.S. GAAP integral approach relative to other U.S. measures

U.S. standard-setters could have other objectives our previous analyses do not address. We use U.S. firms to provide additional evidence on the value of treating some items as discrete events, while otherwise applying the integral method. Better understanding discrete event accounting is important because the events and transactions accounted for on a discrete basis in the U.S. have significant overlap with items termed "special" or "transitory" in the accounting literature. These discrete items also have significant overlap with non-GAAP earnings adjustments.[19] Special items reduce quarterly earnings predictability (Burgstahler, Jiambalvo, and Shevlin 2002), although special items themselves predict future earnings and cash flows (e.g., Dechow and Ge 2006, Jones and Smith 2011, Hsu and Kross 2011).

Research also documents the increasing frequency of these charges (Elliott and Hanna 1996) and the frequency with which they recur (Cready, Lopez, and Sisneros 2010). The current frequency of discrete items is particularly high compared to their frequency in 1973 when the APB first adopted the integral method. While the majority of the board

[19] Black et al. (2020) tabulate S&P 500 firms' non-GAAP exclusion data, which shows managers' exclusions substantially overlap with Compustat's special items. Black et al. (2020) find managers most frequent non-GAAP exclusions are for impairments, acquisitions, legal-related, divestitures, debt extinguishments, and investment items as special items. Compustat collects data for these items and defines them as special items. Less frequently, managers adjust for amortizations, stock compensation, pensions, interest expense, currency adjustments, and tax items, but Compustat does not include these items in their definition of special items.

members could ignore the relatively rare effect of discrete items in 1973, the concerns of dissenting members are more relevant today. Our next tests evaluate the usefulness of the GAAP integral approach relative to excluding discrete items for our full sample of U.S. firms. For the predictability of annual earnings, we expect that GAAP will outperform GAAP excluding discrete items, because annual earnings do include discrete items. GAAP quarterly earnings are significantly less useful than earnings excluding discrete items for predicting earnings four quarters ahead.

Table 10 shows the explanatory power of GAAP earnings excluding discrete items for four-quarter ahead earnings is significantly greater than the explanatory power of GAAP quarterly earnings in all quarters. Our evidence is consistent with studies that examine the predictive ability of non-GAAP annual earnings amounts (i.e. Burgstahler et al. 2002). We cannot evaluate a GAAP fully discrete method, however, because GAAP accounting does not reveal enough information to unwind the embedded integral estimates. Earnings excluding discrete items is also more useful at predicting four-quarters-ahead Street earnings and CFO. We expect this result because Street earnings and CFO frequently exclude discrete items.

In Table 11, we find that GAAP earnings does not have higher predictive power for annual GAAP earnings, although these earnings, by definition, include discrete charges. Earnings excluding discrete items consistently provide the highest predictability for predicting annual Street earnings or CFO while GAAP's integral method again provides the least predictability. Overall, these results show the predictive value of quarterly earnings under U.S. GAAP for future quarterly and annual earnings are significantly lower than earnings excluding discrete items. However, standard setters require additional reporting

for discrete items, which allows financial statement users to calculate alternative earnings measures like earnings excluding discrete items.

7. Conclusions

The role of quarterly earnings as information about a discrete earnings period, or as an integral part of the year, is one of the ongoing differences between U.S. and international accounting standards. We explore the decision usefulness of current U.S. GAAP earnings, which requires quarterly earnings numbers be prepared using a hybrid of the integral and discrete methods. APB 28, the 1973 accounting standard codified in ASC 270, explains that the usefulness of quarterly earnings rests on their relationship to annual earnings.

In a comparison of U.S. GAAP to IFRS, we find that the GAAP integral method has higher predictive ability for four-quarters-ahead earnings, but only when annual earnings are themselves highly predictable. Further, results of market tests also show greater decision usefulness for GAAP when earnings predictability is high. For the third of our sample firms for which annual earnings are not very predictable, the discrete method of IFRS has higher predictive ability for four-quarters-ahead earnings. When shocks to earnings do not reverse during the year, the integral method delays recognition of earnings that are informative about future earnings. IFRS quarterly earnings also have higher or equivalent usefulness in explaining price-levels and contemporaneous returns compared to GAAP earnings. Overall, our tests demonstrate that the GAAP integral method outperforms IFRS discrete method in settings where earnings are highly predictable, but the GAAP integral method is similar or underperforms the IFRS discrete method when earnings are not very predictable. We acknowledge we cannot evaluate GAAP as a fully discrete method as GAAP accounting does not reveal information to unwind integral method estimates.

In an analysis of only U.S. firms, we find GAAP quarterly earnings fall short of providing better predictability for annual earnings, compared to earnings excluding discrete items. Items treated as discrete under U.S. GAAP reduce the usefulness of quarterly earnings numbers for predicting annual and four-quarters-ahead earnings as well as cash flow from operations. Although these discrete items do appear to be adequately identified in the U.S., their lack of decision usefulness explains, in part, the demand for non-GAAP earnings numbers.

We acknowledge other measures of earnings usefulness that we do not consider. For example, the usefulness of earnings for contracting (Shivakumar 2013). However, by limiting our investigation to the explanatory power of quarterly earnings for annual earnings or four-quarters-ahead earnings with numerous earnings measures and the ability of earnings to explain stock returns, we triangulate our understanding of this one measure of usefulness that was the focus of the APB. Examination of other facets of the decision usefulness of quarterly earnings under different accounting methods is a promising avenue for further research.

Appendix: Differences in U.S. GAAP and IFRS' Earnings Definition and Compustat

In this appendix, we report differences between the definition of accounting earnings under U.S. GAAP and IFRS and the variable provided by Compustat.

Earnings (Income before extraordinary items) Definition under U.S. and Canadian GAAP
This item represents the income of a company after all expenses, including special items, income taxes, and minority interest, but before provisions for common and/or preferred dividends. This item does not reflect discontinued operations (appearing below taxes) or extraordinary items. This item includes, when reported below taxes: Amortization of intangibles; Equity in earnings of unconsolidated subsidiaries; Gain or loss on the sale of securities when they are a regular part of a company's operations; Shipping companies' operating differential subsidies (current and prior years).

Earnings (Income before extraordinary items) Definition for International Firms
This item represents income after the deduction of all expenses, including allocations to untaxed Balance Sheet reserves (if applicable), income taxes, minority interest, and net items, but before extraordinary items and provisions for dividends.

Certain country differences:
Austria: This item is adjusted to reflect income prior to allocations to/from free reserves (freie Rucklagen) and statutory reserves (gestzliche Rucklagen).

Germany: This item excludes: Profit (loss) carried forward from prior periods; Transfers or allocations to various equity reserves

Korea: Korean companies typically don't disclose Net Income/Loss after Net Items when the company reports 'Discontinued Operations.' Therefore, this item has been generated through a Compustat calculation: [(Net Income Incl. Extraord. Items - Declared Prf Dividends) * (EPS Excl. Extraord. Items / EPS Incl. Extraord. Items)] + Declared Prf Dividend

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Table 1
Sample Selection and Description

Panel A: Sample Selection

	# of IFRS Observations	# of GAAP Observations
Compustat & Compustat Global firm-quarters between 2009-2016 with greater than $100 million of average quarterly assets	26,650	74,566
Excluding LIFO firms	-	(7,000)
Excluding firm-quarters lacking four quarters in a fiscal year	(6,710)	(4,106)
Excluding firms without at least four years of data	(6,940)	(9,140)
Total firm-quarters before matching	13,000	54,320
Excluding non-matched firm-quarters	(1,164)	(42,484)
Total matched firm-quarters	**11,836**	**11,836**

Panel B: IFRS Sample Countries

Country	# of Firm-quarter Obs.	% of Sample
Canada	2,828	23.9%
Sweden	1,640	13.9%
Finland	1,496	12.6%
Norway	1,220	10.3%
Korea	1,036	8.8%
Germany	548	4.6%
Denmark	460	3.9%
Brazil	432	3.6%
Mexico	200	1.7%
Great Britain	196	1.7%
Switzerland	176	1.5%
Portugal	144	1.2%
Thailand	112	0.9%
India	100	0.8%
Israel	100	0.8%
Countries with < 100 obs.	1,148	9.7%
Total IFRS Observations	11,836	100%

Panel A of Table 1 presents the sample selection procedure for Tables 1-6. Panel B shows the countries included in the IFRS sample.

Table 2

Sample Descriptives

Panel A: GAAP Sample Descriptives

							GAAP vs IFRS Difference of Means			GAAP vs IFRS Equality of Medians	
	N	Mean	SD	P10	P50	P90	Diff	t-stat		Chi-Sq	
Avg. Total Assets$_q$	11,836	8,319	16,097	317	2,365	22,882	4,923	(12.8)	***	8.17	***
Rev$_q$	11,836	0.236	0.171	0.061	0.198	0.452	-0.008	(-4.0)	***	7.45	***
GAAP$_q$	11,836	0.011	0.027	-0.013	0.012	0.036	0.000	(0.7)		22.8	***
GAAP excl. U.S. DI$_q$	11,836	0.013	0.023	-0.008	0.013	0.037	0.000	(-1.0)		42.2	***
Indicator_DI$_q$	11,836	0.577	0.494	0	1	1	-0.203	(-32.0)	***	979	***
DI$_q$	11,836	-0.002	0.008	-0.006	0	0	0.000	(4.2)	***	35.7	***
CFO$_q$	11,836	0.028	0.036	-0.010	0.026	0.070	-0.003	(-5.8)	***	68.3	***
Street Earnings$_{q+4}$	11,836	0.016	0.021	-0.004	0.014	0.041	-0.003	(-11.6)	***	200	***
Rev$_y$	11,836	0.955	0.681	0.255	0.804	1.831	-0.036	(-4.3)	***	7.88	***
GAAP$_y$	11,836	0.042	0.089	-0.042	0.046	0.134	0.001	(1.0)		46.4	***
CFO$_y$	11,836	0.105	0.080	0.017	0.100	0.203	-0.007	(-6.9)	***	86.1	***
Street$_y$	11,836	0.058	0.066	-0.005	0.053	0.138	-0.008	(-9.6)	***	151	***

Panel A of Table 2 presents descriptive statistics for GAAP firms. Avg. Total Assets$_q$ equals the average of beginning and ending of quarterly total assets. Rev$_q$ equals sales (SALEQ). GAAP$_q$ equals income before extraordinary items (IBQ). GAAP excl. U.S. DI$_q$ equals income before extraordinary items minus current quarter's special items. Indicator_DI$_q$ is an indicator variable equal to 1 when DI$_q$ is nonzero and 0 otherwise. DI$_q$ equals special items (SPIQ). CFO$_q$ equals year-to-date cash flow from operations (OANCFY) for quarter q minus year-to-date cash flow from operations in quarter q-1. Street Earnings$_{q+4}$ equals IBES actual earnings for the quarter q+4. Rev$_y$ equals annual sales (SALE). GAAP$_y$ equals annual income before extraordinary items (IB). CFO$_y$ equals annual cash flow from operations (OANCF). Street$_y$ equals IBES annual actual earnings. Earnings variables are scaled by the average total assets.

Table 2

Sample Descriptives - *Continued*

Panel B: IFRS Sample Descriptives

	N	Mean	SD	P10	P50	P90
Avg. Total Assets$_q$	11,836	13,242	38,647	354	2,569	25,024
Rev$_q$	11,836	0.228	0.150	0.054	0.205	0.435
IFRS$_q$	11,836	0.011	0.022	-0.009	0.011	0.033
IFRS excl. U.S. DI$_q$	11,836	0.013	0.019	-0.006	0.012	0.034
Indicator_DI$_q$	11,836	0.374	0.484	0	0	1
DI$_q$	11,836	-0.002	0.008	-0.004	0	0
CFO$_q$	11,836	0.025	0.033	-0.010	0.022	0.063
Street Earnings$_{q+4}$	11,836	0.013	0.018	-0.003	0.011	0.035
Rev$_y$	11,836	0.919	0.602	0.223	0.829	1.736
IFRS$_y$	11,836	0.043	0.072	-0.032	0.041	0.122
CFO$_y$	11,836	0.098	0.073	0.016	0.091	0.190
Street$_y$	11,836	0.050	0.059	0.000	0.044	0.120

Panel B of Table 2 presents descriptive statistics for IFRS firms. Avg. Total Assets$_q$ equals the average of beginning and ending of quarterly total assets. Rev$_q$ equals sales (SALEQ). IFRS$_q$ equals income before extraordinary items (IBQ). IFRS excl. U.S. DI$_q$ equals income before extraordinary items minus current quarter's special items. Indicator_DI$_q$ is an indicator variable equal to 1 when DI$_q$ is nonzero and 0 otherwise. DI$_q$ equals special items (SPIQ). CFO$_q$ equals year-to-date cash flow from operations (OANCFY) for quarter q minus year-to-date cash flow from operations in quarter q-1. Street Earnings$_{q+4}$ equals IBES actual earnings for the quarter q+4. Rev$_y$ equals annual sales (SALE). IFRS$_y$ equals annual income before extraordinary items (IB). CFO$_y$ equals annual cash flow from operations (OANCF). Street$_y$ equals IBES annual actual earnings. Earnings variables are scaled by the average total assets.

Table 3

Panel A: GAAP and IFRS Quarterly Earnings Predictability for High Annual Earnings Predictability Firms

GAAP

	QTR=1		QTR=2		QTR=3		QTR=4	
Beta	Rev_{q+4}	$GAAP_{q+4}$	Rev_{q+4}	$GAAP_{q+4}$	Rev_{q+4}	$GAAP_{q+4}$	Rev_{q+4}	$GAAP_{q+4}$
Rev_q	1.094		1.092		1.103		1.119	
$GAAP_q$		0.838		0.870		0.872		0.802
GAAP excl. U.S. DI_q		0.915		0.919		0.915		0.908
R-squared								
Rev_q	0.900		0.920		0.904		0.904	
$GAAP_q$		0.581***		0.671***		0.606***		0.562***
GAAP excl. U.S. DI_q		0.615***,†		0.674***		0.616***		0.599***

IFRS

	QTR=1		QTR=2		QTR=3		QTR=4	
Beta	Rev_{q+4}	$IFRS_{q+4}$	Rev_{q+4}	$IFRS_{q+4}$	Rev_{q+4}	$IFRS_{q+4}$	Rev_{q+4}	$IFRS_{q+4}$
Rev_q	1.135		1.101		1.120		1.088	
$IFRS_q$		0.733		0.783		0.823		0.650
IFRS excl. U.S. DI_q		0.761		0.802		0.851		0.655
R-squared								
Rev_q	0.905		0.922		0.928***		0.919*	
$IFRS_q$		0.497		0.505		0.525		0.381†
IFRS excl. U.S. DI_q		0.510		0.502		0.511		0.332

Panel A of Table 3 presents the GAAP and IFRS estimates for the beta coefficient and R-squared of the univariate regression of quarter q+4 earnings on quarter q earnings for high annual earnings predictability firms. IFRS firms are matched to US GAAP firm-quarters on industry, size, and annual earnings predictability. Variables are defined in Table 2. We denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively for a test of equality of correlation matrices across GAAP and IFRS samples (***, **, and *) and for a Vuong test between GAAPq and GAAP excl. U.S. DIq (†††, ††, and †) or between IFRSq and IFRS excl. U.S. DIq (†††, ††, and †).

Table 3

Panel B: GAAP and IFRS Quarterly Earnings Predictability for Firms with Low Annual Earnings Predictability Firms

GAAP

	QTR=1		QTR=2		QTR=3		QTR=4	
Beta	Rev_{q+4}	$GAAP_{q+4}$	Rev_{q+4}	$GAAP_{q+4}$	Rev_{q+4}	$GAAP_{q+4}$	Rev_{q+4}	$GAAP_{q+4}$
Rev_q	1.004		1.011		1.003		1.007	
$GAAP_q$		0.338		0.454		0.395		0.278
GAAP excl. U.S. DI_q		0.386		0.563		0.530		0.354
R-squared								
Rev_q	0.897		0.891		0.898		0.884	
$GAAP_q$		0.141		0.190		0.143		0.063
GAAP excl. U.S. DI_q		0.154		0.228††		0.168†		0.066

IFRS

	QTR=1		QTR=2		QTR=3		QTR=4	
Beta	Rev_{q+4}	$IFRS_{q+4}$	Rev_{q+4}	$IFRS_{q+4}$	Rev_{q+4}	$IFRS_{q+4}$	Rev_{q+4}	$IFRS_{q+4}$
Rev_q	1.055		1.067		1.064		1.068	
$IFRS_q$		0.588		0.461		0.494		0.418
IFRS excl. U.S. DI_q		0.639		0.512		0.641		0.545
R-squared								
Rev_q	0.905		0.902		0.903		0.905**	
$IFRS_q$		0.309***		0.179		0.240***		0.180***
IFRS excl. U.S. DI_q		0.325***		0.181		0.292***,†††		0.214***,†

Panel B of Table 3 presents the GAAP and IFRS estimates for the beta coefficient and R-squared of the univariate regression of quarter q+4 earnings on quarter q earnings for low annual earnings predictability firms. IFRS firms are matched to US GAAP firm-quarters on industry, size, and annual earnings predictability. Variables are defined in Table 2. We denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively for a test of equality of correlation matrices across GAAP and IFRS samples (***, **, and *) and for a Vuong test between GAAPq and GAAP excl. U.S. DIq (†††, ††, and †) or between IFRSq and IFRS excl. U.S. DIq (†††, ††, and †).

Table 4

Panel A: GAAP and IFRS Annual Earnings Predictability for High Annual Earnings Predictability Firms

GAAP								
	QTR=1		QTR=2		QTR=3		QTR=4	
Beta	Rev_y	$GAAP_y$	Rev_y	$GAAP_y$	Rev_y	$GAAP_y$	Rev_y	$GAAP_y$
Rev_q	4.174		3.945		3.864		3.634	
$GAAP_q$		3.143		2.897		3.148		2.026
GAAP excl. U.S. DI_q		3.242		3.004		3.222		2.286
R-squared								
Rev_q	0.951		0.958***		0.967***		0.929	
$GAAP_q$		0.700*,†		0.678		0.726††		0.528
GAAP excl. U.S. DI_q		0.661		0.656		0.704		0.558

IFRS								
	QTR=1		QTR=2		QTR=3		QTR=4	
Beta	Rev_y	$IFRS_y$	Rev_y	$IFRS_y$	Rev_y	$IFRS_y$	Rev_y	$IFRS_y$
Rev_q	4.357		3.902		3.796		3.483	
$IFRS_q$		3.504		3.458		3.432		2.199
IFRS excl. U.S. DI_q		3.512		3.511		3.401		2.148
R-squared								
Rev_q	0.945		0.941		0.933		0.934	
$IFRS_q$		0.653††		0.696†		0.755†		0.695***,†††
IFRS excl. U.S. DI_q		0.623		0.680		0.675		0.568

Panel A of Table 4 presents the GAAP and IFRS estimates for the beta coefficient and R-squared of the univariate regression of annual earnings on quarterly earnings by fiscal quarter for high annual earnings predictability firms. IFRS firms are matched to US GAAP firms on industry, size, and annual earnings predictability. Variables are defined in Table 2. We denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively for a test of equality of correlation matrices across GAAP and IFRS samples (***, **, and *) and for a Vuong test between GAAPq and GAAP excl. U.S. DIq (†††, ††, and †) or between IFRSq and IFRS excl. U.S. DIq (†††, ††, and †).

Table 4

Panel B: GAAP and IFRS Annual Earnings Predictability for Low Annual Earnings Predictability Firms

GAAP								
	QTR=1		QTR=2		QTR=3		QTR=4	
Beta	Rev_y	$GAAP_y$	Rev_y	$GAAP_y$	Rev_y	$GAAP_y$	Rev_y	$GAAP_y$
Rev_q	4.118		3.991		3.854		3.558	
$GAAP_q$		2.484		2.573		2.466		2.073
GAAP excl. U.S. DI_q		2.703		2.855		2.960		2.434
R-squared								
Rev_q	0.949***		0.943**		0.962***		0.934	
$GAAP_q$		0.506***		0.595***		0.632**,†		0.525†††
GAAP excl. U.S. DI_q		0.500***		0.571***		0.591**		0.468
IFRS								
	QTR=1		QTR=2		QTR=3		QTR=4	
Beta	Rev_y	$IFRS_y$	Rev_y	$IFRS_y$	Rev_y	$IFRS_y$	Rev_y	$IFRS_y$
Rev_q	4.171		3.934		3.734		3.651	
$IFRS_q$		2.661		3.181		2.568		1.916
IFRS excl. U.S. DI_q		2.767		3.152		2.883		1.955
R-squared								
Rev_q	0.916		0.931		0.927		0.928	
$IFRS_q$		0.386†		0.517††		0.569††		0.653***,†††
IFRS excl. U.S. DI_q		0.370		0.413		0.519		0.475

Panel B of Table 4 presents the GAAP and IFRS estimates for the beta coefficient and R-squared of the univariate regression of annual earnings on quarterly earnings by fiscal quarter for low annual earnings predictability firms. IFRS firms are matched to US GAAP firms on industry, size, and annual earnings predictability. Variables are defined in Table 2. We denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively for a test of equality of correlation matrices across GAAP and IFRS samples (***, **, and *) and for a Vuong test between GAAPq and GAAP excl. U.S. DIq (†††, ††, and †) or between IFRSq and IFRS excl. U.S. DIq (†††, ††, and †).

Table 5

Panel A: Predicting Quarterly Street Earnings and CFO for High Annual Earnings Predictability Firms

GAAP

	QTR=1		QTR=2		QTR=3		QTR=4	
R-squared	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}
$GAAP_q$	0.585***	0.195	0.640***	0.225	0.535	0.203	0.602***	0.371***
GAAP excl. U.S. DI_q	0.621***,†	0.218**,††	0.648***	0.232	0.558*,†	0.215	0.702***,†††	0.438***,†††
CFO_q	0.261***	0.465**	0.308***	0.417*	0.353***	0.490***	0.527***	0.742***

IFRS

	QTR=1		QTR=2		QTR=3		QTR=4	
R-squared	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}
$IFRS_q$	0.488	0.148	0.495	0.196	0.498	0.184	0.351	0.079
IFRS excl. U.S. DI_q	0.503	0.151	0.504	0.198	0.498	0.199	0.342	0.087
CFO_q	0.154	0.385	0.161	0.356	0.166	0.267	0.058	0.337

Panel A of Table 5 presents the GAAP and IFRS estimates for the R-squared of the univariate regression of quarter q+4 Street earnings and cash flow from operations on quarter q earnings, earnings excluding U.S. discrete items, and cash flow from operations for high annual earnings predictability firms. IFRS firms are matched to US GAAP firm-quarters on industry, size, and annual earnings predictability. Variables are defined in Table 2. We denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively for a test of equality of correlation matrices across GAAP and IFRS samples (***, **, and *) and for a Vuong test between GAAPq and GAAP excl. U.S. DIq (†††, ††, and †) or between IFRSq and IFRS excl. U.S. DIq (†††, ††, and †).

Table 5

Panel B: Predicting Quarterly Street Earnings and CFO for Low Annual Earnings Predictability Firms

GAAP

	QTR=1		QTR=2		QTR=3		QTR=4	
R-squared	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}
$GAAP_q$	0.258	0.021	0.285	0.107*	0.231	0.024	0.175	0.100
GAAP excl. U.S. DI_q	0.290††	0.016†	0.348†††	0.131**	0.298†††	0.038	0.203	0.113
CFO_q	0.050	0.369	0.181***	0.355*	0.071	0.418***	0.138	0.428***

IFRS

	QTR=1		QTR=2		QTR=3		QTR=4	
R-squared	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}	$Street_{q+4}$	CFO_{q+4}
$IFRS_q$	0.331**	0.062**	0.285	0.063	0.287	0.099***	0.190	0.078
IFRS excl. U.S. DI_q	0.358*,†††	0.062***	0.322†††	0.073†	0.359*,†††	0.134***,†††	0.209	0.080
CFO_q	0.036	0.313	0.072	0.295	0.156***	0.283	0.119	0.321

Panel B of Table 5 presents the GAAP and IFRS estimates for the beta coefficient and R-squared of the univariate regression of quarter q+4 Street earnings and cash flow from operations on quarter q earnings, earnings excluding U.S. discrete items, and cash flow from operations for low annual earnings predictability firms. IFRS firms are matched to US GAAP firm-quarters on industry, size, and annual earnings predictability. Variables are defined in Table 2. We denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively for a test of equality of correlation matrices across GAAP and IFRS samples (***, **, and *) and for a Vuong test between GAAPq and GAAP excl. U.S. DIq (†††, ††, and †) or between IFRSq and IFRS excl. U.S. DIq (†††, ††, and †).

Table 6

Panel A: Predicting Annual Street Earnings and CFO for High Annual Predictability Firms

GAAP

	QTR=1		QTR=2		QTR=3		QTR=4	
R-squared	$Street_y$	CFO_y	$Street_y$	CFO_y	$Street_y$	CFO_y	$Street_y$	CFO_y
$GAAP_q$	0.636	0.441**	0.618	0.406	0.689	0.443	0.442	0.259
GAAP excl. U.S. DI_q	0.683***,†††	0.452***	0.639	0.437†	0.724**,†	0.465†	0.535††	0.331*,††
CFO_q	0.228	0.398	0.204	0.390	0.267	0.411	0.267***	0.333

IFRS

	QTR=1		QTR=2		QTR=3		QTR=4	
R-squared	$Street_y$	CFO_y	$Street_y$	CFO_y	$Street_y$	CFO_y	$Street_y$	CFO_y
$IFRS_q$	0.622	0.356	0.609	0.356	0.665	0.395	0.476	0.210
IFRS excl. U.S. DI_q	0.615	0.363	0.631††	0.375††	0.669	0.417	0.491	0.269††
CFO_q	0.209	0.428	0.197	0.412	0.227	0.454	0.128	0.359

Panel A of Table 6 presents the GAAP and IFRS estimates for the beta coefficient and R-squared of the univariate regression of annual Street earnings and cash flow from operations on quarterly earnings, earnings excluding U.S. discrete items, and cash flow from operations by fiscal quarter for high annual earnings predictability firms. IFRS firms are matched to US GAAP firms on industry, size, and annual earnings predictability. Variables are defined in Table 2. We denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively for a test of equality of correlation matrices across GAAP and IFRS samples (***, **, and *) and for a Vuong test between GAAPq and GAAP excl. U.S. DIq (†††, ††, and †) or between IFRSq and IFRS excl. U.S. DIq (†††, ††, and †).

Table 6

Panel B: Predicting Annual Street Earnings and CFO for Low Annual Earnings Predictability Firms

GAAP

	QTR=1		QTR=2		QTR=3		QTR=4	
R-squared	$Street_y$	CFO_y	$Street_y$	CFO_y	$Street_y$	CFO_y	$Street_y$	CFO_y
$GAAP_q$	0.320	0.124	0.370	0.160	0.380	0.130	0.252	0.077
GAAP excl. U.S. DI_q	0.360†††	0.132	0.427††	0.161	0.478†††	0.162†	0.301	0.071
CFO_q	0.066	0.333**	0.142	0.413	0.164	0.381	0.185	0.330*

IFRS

	QTR=1		QTR=2		QTR=3		QTR=4	
R-squared	$Street_y$	CFO_y	$Street_y$	CFO_y	$Street_y$	CFO_y	$Street_y$	CFO_y
$IFRS_q$	0.387**	0.221***	0.434*	0.223*	0.457**	0.233***	0.389***	0.086
IFRS excl. U.S. DI_q	0.409††	0.233***	0.451	0.242**,†	0.544**,†††	0.300***,†††	0.374**	0.102
CFO_q	0.047	0.260	0.133	0.417	0.204	0.427	0.159	0.270

Panel B of Table 6 presents the GAAP and IFRS estimates for the beta coefficient and R-squared of the univariate regression of annual Street earnings and cash flow from operations on quarterly earnings, earnings excluding U.S. discrete items, and cash flow from operations by fiscal quarter for low annual earnings predictability firms. IFRS firms are matched to US GAAP firms on industry, size, and annual earnings predictability. Variables are defined in Table 2. We denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively for a test of equality of correlation matrices across GAAP and IFRS samples (***, **, and *) and for a Vuong test between GAAPq and GAAP excl. U.S. DIq (†††, ††, and †) or between IFRSq and IFRS excl. U.S. DIq (†††, ††, and †).

Table 7

Panel A: Price Regressions for High Annual Earnings Predictability Firms

	GAAP				IFRS			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Observations	889	897	894	893	686	692	695	714
Nested Model R^2	0.393	0.376	0.390	0.398	0.830	0.827	0.821	0.806
Full Model R^2	0.554	0.587	0.560	0.488	0.874	0.851	0.836	0.818
ΔR^2	0.161	0.211	0.170	0.090	0.044	0.024	0.015	0.012
ΔGAAP R^2– ΔIFRS R^2	0.117	0.187	0.155	0.078				
Significance	***	***	***	***				

Panel A of Table 7 presents the R-squared values from price regressions for GAAP and IFRS quarterly earnings from high annual earnings predictability firms. ΔR^2 equals the full model R^2 minus the nested model R^2 and shows the increase in explanatory power for stock price from accounting earnings. ΔGAAP R^2– ΔIFRS R^2 equals GAAP's ΔR^2 minus IFRS's ΔR^2. ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively.

Table 7

Panel B: Price Regressions for Low Annual Earnings Predictability Firms

	GAAP				IFRS			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Observations	944	948	942	937	741	752	751	774
Nested Model R^2	0.397	0.401	0.415	0.404	0.159	0.138	0.150	0.171
Full Model R^2	0.441	0.491	0.496	0.458	0.312	0.265	0.305	0.212
ΔR^2	0.044	0.090	0.081	0.054	0.153	0.127	0.155	0.041
ΔGAAP R^2– ΔIFRS R^2	-0.109	-0.037	-0.074	0.013				
Significance	**	n.s.	*	n.s.				

Panel B of Table 7 presents the R-squared values from price regressions for GAAP and IFRS quarterly earnings from low annual earnings predictability firms. ΔR^2 equals the full model R^2 minus the nested model R^2 and shows the increase in explanatory power for stock price from accounting earnings. ΔGAAP R^2– ΔIFRS R^2 equals GAAP's ΔR^2 minus IFRS's ΔR^2. ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively.

Table 8

Panel A: Return Regressions for High Annual Earnings Predictability Firms

	GAAP				IFRS			
Seasonal change in quarterly earnings with growth								
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Observations	644	868	858	836	665	676	680	687
Nested Model R^2	0.007	0.041	0.023	0.011	0.017	0.039	0.007	0.050
Full Model R^2	0.090	0.082	0.037	0.014	0.053	0.067	0.059	0.104
ΔR^2	0.083	0.041	0.014	0.003	0.036	0.028	0.052	0.054
ΔGAAP R^2 – ΔIFRS R^2	0.047	0.013	-0.038	-0.051				
Significance	***	*	**	***				
Seasonal change in quarterly earnings without growth								
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Observations	782	873	865	839	668	677	681	687
Nested Model R^2	0.019	0.043	0.022	0.011	0.017	0.039	0.007	0.050
Full Model R^2	0.126	0.086	0.036	0.021	0.044	0.072	0.047	0.096
ΔR^2	0.107	0.043	0.014	0.010	0.027	0.033	0.040	0.046
ΔGAAP R^2 – ΔIFRS R^2	0.080	0.010	-0.026	-0.036				
Significance	***	n.s.	*	**				

Panel A of Table 8 presents the R-squared values from return regressions for GAAP and IFRS quarterly earnings from high annual earnings predictability firms. ΔR^2 equals the full model R^2 minus the nested model R^2 and shows the increase in explanatory power for stock returns from the seasonal change in quarterly accounting earnings with growth and without growth. ΔGAAP R^2 – ΔIFRS R^2 equals GAAP's ΔR^2 minus IFRS's ΔR^2. ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively.

Table 8

Panel B: Return Regressions for Low Annual Earnings Predictability Firms

	GAAP				IFRS			
Seasonal change in quarterly earnings with growth								
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Observations	703	908	907	891	720	720	728	733
Nested Model R^2	0.012	0.012	0.014	0.021	0.018	0.022	0.024	0.046
Full Model R^2	0.051	0.027	0.047	0.032	0.061	0.061	0.052	0.089
ΔR^2	0.039	0.015	0.033	0.011	0.043	0.039	0.028	0.043
ΔGAAP R^2 – ΔIFRS R^2	-0.004	-0.024	0.005	-0.032				
Significance	n.s.	n.s.	n.s.	**				
Seasonal change in quarterly earnings without growth								
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Observations	835	912	912	892	721	721	731	733
Nested Model R^2	0.010	0.011	0.014	0.021	0.018	0.022	0.023	0.046
Full Model R^2	0.154	0.023	0.036	0.039	0.050	0.076	0.058	0.094
ΔR^2	0.144	0.012	0.022	0.018	0.032	0.054	0.035	0.048
ΔGAAP R^2 – ΔIFRS R^2	0.112	-0.042	-0.013	-0.030				
Significance	***	*	n.s.	*				

Panel B of Table 8 presents the R-squared values from return regressions for GAAP and IFRS quarterly earnings from low annual earnings predictability firms. ΔR^2 equals the full model R^2 minus the nested model R^2 and shows the increase in explanatory power for stock returns from the seasonal change in quarterly accounting earnings with growth and without growth. ΔGAAP R^2 − ΔIFRS R^2 equals GAAP's ΔR^2 minus IFRS's ΔR^2. ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively.

Table 9

Comparison of Street Earnings and U.S. Discrete Items for U.S. GAAP and IFRS

Panel A: Comparison of Street earnings and U.S. Discrete Items for U.S. GAAP and IFRS

	U.S. Discrete Items			
	Yes	No	Row Total	% of Obs.
Street = GAAP	2,339	3,927	6,266	52.9%
Street ≠ GAAP	4,294	1,276	5,570	47.1%
Column Total	6,633	5,203		
% of Obs.	56.0%	44.0%		11,836

	Yes	No	Row Total	% of Obs.
Street = IFRS	2,027	5,809	7,836	66.2%
Street ≠ IFRS	2,208	1,792	4,000	33.8%
Column Total	4,235	7,601		
% of Obs.	35.8%	64.2%		11,836

Panel B: Magnitude of Difference (per share) between Street & U.S. GAAP or IFRS Earnings

	N	Mean	STD	P5	P10	P25	P50	P75	P90	P95
(Street - GAAP)	11,836	0.066	0.195	-0.210	-0.057	0	0	0.093	0.340	0.611
(Street - IFRS)	11,836	0.029	0.191	-0.348	-0.126	0	0	0.024	0.236	0.560
Difference		.037***	0.003							

Table 9 shows the relationship between discrete items and the exclusion of discrete items from Street earnings for GAAP and IFRS earnings. 'Street = GAAP' and 'Street = IFRS' when the absolute difference between earning measures is less than 0.001 cents per share. 'Street ≠ GAAP' and ''Street ≠ IFRS' when the absolute difference between earning measures is greater than or equal to 0.001 cents per share. A firm has a U.S. Discrete Items ('Yes') if the absolute discrete item is greater than 0.001 cents per share and 'No' if less than 0.001 cents per share.

Table 9

Panel C: U.S. GAAP and IFRS Cost Behavior

	GAAP				IFRS			
	Low Annual Earnings Predictability							
Quarter	1	2	3	4	1	2	3	4
Num. Obs.	852	852	852	852	907	907	907	907
$COGS_q/Sale_q$	0.638	0.628	0.616	0.640	0.616	0.616	0.612	0.586
$SG\&A_q/Sale_q$	0.218	0.206	0.199	0.205	0.157	0.154	0.150	0.238
$COGS_q/COGS_y$	0.231	0.246	0.252	0.267	0.242	0.254	0.257	0.248
$SG\&A_q/SG\&A_y$	0.241	0.245	0.247	0.266	0.206	0.209	0.204	0.378
	Medium Annual Earnings Predictability							
Quarter	1	2	3	4	1	2	3	4
Num. Obs.	1,006	1,006	1,006	1,006	1,048	1,048	1,048	1,048
$COGS_q/Sale_q$	0.630	0.616	0.634	0.658	0.626	0.626	0.626	0.605
$SG\&A_q/Sale_q$	0.203	0.195	0.193	0.196	0.152	0.153	0.148	0.199
$COGS_q/COGS_y$	0.233	0.240	0.251	0.273	0.242	0.249	0.252	0.257
$SG\&A_q/SG\&A_y$	0.242	0.244	0.248	0.266	0.219	0.226	0.218	0.335
	High Annual Earnings Predictability							
Quarter	1	2	3	4	1	2	3	4
Num. Obs.	817	817	817	817	791	791	791	791
$COGS_q/Sale_q$	0.568	0.569	0.555	0.558	0.602	0.598	0.599	0.545
$SG\&A_q/Sale_q$	0.259	0.251	0.244	0.241	0.171	0.162	0.159	0.240
$COGS_q/COGS_y$	0.232	0.247	0.252	0.267	0.249	0.257	0.260	0.234
$SG\&A_q/SG\&A_y$	0.240	0.244	0.250	0.266	0.210	0.215	0.217	0.353

Table 9 Panel C shows the means of quarterly cost of goods sold and sales, general, and administrative expenses scaled by quarterly sales and annual cost of goods sold or annual sales, general, and administrative expenses by U.S. GAAP and IFRS, annual earnings predictability tercile, and fiscal quarter. Missing quarterly cost of goods sold and sales, general, and administrative expenses are set to zero. Annual cost of goods sold and sales, general, and administrative expenses equals the sum of the four quarterly amounts. We exclude observations with zero annual costs of goods sold or sales, general, and administrative expenses.

Table 10

U.S. GAAP Quarterly Earnings Predictiveness for Four-Quarter Ahead Earnings

Quarter 1

Beta	Rev_{q+4}	$GAAP_{q+4}$	$Street_{q+4}$	CFO_{q+4}
Rev_q	1.054			
$GAAP_q$		0.689	0.697	0.643
GAAP excl. DI_q		0.777	0.780	0.724
R-squared				
Rev_q	0.917			
$GAAP_q$		0.429	0.500	0.142
GAAP excl. DI_q		0.468***	0.544***	0.155***

Quarter 2

Beta	Rev_{q+4}	$GAAP_{q+4}$	$Street_{q+4}$	CFO_{q+4}
Rev_q	1.052			
$GAAP_q$		0.624	0.614	0.533
GAAP excl. DI_q		0.764	0.745	0.668
R-squared				
Rev_q	0.916			
$GAAP_q$		0.358	0.450	0.147
GAAP excl. DI_q		0.415***	0.523***	0.179***

Quarter 3

Beta	Rev_{q+4}	$GAAP_{q+4}$	$Street_{q+4}$	CFO_{q+4}
Rev_q	1.056			
$GAAP_q$		0.591	0.588	0.538
GAAP excl. DI_q		0.746	0.731	0.697
R-squared				
Rev_q	0.918			
$GAAP_q$		0.313	0.421	0.151
GAAP excl. DI_q		0.369***	0.495***	0.188***

Quarter 4

Beta	Rev_{q+4}	$GAAP_{q+4}$	$Street_{q+4}$	CFO_{q+4}
Rev_q	1.051			
$GAAP_q$		0.433	0.391	0.379
GAAP excl. DI_q		0.657	0.606	0.614
R-squared				
Rev_q	0.922			
$GAAP_q$		0.175	0.282	0.108
GAAP excl. DI_q		0.232***	0.401***	0.163***

Table 10 presents the estimates for beta coefficients and R-squareds of univariate regressions of quarter q+4 earnings on quarter q earnings by fiscal quarter. Variables are defined in Panel A of Table 2. ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail) for a Vuong test between GAAPq and GAAP excl. U.S. DIq.

Table 11

U.S. Quarterly Earnings Predictiveness for Annual Earnings

Quarter 1

Beta	Rev_y	$GAAP_y$	$Street_y$	CFO_y
Rev_q	4.005			
$GAAP_q$		3.296	2.645	2.269
GAAP excl. DI_q		3.552	2.933	2.566
R-squared				
Rev_q	0.958			
$GAAP_q$		0.567	0.603	0.319
GAAP excl. DI_q		0.565	0.645***	0.350***

Quarter 2

Beta	Rev_y	$GAAP_y$	$Street_y$	CFO_y
Rev_q	3.892			
$GAAP_q$		3.088	2.403	2.032
GAAP excl. DI_q		3.503	2.865	2.505
R-squared				
Rev_q	0.964			
$GAAP_q$		0.616	0.599	0.316
GAAP excl. DI_q		0.613	0.673***	0.372***

Quarter 3

Beta	Rev_y	$GAAP_y$	$Street_y$	CFO_y
Rev_q	3.927			
$GAAP_q$		2.946	2.303	1.863
GAAP excl. DI_q		3.440	2.818	2.397
R-squared				
Rev_q	0.964			
$GAAP_q$		0.638	0.607	0.303
GAAP excl. DI_q		0.643	0.691***	0.370***

Quarter 4

Beta	Rev_y	$GAAP_y$	$Street_y$	CFO_y
Rev_q	3.777			
$GAAP_q$		2.164	1.428	1.071
GAAP excl. DI_q		2.817	2.155	1.704
R-squared				
Rev_q	0.949			
$GAAP_q$		0.645	0.415	0.188
GAAP excl. DI_q		0.629***	0.559***	0.273***

Table 11 presents the estimates for beta coefficients and R-squareds of univariate regressions of annual earnings on quarterly earnings by fiscal quarter. Variables are defined in Panel A of Table 2. ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail) for a Vuong test between GAAPq and GAAP excl. U.S. DIq.