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Benefits and Costs of Auditor's
Assurance: Evidence from the
Review of Quarterly Financial
Statements

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ABSTRACT

Even though there is a worldwide consensus as to the necessity of an audit of annual financial statements for public companies, there is divergence of views as to the review of interim financial statements. While some jurisdictions make it mandatory (e.g., Australia, France, US), others allow the review without requiring it (e.g., Canada, UK). Using a sample of companies listed in Canada, we examine the costs associated with these reviews and the benefits they generate in terms of improvement in the quality of interim financial statements for the years 2004 and 2005. Controlling for the decision to purchase the reviews, we find that audit fees are 18 percent higher for firms with interim reviews and, contrary to many regulators' assumption, we find no evidence that this cost increase is proportionally higher for smaller firms.

Regarding the benefits of interim reviews, we find no significant association between either accruals- or non accruals-based measures of earnings management and the fact that the interim statements are reviewed by the auditor, neither in the interim reports nor in those of the fourth quarter. The results suggest that auditors' involvement with interim reports may not be as effective as previously thought at controlling the quality of interim financial statements.

Keywords: Interim Financial Reporting, Auditor Reviews, Regulation, Audit Fees, Unexpected Accruals.

JEL Classifications: G38, M41, M49

Benefits and Costs of Auditor's Assurance: Evidence from the Review of Quarterly Financial Statements

1. Introduction

The typical response of regulators to accounting scandals has been to increase auditors' involvement with the financial statements. The most obvious and recent example of such reaction has been the introduction of the Sarbanes-Oxley Act of 2002 (SOX, hereafter) which requires the attestation by the auditor of the internal control over financial reporting. A few years earlier, upon the recommendation of the Blue Ribbon Committee, the Securities and Exchange Commission (SEC) introduced the requirement that external auditors be involved in the preparation of interim financial reports by performing, at the end of each quarter, a review of the financial statements, referred to as "interim review".¹ The benefits and costs of this important change in auditors' duties and responsibility have been debated over the last decade (e.g., Crawford Committee 2003; Boritz 2006) but the evidence on its effects is scarce.²

This study tries to fill this gap by examining the costs and benefits associated with the auditor's review of quarterly financial statements in a setting where interim reviews are not mandatory. We focus on quarterly financial statements because they play an important role in equity markets (Wiedman 2007) and because their reliability has been

¹ In the US, an interim review is called a timely review to differentiate it from the retrospective review, where the auditor reviews the interim reports as part of the year-end audit engagement. Retrospective reviews were performed before the introduction of the SEC's (1999a) requirement for interim reviews.

² Ettredge, Simon, Smith and Stone (1994; 2000a; 2000b) and Manry, Tiras, and Wheatley (2003) examine the increase in financial reporting quality, which constitutes one of the benefits of the auditor's involvement, between firms with interim vs. retrospective reviews of quarterly data.

questioned (McEwen and Schwartz 1992; Brown and Pinello 2007). In addition, national regulations regarding interim reviews vary; the reviews are mandatory for all public companies in some jurisdictions (e.g., Australia, France, US) and not in others (e.g., Canada, UK, Spain). Such diversity suggests that there is no consensus that the benefits of this type of regulation exceed its cost. The debate on this issue is not closed, however. For example, in 2006 the Capital Markets Leadership Task Force, a group initiated by the major CA firms and the CA profession in Canada, accepted a Discussion Paper (Boritz 2006) proposing to make interim reviews mandatory. Moreover, in April 2013 the Auditing and Assurance Standards Board of Canada has put on its agenda the revision of the standard on Auditor Review of Interim Financial Statements (Auditing and Assurance Standards Board of Canada 2013).

Interim reviews are believed to improve the quality of interim reporting by allowing the timely consideration of significant accounting matters affecting the interim financial statements and reducing the likelihood of restatements or other adjustments in the fourth quarter (SEC, 1999). There is obviously a cost associated with interim reviews, but it has been argued that these costs are mitigated by a reduction of the audit work necessary at year-end (Arthur Andersen LLP 1999).

Critics of mandatory interim reviews, however, contend that they might not be justified from a cost-benefit analysis, particularly for small firms (e.g., Ontario Securities Commission (OSC) 2000; Ontario Teachers' Pension Plan 2002; TSX Venture Exchange 2002). On the side of the benefits, Ettredge et al. (2000b) and Manry et al. (2003) find empirical evidence of an increase in financial reporting quality, as measured by the

timeliness in reporting non-routine adjustments and by earnings response coefficients. To our knowledge, there is no empirical evidence as to the cost of interim reviews.

The objective of this study is to examine both the costs to the firm and the benefits to the market, in terms of improvement in disclosure quality, associated with interim reviews on a sample of firms listed in Canada over the period 2004-2005, a setting where interim reviews are voluntary and audit fees are disclosed. Much of the discussion on whether to make the reviews mandatory has focused on their cost to the firms but, to our knowledge, it has never been quantified (Ontario Teachers' Pension Plan 2002). As to the benefits of interim reviews, we try to find out whether they have materialized in a setting and a period in which alternative control mechanisms have been put in place, e.g., management certification of interim filings, increased audit committees responsibilities, and greater oversight of audit firms.

Controlling for the decision to purchase interim reviews and for variables associated with annual audit fees, we find that total audit fees are 18 percent higher for firms that choose to have the reviews. Contrary to the expectations of regulators that smaller firms would be harder hit by the incremental assurance costs (Toronto Stock Exchange 2002), we find no evidence that the costs of interim reviews are proportionally higher for smaller firms.

As for the benefits of interim reviews, we find no significant association between the quality of earnings in interim quarters (Q1-Q3) or in the fourth quarter (Q4), as measured by the level of absolute unexpected accruals, and the fact that they were reviewed by an auditor. We find similar results with non accruals-based measures of reporting quality

such as earnings reversals (Das, Shroff, and Zhang 2009) and the timing of non-routine adjustments (Ettredge et al. 2000b). This suggests that the association of the auditor with interim reporting has no significant effect on the quality of interim earnings nor does it reduce the fourth-quarter adjustments documented in previous studies (Givoly and Ronen 1981; Dhaliwal, Gleason, and Mills 2004; Jacob and Jorgensen 2007; Das et al. 2009).

This study makes several contributions to the literature. First, it provides direct evidence on the incremental costs of interim reviews. Second, by documenting the effect of auditors' review of quarterly statements on unexpected accruals, it adds to our knowledge about the link between auditing and financial statement quality. Finally, it provides evidence on the value of interim reviews in the period following the important regulatory changes triggered by the accounting scandals of 1999-2000.

Our results also have implications for regulators. First, the finding that the relative audit fee increases associated with reviews are not larger for smaller firms contradicts one of the arguments against mandatory reviews for small firms (Pricewaterhouse-Coopers LLP 1999; OSC 2000; Ontario Teachers' Pension Plan 2002). Second, the fact that interim reviews do not seem to be associated with lower levels of unexpected accruals in any of the quarters casts some doubt on the effectiveness of the reviews to mitigate earnings management.³ With an estimated increase of 18 percent in audit fees and no detectable benefits in terms of improvement in the quality of interim reports, the

³ Of course, the fact that we don't find a significant association does not mean that it does not exist. Despite the fact that we use several approaches to measure earnings quality, there remains a possibility that the lack of significance in our tests is a consequence of the inability of the methodologies employed to detect the association.

results of our investigation put into question the necessity to make interim reviews mandatory.

The remainder of the paper is organized as follows. Section 2 outlines the Canadian regulations on interim reviews, gives an overview of the literature and presents the research hypotheses. Section 3 describes the sample, the models, and the measurement of variables. Section 4 presents the results of the main analysis, while those of sensitivity analyses appear in Section 5, and Section 6 concludes.

2. Literature Review and Hypotheses

Regulatory Background

The review of interim financial statements originated in the US, with ASR No. 177 (SEC 1976) that required large publicly listed companies to disclose selected quarterly data in their annual reports and to have their auditor to perform a *retrospective review*, i.e. to examine these quarterly data at the end of the year, in conjunction with the year-end audit. At that time, the SEC recommended, but did not require, *interim reviews* (to be performed at the end of each quarter). Despite the voluntary nature of the regulation, the major US accounting firms started to impose interim reviews as a precondition for accepting audit appointments for SEC registrants in the mid-nineties (Public Accounting Report 1994). The SEC made interim reviews mandatory in March 2000.

The Canadian Securities Administrators (CSA) do not require the review of interim financial statements by an external auditor. While proposals to mandate interim reviews have been made in the past (Crawford Committee 2003; Ontario Securities Commission

(OSC) 2000), they were rejected because of the lack of consensus on the costs and benefits of the reviews, in particular for smaller companies. Thus, Canadian companies are not required to have interim reviews, even if their stocks are listed in the US because of the exemption for “foreign private issuers” (SEC 1999b). The CSA encourage interim reviews, however, and firms that choose not to have them must disclose that fact in their financial statements (OSC 2004, sec. 4.3(3)).

The main objective of the interim review is to increase the quality of interim financial statements. According to regulators and commentators, it allows the timely consideration of significant accounting matters affecting the quarterly statements and provides an opportunity for the early resolution of issues affecting the annual reports (CICA 2000). Since managers have considerably more discretion in the preparation of interim information than for annual reports, they may use this discretion to manage interim earnings upwards in order to delay negative earnings surprises. The involvement of the auditor in the preparation of interim reports may enhance the effectiveness of the control “process [to] curb earnings surprise games” (Brown and Pinello 2007, p. 1), leading to more reliable interim accounting numbers and reducing the likelihood of year-end adjustments (SEC 1999b; 1976, 818; Crawford Committee 2003, 157). It is also believed to reduce the risk of material misstatements in the audited annual financial statements because of the enhanced auditor knowledge of the client (Boritz 2006). All of this could possibly increase the market’s information efficiency, thus justifying the increase in audit costs.

Characteristics of Interim Reviews

Interim reviews differ from year-end audits in terms of the auditor's work and responsibility, and of the characteristics of the financial information on which assurance is given.

A review consists mostly of enquiry, analytical procedures and discussion and its scope is narrower than that of an audit. It does not normally include such procedures as physical inspection, confirmation from external parties or examination of documents, which are usually performed in an audit, unless the auditor has doubts about the plausibility of the information obtained through the review procedures (CICA 7050; ISRE 2006). Hence, the extent of the auditor's work is lower than for an audit.

In terms of responsibility, the form and distribution of the auditor's communication differ significantly between review and audit. Information about the nature and extent of involvement with the interim financial statements, as well as the results of the review, must be communicated to the audit committee either orally or in written form. However, unlike in other countries such as Australia and the US, under Canadian GAAS (CICA 7050.08) auditors are not allowed to consent that their report be made public; its distribution is limited to the audit committee. This prohibition implies that neither the company nor its directors or officers can use the review report for statutory due diligence defense. Accordingly, exposure to legal liability towards third parties is significantly reduced, limiting the auditor's responsibility.⁴

⁴ We do not expect the Canadian ban on the publication of the report to significantly affect the generalizability of our results because, in contexts where the publication is allowed, the percentage of firms that disclose the review

Interim and annual financial reports also differ in terms of the information they contain: interim information (1) is reported on a more timely basis, leaving less time for its preparation, (2) uses more estimates, and (3) contains estimates that are based on expectations of what will happen in the rest of the fiscal year, which may require corrections in subsequent quarters (CICA 7050). These characteristics increase the risk of errors that could lower interim earnings quality.

Moreover, earnings quality may be reduced through intentional bias in accruals, although quarterly earnings differ from annual earnings in both opportunities and incentives to manage earnings. On the one hand, because they are not audited, interim reports are more likely to suffer from earnings management. On the other hand, management compensation levels (Jeter and Shivakumar 1999) and most debt covenant restrictions are based on annual rather than quarterly earnings, implying that some of the incentives to manage earnings are less important at the time of interim reports. However, the incentives remain to meet or beat analyst earnings forecasts, to reach budget targets or to maintain strings of growing quarterly earnings per share (Myers, Myers, and Skinner 2007). Whether the source of the problems is the difficulty in estimating accrual accounts or managerial opportunism, the quality of quarterly financial statements has been questioned (McEwen and Schwartz 1992; OSC 2002), and the large proportion of

report is low (e.g. 6 percent in the US (Krishnan and Zhang 2005) and 22 percent in Australia (Chen, Carson, and Simnett 2007)).

restatements of quarterly numbers that is observed is an indication of their low quality (Huron Consulting Group 2005).⁵

To summarize, even if interim reviews require less assurance work than audits and may involve a lower level of risk for the auditor because the report is not public, they have the potential to prevent earnings management in interim reports or large adjustments at year-end. Regulators have tried to weigh the additional assurance costs against the expected benefits of interim reviews in their decision on whether to make them mandatory.⁶ We try to shed some light on both of these aspects in the Canadian setting where interim reviews are recommended by regulators but are not mandatory.

Auditor Fees and Interim Review

To quantify the additional cost of interim reviews, it is necessary to decompose the total audit fees presented in the annual reports into those related to the year-end audit and to the interim reviews. Because the two components are not disclosed separately, we need to identify the factors that affect the fees for the reviews and the audit in order to estimate the effect of the reviews on total audit fees (including audit and reviews).⁷

⁵ Among the 3,744 SEC restatements of annual and quarterly statements they analyze for the period 2003-2006, Plumlee and Yohn (2010) find that 57% are caused by company errors and 3% by intentional manipulations.

⁶ For example, in its final report, the Crawford Committee (2003) recommended that some issuers be exempted from the requirement of interim reviews, taking into account their costs and benefits.

⁷ The review of quarterly reports may also add to the time necessary to prepare interim reports. Ettredge et al. (2000a) estimate that reviews increase the reporting lag of interim reports when the earnings contain special items. In this study we concentrate on the dollar costs of the review.

The Cost of Reviews

Interim reviews require the performance of procedures three times during the year, leading to increased assurance costs (audit plus review). Offsetting the review costs, however, is the performance of some substantive audit procedures during the interim period rather than at year-end, strengthened client internal accounting, and time saving in fixing problems that may not otherwise have been discovered until year-end (Arthur Andersen LLP 1999), but the SEC (1999b) was expecting the cost of reviews to be only partially offset by a reduction of year-end audit fees. Accordingly, total audit fees are expected to increase with interim reviews.

Some prior estimates of the cost increase were made in comments from audit firms on the SEC's proposal to introduce interim reviews. Although these estimates relate to the difference between interim reviews and the retrospective review of interim financial statements, they provide an indication of the magnitude of the cost increase that was anticipated. PriceWaterhouseCoopers (1999) estimates that the first implementation of their policy requiring the performance of interim reviews for their US clients resulted in an incremental annual audit effort in the range of 5-10 percent from the then-current annual level. Ettredge et al. (1994) report that, in their responses to the SEC's (1989) request for comments, two large accounting firms indicated an incremental price ranging from 5% of the annual audit fees for large clients to 15% or 20% for small clients. As retrospective reviews of interim reports do not exist in Canada, this study compares interim reviews to no review at all, so the cost difference should be even more important.

The above discussion suggests the first research hypothesis:

H1: Total audit fees are higher for firms whose interim financial statements are reviewed by their auditor.

Review Cost and Firm Size

Simunic (1980) models audit fees as consisting of a resource cost component and an expected liability loss component. Resource costs are increasing in the level of audit work whereas expected liability losses generally decrease with audit work. Simunic (1980) and a large body of subsequent research have examined the effect of various factors on auditors' work and liability (see Hay, Knechel, and Wong 2006 for a review).

The differences between an audit and a review, in terms of auditor responsibility and work performed, are likely to affect both the expected liability loss and the resource cost components of the audit fees. In particular, the attributes of the expected liability loss should be less important because the review report is not public (CICA 7050.08).

Krishnan and Zhang (2005) find a negative association between the disclosure of the auditor's review report and auditor's litigation risk.

Hence, the cost of interim reviews should be determined mostly by the resource cost component, which is in large part related to the size of the client. PriceWaterhouse-Coopers (1999) suggest that the relative cost may be higher for smaller companies because of "(1) the relatively lower cost of auditing smaller entities and, therefore, the relatively higher impact of adding three visits to the company during the year, and (2) the less structure in such entities resulting in additional need to follow up on inquiries and analytical procedures." In addition, smaller companies generally have less sophisticated

accounting and reporting systems and less qualified accounting personnel. Hence, consistent with Ettredge et al. (1994) and with the prior expectations of regulators (e.g., Crawford Committee 2003), we expect the incremental effect of reviews on audit fees to decrease as firm size increases. This leads to our second research hypothesis:

H2: The incremental audit fee associated with the review of interim financial statements decreases as firm size increases.

The Benefits of Auditor Assurance on Interim Financial Information

Interim reviews are required or recommended in several jurisdictions because they are expected to increase the quality of quarterly reports. In this study, we compare the quality of interim reports between firms with reviews vs. no review and we measure quality by the level of unexpected quarterly accruals estimated with various versions of the Jones (1991) model.

Financial reporting involves making choices regarding accounting policies and their application and requires management to exercise judgment in making accounting decisions and estimates, which affect the reported results. The level of earnings quality depends on both the difficulty in estimating accrual accounts and the possibility of managerial opportunism (Dechow and Dichev 2002). Given the short reporting lag and the heavy use of estimations inherent to interim financial statements, they are likely to contain reporting errors that need to be corrected with fourth-quarter accruals.

Quarterly Earnings Quality

The empirical evidence supports the existence of a difference in earnings quality between interim (Q1-Q3) and fourth-quarter reports (Q4), but not always in the same direction.

Cohen, Dey, and Lys (2005), for example, find significantly less earnings management in Q1-Q3 than in Q4, while Jeter and Shivakumar (1999) find a tendency to defer bad news to the last quarter.

Kerstein and Rai (2007) find that firms use income-increasing earnings management in the last quarter to convert small cumulative losses in the interim quarters into small annual profits, or to prevent small cumulative profits from becoming small annual losses.⁸ Das et al. (2009) examine the behavior of quarterly earnings changes, with respect to the same quarter a year earlier, and find that around 22% of Compustat firms over the period 1988-2004 exhibit a reversal in the direction of earnings changes in the fourth quarter. Roughly half of these reversals are consistent with an increase in Q4 earnings to reverse decreases in Q1-Q3, and half are consistent with decreasing Q4 earnings to build “reserves” for the future.

Effect of Auditing on Financial Statement Quality

A large body of literature examines the effect of audits on the quality of financial statements (Becker et al. 1998; Chen, Lin, and Lin 2008; Myers, Myers, and Omer 2003; Frankel, Johnson, and Nelson 2002, among others). The results show that measures of audit quality such as Big 4 firm, industry specialization, independence and quantity of audit work are positively associated with earnings quality (Francis 2004). The positive effect of auditing on the quality of financial reports is also documented in adjusting-entry

⁸ Dechow et al. (2003), among others, document a low frequency of firms with small losses and a high frequency of small profit firms. Durtschi and Easton (2005) contest the results of this line of research, though, arguing that the lower frequency of small losses than small profits may be created by the methodology used in the studies.

studies (Wright and Wright 1997) and in a survey of auditors by Nelson, Elliott, and Tarpley (2002).

Effect of Interim Reviews on Financial Statement Quality

When recommending interim reviews or making them mandatory, regulators were expecting similar improvements in the quality of quarterly reporting. The results of early research on the benefits of interim reviews are not consistent with these expectations (e.g. Givoly, Ronen, and Schiff 1978; Alford and Edmonds 1981). More recent studies compare interim and retrospective reviews of quarterly reports in US firms. Ettredge et al. (2000b) show that, for the years 1989 and 1990, 131 firms with interim reviews recorded a higher proportion of non-routine adjustments during the first three quarters and a lower proportion in the fourth quarter than 69 firms with a retrospective review. Similarly, Manry et al. (2003) find that, between 1990 and 1995, their 412 sample firms with interim reviews have a higher contemporaneous association between returns and interim-quarter earnings than 84 firms with retrospective reviews, suggesting that reviewed quarterly earnings “better” reflect the economic information that is impounded in returns.

These latter results seem to indicate that auditor involvement improves the quality of quarterly earnings. In order to capture a number of earnings management techniques as well as unintentional estimation errors, we use the absolute value of unexpected quarterly current accruals as an inverse measure of the quality of interim statements and hypothesize that:

H3: The review of interim financial statements decreases the absolute value of unexpected quarterly current accruals in interim financial statements.

Moreover, by ensuring more reliable quarterly reports, interim reviews should reduce the likelihood of fourth-quarter adjustments attributable to the more rigorous year-end financial reporting process (SEC 1999b; 1976, 818). This is consistent with Ettredge et al.'s (2000b) findings that US firms with interim reviews have a lower proportion of non-routine adjustments in the fourth quarter than firms with retrospective reviews. We hypothesize that:

H4: The review of interim financial statements decreases the level of the absolute value of unexpected quarterly current accruals in the fourth quarter.

We test these hypotheses in a setting where this type of review is available but not mandatory, comparing firms which submit themselves to interim reviews with firms that have no quarterly review at all.⁹ Contrary to Ettredge et al. (2000b) and Manry et al. (2003) who had to rely on questionnaires to determine whether their sample firms had an interim or a retrospective review report, we are using only archival data. This prevents the loss of observations from non-response to the survey.¹⁰

⁹ Using firms with no quarterly review instead retrospective review as control group allows for a sharper contrast of the audit costs and benefits between the two groups of firms. When the review is made retrospectively, firms know that their quarterly reporting will be checked after the fact, which may have a preventive effect on the quality of interim reporting.

¹⁰ For example, the results of Ettredge et al. (2000b) are based on survey results from 371 questionnaires received out of a sample of 709 firms selected from approximately 2,700 NYSE and AMEX listed firms. Similarly, Manry et al.'s (2003) conclusions are based on the results of a survey from 412 firms out of a sample of 1,025 companies listed in the 1995 Directory of Corporate Affiliations.

3. Methodology

Audit Fee Model Specification and Variable Definitions

In order to test our hypotheses about the cost of interim reviews (H1-H2), we first model audit fees as a function of the presence of review services (*REVIEW*) and firm attributes related to audit fees. The resulting Model (1a) allows us to test the incremental impact of quarterly reviews on the total audit fees for the year (H1). In Model (1b), we add an interaction between median-adjusted firm size (*Adj Ln(Assets)*) and *REVIEW* to test hypothesis H2 related to the effect of size on the cost of a review.¹¹

$$\begin{aligned} LnAuditFees = & \alpha + \beta_1 REVIEW + \beta_2 Ln(Assets) + \beta_3 INVREC + \beta_4 GEOSEG \\ & + \beta_5 MGREORG + \beta_6 NEWFIN + \beta_7 ROA + \beta_8 GC + \beta_9 USA + \beta_{10} BIG4 \\ & + \beta_{11} Y2005 + Industry Fixed Effect + \varepsilon \end{aligned} \quad (1a)$$

$$\begin{aligned} LnAuditFees = & \alpha + \beta_1 REVIEW + \beta_2 Ln(Assets) + \beta_3 REVIEW * Adj Ln(Assets) \\ & + \beta_4 INVREC + \beta_5 GEOSEG + \beta_6 MGREORG + \beta_7 NEWFIN + \beta_8 ROA \\ & + \beta_9 GC + \beta_{10} USA + \beta_{11} BIG4 + \beta_{12} Y2005 + Industry Fixed Effect + \varepsilon \end{aligned} \quad (1b)$$

Audit Fee Variable

Consistent with previous research we use the natural log of the audit fees (*LnAuditFees*) as a measure of the cost of assurance services. As is the case in the US, under Canadian rules a firm must disclose under the caption “Audit Fees” the amount of fees billed by its external auditors for the audit and review of its financial statements (CSA 2003). Fees paid to the auditor for non-audit services and audit-related services must be disclosed

¹¹ All variables are defined in Table 1.

separately. Fee data were collected manually in the firms' regulatory filing from the SEDAR online database.¹²

Experimental Variables

According to Canadian regulation, since 30 March 2004 and for financial years beginning on or after 1 January 2004, if the firm's auditor has not performed the review of the interim financial statements, this fact must be disclosed in a notice accompanying the interim reports (OSC 2004). *REVIEW* is a dichotomous variable that takes the value of one if the firm *does not* disclose that the financial statements have *not* been reviewed by its auditor and zero otherwise. The presence or absence of such disclosure is determined by reviewing quarterly financial statements filed in the SEDAR database. If no notice is found, it is presumed that the quarterly reports have been reviewed.¹³ From H1, we expect a positive coefficient on *REVIEW* in Model (1a). In Model (1b), from H2, we expect a negative coefficient on the interaction between *REVIEW* and *Adj Ln(Assets)*.

Other Audit Fees Determinants

To estimate the incremental effect of a review on total audit fees (audit plus reviews) we need to control for attributes related to audit fees in general. We include the attributes

¹² Depending on the company's status, the information may be disclosed in the Annual Information Form, the Management Information Circular, or the Management Discussion and Analysis (CSA 2003).

¹³ There is the possibility, however, that no notice is found even if there was no review because the firm was unaware of the new disclosure requirement. This is more likely to happen in the quarters closely following its first implementation, so when we found no notice in the three first quarters of 2004 we looked for a notice in the first quarter of 2005. If we found a non-review notice in that quarter, we assumed that the quarterly reports were not reviewed in 2004 either and that the firm had neglected to include the notice. Otherwise, we concluded that the firm's reports had been reviewed for all three quarters of 2004 and *REVIEW* was coded 1 also for 2004. The results are substantially the same if we don't make this adjustment. We also performed the analyses separately for the two years and find similar results for the 2004 and 2005 subsamples.

related to resource cost and expected liability loss that are identified as most significant in Hay et al.'s (2006) meta-analysis.

The levels of inventory and receivables have been found to be associated with the level of audit fees, because the physical inspection and confirmation procedures they require increase the audit effort at year-end, and hence the resource cost. To control for this additional audit effort, we include *INVREC*, the ratio of inventory plus accounts receivable to total assets. The second firm attribute included is the number of geographic segments, which proxies for the complexity of operations as well as for the number of foreign subsidiaries and is expected to increase resource costs for both the reviews and the audit. *GEOSEG* is taken from the notes to the financial statements. We also include *MGREORG* (an indicator variable equal to one if a merger, an acquisition or a reorganization have occurred in the current or the previous years and zero otherwise) which is expected to increase the resource costs of the audit (Ghosh and Lustgarten 2006).

To control for factors affecting expected liability loss we use variables related to new financing, client financial performance and cross-listing on the US market. The issuance of equity or debt by way of prospectus increases the risk of legal suit for the auditor and accordingly should be positively associated with audit fees.¹⁴ We control for this factor with *NEWFIN*, an indicator variable equal to one if the firm has issued equity or debt by way of prospectus in the current year and zero otherwise. Poor firm performance increases litigation risk (Simunic 1980), so we expect audit fees to be negatively related

¹⁴ In response to higher litigation risk an auditor may increase the audit effort and/or charge an insurance premium to cover possible future litigation losses (Seetharaman et al. 2002).

to *ROA* (net income divided by total assets) and positively associated with *GC*, which equals one if the firm discloses uncertainties regarding its ability to continue as a going concern and zero otherwise.¹⁵

Because the US represent a more litigious environment than Canada (Clarkson and Simunic 1994), an auditor is more exposed to litigation risk if its Canadian client has securities listed on a US marketplace. Moreover, the client may require additional audit work related to GAAP reconciliation.¹⁶ Thus, we expect a positive relationship between audit fees and *USA*, an indicator variable equal to one if the firm is a SEC registrant and zero otherwise.

Finally, we control for auditor size, year and industry. *BIG4* is an indicator variable which equals one if the firm's auditor is a Big 4 firm, and it is expected to be positively associated with audit fees. Our sample period covers two years so we control for the potential year effect with *Y2005*, an indicator variable equal to one for the observations of fiscal year 2005. We control for nine industry fixed effects with a series of eight indicator variables.

¹⁵ While the type of audit opinion (qualified or unqualified) has also been shown to significantly affect audit fees in previous research, we do not include this variable because Canadian GAAS exclude the use of modified opinions (i.e. emphasis of matter) for going concern uncertainty.

¹⁶ Since 2007, GAAP reconciliation is no longer necessary for firms using IFRS. For the period under study (2004-2005) Canadian firms listed in the US used Canadian GAAP and had to reconcile their statements to US GAAP.

Earnings Quality Model Specification and Variable Definitions

Measuring Earnings Quality

We measure the quality of quarterly earnings (or rather the lack of quality) as the absolute value of unexpected current accruals. We focus on current accruals since they are more likely than long-term accruals to be used to manage earnings across quarters.¹⁷

We use Jeter and Shivakumar's (1999) cross-sectional version of the Jones (1991) model on quarterly observations. They find that their model is more powerful at detecting artificially-induced quarterly unexpected accruals when it controls for firm performance. For this reason, we include lagged ROA to our model (Kothari, Leone, and Wasley 2005), which we estimate for each quarter in cross-section by industry. The residuals of the quarterly regressions represent our measure of the unexpected accruals (*ACCRUALS*) for each firm-quarter observation.¹⁸

Earnings Quality Model

In order to test hypotheses H3 and H4 about the effect of interim reviews on earnings quality, we use the following regression model on the sample of firm-quarter observations:

¹⁷ To take into account the impact of a review on accruals from long term assets and liabilities (e.g., impairment of long term assets, deferred tax, etc.), one should use total unexpected accruals as a measure of quality. Unfortunately, under Canadian GAAP, firms do not have to report in interim statements the gross amount of Property Plant and Equipment, which is necessary for estimating long-term unexpected accruals. We use current unexpected accruals since they are more likely to be affected by estimation errors or earnings shifting across quarters. Yang and Krishnan (2005), in their study of the effect of audit committees on quarterly unexpected accruals, find similar results for total and current unexpected accruals.

¹⁸ We use alternative methods for the detection of earnings management, including the timing of non-routine adjustments (Ettredge et al. 2000b), and find substantially the same results. See Section 5 for details.

$$\begin{aligned}
ACCRUALS = & \alpha + \beta_1 REVIEW_Q1-Q3 + \beta_2 REVIEW_Q4 + \beta_3 Q4 + \beta_4 Ln(Assets) \\
& + \beta_5 MGREORG + \beta_6 USA + \beta_7 BIG4 + \beta_8 ROA + \beta_9 Y2005 \\
& + Industry\ fixed\ effect + \varepsilon
\end{aligned}
\tag{2}$$

where *ACCRUALS* is the absolute value of unexpected current accruals. We separate the effect of the reviews between the interim and the fourth quarters: *REVIEW_Q1-Q3* is equal to one if the observation is for an interim quarter and there is a review, and zero if it is for Q4 or if it is for an interim quarter and there is no review; *REVIEW_Q4* is equal to one if the observation is for the fourth quarter of a firm with interim reviews, and zero if it is for an interim quarter or the firm had no interim review. *REVIEW_Q1-Q3* captures the effect of the review on unexpected accruals in the interim quarters (Q1 to Q3) and *REVIEW_Q4* measures the effect of the review on the accruals of the fourth quarter. *Q4* indicates a fourth-quarter observation and is introduced to control for the differences in earnings quality across quarters that have been documented in prior research. From H3, we anticipate that the absolute value of unexpected current accruals of the interim quarters (Q1-Q3) will be lower for firms with a review. From H4, we expect that the reviews in the first three quarters will ameliorate the higher level of unexpected accruals generally found in the fourth quarter. Hence both β_1 and β_2 are expected to be negative.

The model controls for factors that have been shown in prior research to affect the level of unexpected accruals. First, we control for firm size, *Ln(Assets)*, because earnings quality has been found to be higher for large firms which tend to have more efficient internal control systems than smaller firms (Dechow, Ge, and Schrand 2010). We then control for earnings management incentives by including *MGREORG* (Ashbaugh, LaFond, and Mayhew 2003) and *USA* in the model. Mergers and reorganizations are

often the occasion for “cleaning up” the balance sheet, while firms cross-listed in the US may be under more scrutiny from their auditor and hence present lower levels of earnings management. Higher levels of scrutiny may also come from hiring a large international auditor (*BIG4*) (Ashbaugh et al. 2003). Big 4 auditors may be associated with lower unexpected accruals because of client characteristics (Lawrence, Minutti-Meza, and Zhang 2011) and/or more thorough year-end audits (Krishnan 2003). Finally, following Frankel et al. (2002), we add current *ROA* as a measure of performance to further control for the effect of profitability on the level of unexpected accruals.

Accounting data are collected from Compustat, while audit fee, review and segment information data are collected manually. Table 1 provides a summary of the definition, measurement and source of all variables.

Table 1

Sample

Canada offers an excellent setting to examine the costs and benefits associated with interim reviews since its economic and institutional settings are very similar to those of the US but the adoption of interim reviews is entirely voluntary. As shown in Table 2, our initial sample consists of all Canadian firms included in Compustat Canada in 2004 and 2005, for which financial information is available (2,055 firm-years). We exclude observations for firm with non-Canadian auditors (75) and those that do not provide audit fee information (149) or belong to the financial industry (115). Also excluded are the firms that filed a Sarbanes-Oxley Section 404 report either in 2004 or in 2005, because of the large impact of such a report on audit fees (32), or that changed auditors, because the

reviews may have been performed by the previous auditor (79). Finally, we exclude 25 observations for which the review fees are included in audit-related fees, to avoid possible measurement errors in the fees. This leaves 1,580 firm-year observations of which 641 (41 percent) disclose that their interim financial statements have not been reviewed by their auditor (*no-review* firms) and 939 (59 percent) have voluntarily purchased quarterly reviews.¹⁹

Table 2

For the estimation of quarterly unexpected accruals models (Panel B), we start from the sample of 1,580 firm-years resulting in 6,320 firm-quarters, from which we exclude 1,747 observations for which unexpected accruals could not be estimated.²⁰ Thus, the sample used to test hypotheses H3 and H4 includes 4,573 firm-quarters.²¹

Descriptive Statistics

Panel A of Table 3 shows a comparison of the characteristics of firms with and without quarterly reviews. The average audit fees over the whole sample are \$411,270 (median \$129,150). While mean Total Assets for the full sample is \$1,030.73 million, the median

¹⁹ The review purchase rate of 59 percent is slightly higher than the 54 percent of interim reviews reported by Ettredge et al. (1994) for a sample of 371 US companies in 1989 and lower than the 80 percent reported by Manry et al. (2003) for a sample of 443 US companies in 1995.

²⁰ Of these, 381 firm-years (1,524 firm-quarter observations) are excluded completely for the following reasons: 44 firm-years are missing from the Compustat quarterly data, 9 are in the 2-digit SIC 99, 129 belong to 2-digit SIC groups with less than the minimum 7 observations necessary to estimate unexpected accruals, and 199 were missing at least one financial variable for the accruals estimation in each of the four quarters. The remaining 223 firm-quarter observations had missing variables.

²¹ We repeated the audit fees analysis excluding the 381 firm-year observations (1524 firm-quarters) that are absent from the accruals sample for all four quarters and found results similar to those including these 381 firms.

firm is much smaller with assets of \$96.98 million. The effect of this skewness is mitigated in model estimation by the inclusion of $Ln(Assets)$ as a control variable.

Table 3

Panel A of Table 3 also shows that firms with interim reviews were charged significantly higher audit fees than non-review firms, with a mean (median) of \$598,840 (\$196,940) for firms with interim reviews and \$149,680 (\$70,000) for those without. This difference is consistent with the difference in firm size between the two groups: mean (median) total assets of \$1,622.92 (\$214.67) million for reviewed firms vs. \$163.23 (\$40.25) million for the non-reviewed ones.

The univariate comparison of firm characteristics suggests that the two groups of firms differ significantly. The values for all the explanatory variables except *INVREC* show significant differences across the two groups. Firms with interim reviews are larger ($Ln(Assets)$), more complex (*GEOSEG*), and more profitable (*ROA*). They also are more likely to have been involved in a merger/acquisition or a reorganization in the current or previous years (*MGREORG*), to have issued equity or debt by way of prospectus in the current year (*NEWFIN*), to have no going concern uncertainties (*CG*), to have securities listed on a US marketplace (*USA*), and to have a Big 4 auditor (*BIG4*).

Panel B of Table 3 provides summary statistics for our measure of earnings quality for interim quarters (Q1 to Q3) and for the fourth quarter (Q4). Both mean and median absolute unexpected current accruals are significantly higher for no-review firms, in all quarters (means of 4.4% vs. 3.1% of total lagged assets in interim quarters and 7.4% vs.

5% in the fourth). Moreover, absolute unexpected accruals are higher in Q4 than in Q1-Q3, consistent with findings of previous research.

The univariate results of Table 3 provide a first view on some of our hypotheses. Audit fees are significantly higher for firms that choose to purchase interim reviews (H1). The results on absolute unexpected accruals are also consistent with our expectation that interim reviews are associated with lower unexpected accruals in interim quarters (H3) as well as in the last quarter of the fiscal year (H4). However, to test our hypotheses, we need to control for the joint effect of several factors on the two dependent variables, audit fees and unexpected accruals.

Propensity Score Matching

Since interim reviews are not mandatory in Canada, the firms that voluntarily opt to purchase them are those for which the expected benefits (to the firm) from having the reviews are higher than the additional cost.²² Hence, firms are not randomly assigned to the review treatment, but self-select into review or no-review status. This problem affects both the audit fees and the accruals models.

To control for this selection bias, we perform our regression analyses on a matched-pair sample where the review and no-review firms are matched on fiscal year and their propensity score (i.e. on the probability of being reviewed), which allows for a follow-up multivariate analysis “as would be performed on a sample generated by a randomized

²² The benefits of interim reviews to the firm are those linked with disclosure quality: lower cost of capital from reduced information risk premium (Graham, Harvey, and Rajgopal 2005).

experiment” (Guo and Fraser 2010, p. 37).²³ In addition, propensity scores allow matching on several dimensions by reducing them to a single one with the use of a balancing score, the probability of being reviewed.²⁴

We estimate the propensity scores with the following probit model with *REVIEW* as the dependent variable.

$$REVIEW = \alpha + \beta_1 Ln(Assets) + \beta_2 NEWFIN + \beta_3 USA + \beta_4 BIG4 + \beta_5 ROA + \beta_6 GC + \varepsilon \quad (3)$$

Based on Ettredge et al. (1994) we expect firm size ($Ln(Assets)$) and recent security issue ($NEWFIN$) to affect the decision to purchase a review.²⁵ As mentioned earlier, cross-listing in the US (USA) and a Big 4 auditor increase the likelihood of interim reviews. Finally, the firm’s ability to pay (ROA , GC) is also expected to affect the interim review decision.²⁶

Panel A of Table 4 reports the results of the probit regression. The model is statistically significant and has a pseudo R^2 of 0.26, which supports the need to control for self-selection based on observable characteristics. As expected, the propensity of a firm to choose a review is positively related to firm size ($Ln(Assets)$), the issuance of

²³ The maintained assumption is that, conditional on observable characteristics, the decision to have reviews is completely independent of unobservable characteristics.

²⁴ In auditing, propensity score matching has been used by Lawrence et al. (2011). As an alternative to propensity score matching, we also used the Heckman treatment effect model. For both the fees and the accruals models, the coefficients on Lambda are not significant, suggesting that the assumption holds that the decision to have reviews is independent of unobservable characteristics.

²⁵ When the most recent audited financial statements in a prospectus are not sufficiently current, securities legislation requires the inclusion of interim financial statements, which may be unaudited. Normally the auditor would perform a review of interim financial statements (CICA 7110.27). It is thus expected that *NEWFIN* increase the demand for review.

²⁶ Ettredge et al.’s (1994) model also includes three other variables that are statistically significant: ownership by officers and directors, number of internal audit staff, and percentage of assets in receivables. We exclude the first two because they are not available for our sample firms and the last one because it is not significant in our model.

equity or debt during the year (*NEWFIN*), and cross-listing in the US (*USA*), and negatively related to the presence of going concern uncertainty (*GC*). Contrary to expectations, a higher ROA reduces the probability of having a review and the type of auditors does not affect the review decision.²⁷ The latter suggests that, contrary to what happened in the US (e.g., Public Accounting Report 1994; SEC 1999b), Big 4 firms in Canada may not have pressured their clients into opting for interim reviews.

Table 4

We match review firms with no-review firms based on fiscal year and their propensity score using nearest neighbor matching, within a range of + or - 0.05 (Guo and Fraser 2010).²⁸ This yields a sample of 1,006 firm-year observations (503 matched pairs) for the audit fee analysis to test hypotheses H1 and H2 and 3,014 firm-quarter observations (1,507 matched pairs) to test hypotheses H3 and H4.

Comparing the covariates between the matched groups (Panel B of Table 4), we find no significant differences in means and medians of the control variables. The mean audit fees are still significantly higher for firms that chose to purchase interim reviews (H1) but the results on absolute unexpected accruals (H3, H4) are no longer significant, suggesting that the difference observed in Panel B of Table 3 may have been related to firm characteristics rather than the involvement of the auditor in the preparation of interim

²⁷ The sign of the association between *ROA* and *REVIEW* changes when firm size is added into the probit regression, which seems to indicate that the significantly higher profitability of review firms identified in Table 3 is due to the effect of *Ln(Assets)* on the review decision.

²⁸ Imposing a maximum range (caliper) for matching eliminates the risk of a bad match if the closest neighbour is far away. Our caliper size is based on the recommendation of Rosenbaum and Rubin (1985) ($\leq .25 \sigma_{\text{propensity score}}$, i.e. $\leq .055$). We also used a caliper of .02 and the results were similar.

reports. Moreover, (untabulated) results show that the probit regression model is no longer significant when estimated on the matched sample. These results indicate that in the matched sample the two groups are equivalent in terms of the characteristics included in the probit model.

4. Results

Interim Review and Audit Fees

Table 5 reports the results of the regression Models (1a) and (1b) estimated on the propensity score-matched sample with standard errors clustered on firms. Model (1a) regresses *LnAuditFees* on *REVIEW* and other fee determinants while Model (1b) includes the interaction between *Adj Ln(Assets)* and *REVIEW*. Both models are highly significant and have an adjusted R^2 of 0.66.

Table 5

Model (1a) is used to test hypothesis H1 that interim reviews are associated with an increase in audit fees. In this model, the coefficient on *REVIEW* has a positive value of 0.165 and it is significant at the 0.01 level. Consequently, the interim reviews are associated with an increase of around 18 percent in audit fees.²⁹ Thus, although the cost of reviews may be partially offset by a reduction in year-end audit fees, the net effect is a significant increase in the total audit and review fees billed by the auditors.³⁰

²⁹ The procedure documented in Wooldridge (2009 p. 232) to calculate the percentage effect of the intercept shift on the dependent variable is defined as $e^x - 1$, where x is the estimated coefficient for *REVIEW*.

³⁰ In Canada, as in the US, the description of what should be disclosed under the caption “Audit Fees” does not specifically mention the review of interim financial statements (CSA 2003, 9.1). We find that 25 of our sample

For the control variables, audit fees are positively associated with firm size ($\ln(\text{Assets})$), complexity (INVREC , GEOSEG , MGREORG), audit firm litigation risk ($1-\text{ROA}$), and the use of a large audit firm (BIG4), all consistent with expectations. The coefficient on $Y2005$, is positive and significant indicating that audit fees increased from 2004 to 2005. The only factors that don't seem to have any significant effect (at the 5% level) on the level of total audit fees are the issue of new debt or equity (NEWFIN), the presence of going concern uncertainties (GC) and trading on US markets (USA).

In Model (1b), the regression coefficients on the determinants of audit fees remain substantially the same as in Model (1a). Contrary to H2, however, and differing from expectations, the coefficient on the interaction $\text{REVIEW} * \text{Adj } \ln(\text{Assets})$ is positive but not significant (0.044, $p=0.14$). Hence, the results of Table 5 suggest that interim reviews significantly increase audit costs, as expected, but that, contrary to regulators' expectations, the cost increment is not higher for smaller firms.

Interim Review and Earnings Quality

Table 6 presents the results of the multivariate analysis which examines the expected benefits of interim reviews, namely the increase in earnings quality of both interim financial reports (H3) and fourth-quarter reporting (H4). The absolute value of each firm's unexpected quarterly current accruals is regressed on two test variables:

REVIEW_Q1-Q3 , which indicates interim quarters that are reviewed, to test H3 and

firms misclassified review fees into "Audit-related fees". We exclude these firms in the main analysis, but if we use the sum of audit fees and audit-related fees as the dependent variable in Models (1a) and (1b), untabulated results show that the coefficient on REVIEW increases to 0.209, while the effect of the interaction term is positive but not significant.

REVIEW_Q4, which indicates final quarters of firms with interim reviews, for H4. A pooled regression with standard errors clustered on firms is used to estimate Equation (2).

Table 6

The coefficient on *REVIEW_Q1-Q3*, while negative, is not significantly different from zero (-0.002, $p=0.44$), thereby failing to support the hypothesized decrease in unexpected accruals and increase in reporting quality in the interim quarters. Similarly, the coefficient on *REVIEW_Q4* is also negative but not significant (-0.002, $p=0.80$), suggesting that interim reviews have no significant effect on 4th quarter unexpected accruals. It seems that the reviews do not lead to the expected improvement in quarterly reporting quality or reduce the adjustments necessary at year-end. The bulk of the year-end adjustments is captured by the coefficient of *Q4*, which is significantly positive (0.026, $p<0.01$), and this is consistent with the results of previous studies on the difference in unexpected accruals across quarters.³¹

Of the control variables, some firm characteristics, $\ln(\text{Assets})$ and profitability (*ROA*), are significantly associated with lower levels of unexpected accruals, suggesting that larger, more profitable firms have lower levels of unexpected accruals. On the other hand, major transactions (*MGREORG*) and cross-listing (*USA*) have no significant effect. Contrary to expectations, the coefficient on *BIG4* is positive but not significant (0.004,

³¹ We use two other measures of current unexpected accruals as the dependent variable: their signed value and a dichotomous variable equal to one for firm-quarters with income-increasing current unexpected accruals and zero otherwise. The results are substantially similar and, in particular, the coefficients on *REVIEW_Q1-Q3* and *REVIEW_Q4* are not significantly different from zero.

p=0.33) providing no evidence to suggest that clients of Big 4 firms have better earnings quality than non-Big 4 clients.

The results of Table 6 suggest that interim reviews have no significant effect on the level of unexpected accruals in either the interim or the fourth quarters. The benefits that were expected by the regulators in terms of increased interim reporting quality do not seem to have materialized for Canadian listed firms.

This result is inconsistent with those of Ettredge et al. (2000b) and Manry et al. (2003) on the benefits of interim vs. retrospective reviews on samples of US firms in the late 1980s and early 1990s. One possible explanation for this discrepancy is that, as argued by Boritz (2006), the minimum interim review procedures required under Canadian standards are not sufficient. Alternatively, it is possible that some auditors are actually performing additional work related to interim reports but without a formal review engagement. Indeed, informal discussions with CFOs and auditors suggest that a number of companies voluntarily choose to have their auditor verify material transactions and first-time application of accounting policies in the interim quarters even when the quarterly reports are not reviewed. The measure of our *REVIEW* variable does not capture this and these firms are classified in the no-review group, obscuring the effect of this extra work on earnings quality. A third alternative explanation relates to the lack of litigation risk for the auditor because the review report cannot be made public. This may render auditors less demanding regarding the quality of interim reports than at year-end.

It is also possible that the methodology we use does not allow us to detect a difference in reporting quality that is actually present. In the next section, we consider a number of alternative methods to test the robustness of our results.

5. Extensions and Sensitivity Analyses

Regressions Partitioned by Firm Size and BIG4

One of the maintained hypotheses in this study is that the process of assurance related to financial statements (both audit and review) is the same for all firms. To allow for the differences that may depend on the size of the client and the type of auditor, we partition each of our annual and quarterly full samples into four sub-samples on auditor type (*BIG4* equal to one or zero) and then by firm size ($\ln(\text{Assets})$ above or below the median of the group) and estimate Models (1a) and (2) on each of the sub-samples separately.

The (untabulated) results show that the coefficients on *REVIEW* have a significantly positive effect on audit fees for all sub-samples, except for the small, non-Big 4 group. Moreover, the coefficients are higher for large firms than for small firms for both BIG4 and non-Big 4 although the difference in coefficients is not statistically significant for the Big 4 group ($p=.25$) and marginally significant for the non-Big 4 ($p=.08$).³² Hence, the increase in audit fees holds for all types of firms except small firms with smaller local auditors.

³² For BIG4 firms the coefficient estimates are 0.200 ($p=.03$) and 0.141 ($p=0.02$) for large and small firms, respectively, while they are 0.270 ($p=.05$) and 0.054 ($p=.65$) for non-BIG4 firms.

The results of the partitioned regressions for the accruals model show non-significant coefficients on *REVIEW_Q1-Q3* and *REVIEW_Q4* for all sub-samples. This is consistent with the absence of effect of interim reviews on earnings quality documented in Table 6.

Alternative Measures of Earnings Quality

Earnings quality is a construct which is very difficult to measure. Several approaches have been proposed in the literature, but all of them contain some degree of measurement error. To verify that our non-significant results on the benefits of interim reviews are not due to the estimation model used, we examine the relationship with four alternative approaches, including two non accruals-based.

The first alternative measure of earnings management controls for transaction-based earnings management using a version of the Modified Jones model proposed by Ashbaugh et al. (2003). This model accounts for both real and accruals-based earnings management, while controlling for firm performance with lagged ROA as an explanatory variable. The (untabulated) coefficient estimates on *REVIEW_Q1-Q3* and *REVIEW_Q4* in Equation (2) are not significantly different from zero.

Our second alternative measure is based on Larcker, Richardson, and Tuna's (2007) approach and differs from the above in using book-to-market ratio and lagged cash flows from operations, deflated by lagged assets, to control for firm performance. The (untabulated) results are very similar to those of Table 6, showing no significant effect of interim reviews on the unexpected quarterly accruals of any of the quarters.

For our third measure, we adopt the non accruals-based measure of quarterly earnings quality proposed by Das et al. (2009) to detect unexpected earnings changes in the fourth quarter possibly caused by managerial opportunism. For each firm-year observation, we build a dichotomous variable indicating whether or not there was a reversal in the fourth quarter so that the fourth-quarter earnings change is opposite the change that occurred in two out of the three interim quarters (change from negative to positive or from positive to negative). We then regress this dichotomous variable on *REVIEW* and the control variables of Equation (2).³³ The (untabulated) coefficient on *REVIEW* is not significantly different from zero, which is consistent with the results shown in Table 6.

Timing of Non-routine Adjustments

Interim reviews can improve the quality of quarterly financial statements through the timely recording of non-routine adjustments such as discontinued operations and extraordinary items. We replicate Ettredge et al.'s (2000b) methodology to measure earnings quality by the timing of the recognition of adjustments to quarterly earnings. Interim reviews should reduce the deferral of adjustments to the fourth quarter. We test H4 using the same model as Ettredge et al. (2000b):

$$nq13 = \alpha_0 + \alpha_1 REVIEW + \alpha_2 SIZE10 + \beta_1 NQ14 + \varepsilon \quad (4)$$

where *nq13* is the number of non-routine adjustments recorded during the first three quarters, *SIZE10* is the decile of $\ln(Assets)$ to which the firm belongs, and *NQ14* is the total number of adjustments recorded during the four quarters (Q1 to Q4).

³³ The regression is run on the 1,149 firms-years of our original sample for which all quarterly data necessary to compute reversals is available.

In this model, $-\alpha_0$ is the expected number of deferred adjustments, α_1 the effect of interim reviews on deferred adjustments and α_2 the effect of firm size on deferred adjustments. We expect $\alpha_1 > 0$ if reviews reduce the number of deferred adjustment. Because larger firms likely have better internal control systems that ensure the timely recognition of adjustments, we expect that $\alpha_2 > 0$. Finally, β_1 is the proportion of total adjustments that should have been recorded in quarters Q1 to Q3, so it should be larger than zero.

For each firm with special items (Compustat item #32), we examined the interim and annual financial statements to identify each reported adjustment and classify it in an individual quarter using Ettredge et al.'s (2000b) taxonomy.³⁴

Panel A of Table 7 presents descriptive statistics for the number and rate of adjustments per firm by review status. Results from univariate comparisons show that review firms have more average interim-quarter and fourth-quarter adjustments than no-review firms, suggesting that the latter have a lower total number of adjustments than review firms. This highlights the need to control for the number of adjustments recorded by each firm before comparing the two groups of firms. The last line of Panel A presents the proportion of the total adjustments which are recorded in the fourth-quarter and univariate tests indicate that the mean and median proportions of adjustments in Q4 are lower for the review group but the difference is not significant.

³⁴ Canadian regulations do not require the inclusion of a summary of quarterly results in the year-end financial reports.

Panel B of Table 7 presents the regression results of Model (4) using the number of adjustments. The expected number of deferred adjustments for a firm is 0.642 ($-\alpha_0$). This number is higher than the yearly rate of 0.445 of Ettredge et al. (2000b), suggesting a higher number of deferred adjustments. The estimated coefficient on *REVIEW* is close to zero and not significant (-0.003, $p=0.98$), indicating that the number of deferred adjustments is not significantly different between review and no-review firms.³⁵ The coefficient on *SIZE10*, while positive, is not significant (0.014, $p=0.36$). These results are not consistent with Ettredge et al.'s (2000b) findings but they are consistent with our results for the other measures of earnings quality. The fact that we do not find the negative association between *REVIEW* and the deferment of adjustments documented by Ettredge et al. (2000b) may be due in part to the difference in settings and in particular to the difference in sample period. Between the end of the 1980's and 2004-2005, both the accounting treatment of non-routine adjustments and the control environment have changed significantly. For instance, asset write-downs and provisions are the prevalent adjustments in our sample while discontinued operations and unusual items dominated that of Ettredge et al. (2000b). Moreover, in our post-Enron, post-SOX sample period, several alternative control mechanisms have been put in place to reduce the extent of earnings management and improve the quality of reporting, possibly making interim reviews redundant.³⁶

³⁵ We repeated the analysis (1) excluding discontinued operations and other restructurings adjustments because they result from decisions which are often made in the fourth quarter, (2) excluding asset write-downs, because they are the most frequent adjustments, and (3) using a matched-sample approach. In all three cases, the results are the same, the parameter on *Review* is not significantly different from zero.

³⁶ We also examine the effect of interim reviews on the timing of going-concern disclosure. Of the 22 firms that disclosed a going-concern uncertainty for the first time in their audited annual financial statements of 2005, 12 had

Table 7

Hence, all of our attempts to measure reporting quality seem to point to the same conclusion. The benefits expected from the auditors' review of interim financial statements do not seem to have materialized in our sample firms.

Full Sample Analysis

The results in Section 4 are based on the sample of review and no-review firms matched on propensity scores. The matching methodology leads to an equal proportion of the two types of firms, while the original population has 59% of review firms. We re-estimate the audit fee and the accruals regressions on the original samples of 1,580 firm-years and 4,573 firm-quarters, respectively, to verify that our results are not due to our sampling method.

For the audit fee analysis, untabulated results show that in Model (1a), the coefficient on *REVIEW* has a positive value of 0.179 and it is significant at the 0.01 level, indicating an increase of 20 percent in audit fees. In Model (1b), the coefficients on the determinants of audit fees remain substantially the same as in Model (1a). The effect of firm size on review fees, as measured by the interaction of *REVIEW* and *Adj Ln(Assets)*,

interim reviews and 3 out of these 12 made the disclosure in one of their interim reports, while all of the ten no-review firms had the disclosure only in their annual report. The difference between the two groups is not statistically different, but the test is based on a small sample.

is positive and statistically significant in a two-tailed test, while it was not significant in the matched sample.³⁷

For the accruals analysis, the full sample regressions yield results that are very similar to those of the matched sample presented in Section 4. The coefficients on *REVIEW_Q1-Q3* and *REVIEW_Q4* are not significantly different from zero, suggesting that interim reviews have no effect on the level of unexpected accruals in interim quarters or at year-end.³⁸ Hence, the results obtained from the full sample are consistent with those of the main analysis, both for the cost and the benefits of interim reviews.

6. Conclusion

In this study we examine the costs and benefits associated with the performance of a review of quarterly financial statements by the external auditor on a sample of firms listed in Canada over the years 2004-2005. We estimate the increase in assurance costs associated with the purchase of interim reviews at 18 percent. However, contrary to arguments by stakeholders against the mandatory review of interim financial reports, we find no evidence that the costs are proportionally higher for smaller firms than for larger ones.

Our results on the benefits of interim reviews in terms of increased reporting quality constitute the big surprise of this study. Despite our efforts to use various measures of earnings quality, we find no significant improvement in the quality of financial

³⁷ The higher coefficient on *REVIEW* and the significance of the interaction of firm size and *REVIEW* on audit fees in the full sample suggest that the matched sample method corrects for a slight self-selection bias.

³⁸ The coefficient estimates for *REVIEW_Q1-Q3* and *REVIEW_Q4* are 0.0002 (p=0.94) and -0.004 (p=0.48), respectively.

statements associated with interim reviews for any of the quarters. All of our measures are based on the characteristics of financial statements themselves. Future research could investigate the market's perception of the quality of interim reports by examining earnings response coefficients (Manry et al. 2003).

Our results have important policy implications, not only in the Canadian context. Because of the difficulty in measuring the benefits, we cannot compare the costs to the benefits to come up with a decision rule to be used by regulators, but our findings suggest that the costs are significant while the financial statements benefits are not evident. On the other hand, the heavy cost burden to be imposed on small firms may not be a valid argument against the introduction of mandatory interim reviews.

The absence of results on the benefits of interim reviews begs the question of why the expected improvement in interim reporting quality did not materialize. One possible explanation is that the procedures involved in the review of financial statements do not allow the auditor to detect earnings management in interim reports or to resolve reporting issues before the year-end audit. Firms may purchase interim reviews because of the lack of public information about their effectiveness and/or because they want to reassure the market about the quality of their interim reports. They may even purchase the reviews despite their additional costs, knowing that their effectiveness is limited, because it allows them easier access to financing or a reduction of the information risk premium included in their cost of capital. Regulators may have to reconsider the standards related to the review of financial statements to make this assurance service more effective (Boritz 2006). The issue needs further investigation, however, and future research could take into consideration the complementary roles of disclosure controls and procedures,

internal control over financial reporting, and assurance services in improving the quality of interim reports.

Finally, the lack of association between interim reviews and earnings quality may be due to the methodology employed. As is the case for all research which attempts to measure earnings quality, our results depend on the effectiveness of our quality measures. Although the lack of results is consistent across the various measures used in the study, other measures, such as long-term unexpected accruals, could lead to different conclusions. Moreover, although the classification of firms between review and non-review is based on publicly available information, it is possible that some misclassification has occurred for firms that did not disclose that they had not been reviewed.

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Table 1
Variable Definitions

Variable	Definition (Source)
<i>LnAuditFees</i>	Natural log of Audit fees where Audit fees (\$ 000) are the audit fees billed by the firm's external auditor as reported in the firm's Annual Information Form or Management Information Circular.
<i>ACCRUALS</i>	<p>Absolute value of unexpected quarterly accruals from the Jones (1991) model, modified to correct for firm performance bias, applied to current accruals, and estimated cross-sectionally by industry (2-digit SIC) and by quarter using the following model:</p> $\text{Current Accruals}_{i,q} = \beta_1 (1/TA_{i,q-1}) + \beta_2 (\Delta Rev_{i,q}) + \beta_3 (ROA_{i,q-1}) + \varepsilon_{i,q}$ <p>where</p> <p><i>Current Accruals_{iq}</i> = difference between Net Income (Compustat item #8) and Cash Flows from Operations (item #108) of firm i for quarter q plus Depreciation and Amortization Expense (item #5), scaled by TA_{q-1}, TA_{q-1} = Total Assets (item #6) at the end of quarter q-1, $\Delta Rev_{i,q}$ = Increase in Revenue (item #12) from q-1 to q, scaled by TA_{q-1}, $ROA_{i,q-1}$ = Return on asset of quarter q-1, net income (item # 172) over total assets.</p>
<i>REVIEW</i>	Dichotomous variable equal to one if the firm does not disclose that its interim financial statements have not been reviewed by its auditor and zero otherwise. (Quarterly reports)
<i>REVIEW_Q1-Q3</i>	Dichotomous variable equal to one if the observation is for an interim quarter and there is a review, and zero if it is for Q4 or if there are no interim reviews.
<i>REVIEW_Q4</i>	Dichotomous variable equal to one if the observation is for the fourth quarter of a firm with interim reviews, and zero if it is for an interim quarter or the firm had no interim review.
<i>Q4</i>	Dichotomous variable equal to one if the observation is for the fourth quarter and zero otherwise.
<i>Ln(Assets)</i>	Natural log of Total Assets at the end of the quarter (Compustat item #6).
<i>Adj Ln(Assets)</i>	Median-adjusted <i>Ln(Assets)</i> computed as $(Ln(Assets) - \text{median } Ln(Assets))$
<i>GEOSEG</i>	Number of geographical segment (Financial statements).
<i>INVREC</i>	Ratio of inventory (Compustat item #3) plus accounts receivable (Compustat item #151) to total assets.
<i>MGREORG</i>	Indicator variable equal to one if there was a merger/acquisition (Compustat item #360) in the current or previous years, or a reorganization (Compustat item #376) in the current year, and zero otherwise.
<i>NEWFIN</i>	Indicator variable equal to one if the firm issued equity or debt by way of prospectus in the current year, and zero otherwise (FPInformart – new issues).

(Continued on next page)

TABLE 1 (continued)

<i>ROA</i>	Net income before extraordinary items (Compustat item #172) divided by beginning of period total assets (Compustat item #6), winsorized at ± 1 .
<i>GC</i>	Indicator variable equal to one if the firm discloses uncertainties regarding its ability to continue as a going concern and zero otherwise. (Financial statements)
<i>USA</i>	Indicator variable equal to one if the firm is also a SEC registrant and zero otherwise (Compustat, AuditAnalytic).
<i>BIG4</i>	Indicator variable equal to one when the auditor is a Big 4 firm and zero otherwise (Compustat).
<i>Y2005</i>	Indicator variable equal to one for the 2005 fiscal year and zero otherwise.
<i>Industries fixed effects</i>	Series of dichotomous variables controlling for industries (energy (gics=10), materials (gics=15), consumer discretionary (gics=25), consumer staples (gics=30), health care (gics=35), information technology (gics=45), telecommunications services (gics=50) and utilities (gics=55); industrials (gics= 20) serves as the basis and its effect is included in the intercept).

Table 2
Sample Construction

Panel A: Sample of Firm-Years			
	Firm-years		
	Review	No Review	Total
COMPUSTAT Canada firms for which financial information is available for the years 2004 and 2005			2055
Non-Canadian auditors			(75)
No audit fee information			(149)
Financial industry			(115)
SOX 404 Report			(32)
Auditor change			(79)
Review fees in “Audit-related fees” instead of “Audit fees”			(25)
Base sample	939	641	1580
	59%	41%	100%
Panel B: Sample of Firm-Quarters			
	Firm-quarters		
	Review	No Review	Total
Base sample of Panel A (firm-years x 4 quarters)	3756	2564	6320
Missing data for unexpected quarterly accruals			
All four quarters missing	948	576	1524
One to three quarters missing	111	112	223
	(1059)	(688)	(1747)
Sample Firm-Quarters	2697	1876	4573
	59%	41%	100%

Table 3
Descriptive Statistics

Panel A: Mean (Median) of firm characteristics and audit fees^a

	All Firms (n = 1580)	Review (n = 939)	No Review (n= 641)	Difference	
				Stat ^b	Pr. ^c
<i>Audit Fees (\$000)</i>	411.27 (129.15)	589.84 (196.94)	149.68 (70.00)	9.73 (12.14)	< .01 < .01
<i>LnAuditFees</i>	11.80 (11.77)	12.27 (12.19)	11.11 (11.16)	17.11 (12.14)	< .01 < .01
<i>Total Assets (\$millions)</i>	1030.73 (96.98)	1622.92 (214.67)	163.23 (40.25)	10.26 (13.06)	< .01 < .01
<i>Ln(Assets)</i>	11.45 (11.48)	12.29 (12.28)	10.22 (10.60)	18.16 (13.06)	< .01 < .01
<i>INVREC</i>	0.18 (0.10)	0.17 (0.11)	0.18 (0.09)	0.64 (1.59)	0.53 0.11
<i>GEOSEG</i>	0.61 (0.69)	0.64 (0.69)	0.57 (0.69)	1.94 1.38	0.05 0.17
<i>MGREORG</i>	0.17	0.21	0.11	5.19	< .01
<i>NEWFIN</i>	0.10	0.14	0.04	43.03	< .01
<i>ROA</i>	-0.03 (0.07)	0.03 (0.09)	-0.11 (-0.02)	8.22 (7.73)	< .01 < .01
<i>GC</i>	0.21	0.11	0.35	126.30	< .01
<i>USA</i>	0.27	0.32	0.20	26.50	< .01
<i>BIG4</i>	0.77	0.85	0.65	86.34	< .01
<i>Y2005</i>	0.47	0.48	0.46	0.36	< .01

Panel B: Mean (Median) of the absolute value of unexpected current accruals (*ACCRUALS*)^a

Quarters	All firms (n = 4,573)	Review (n=2,697)	No Review (n= 1,876)	Difference	
				Stat ^b	Pr. ^c
Q1 to Q3	0.036 (0.019)	0.031 (0.017)	0.044 (0.021)	6.12 (15.13)	< .01 < .01
Q4	0.060 (0.028)	0.050 (0.024)	0.074 (0.036)	3.76 (25.66)	< .01 < .01

a. All variables are defined in Table 1. The sample consists of 1,580 firm-years from Canadian listed firms over 2004-2005 in Panel A and 4,573 firm-quarters in Panel B.

b. Test of difference in means with a t-test, in medians with a median test (based on median scores), and in frequency with a chi-square test for dichotomous variables.

c. p-values are for two-tailed tests.

Table 4**Panel A:** Probit Analysis of the Choice of Purchasing Interim Reviews
$$REVIEW = \alpha + \beta_1 Ln(Assets) + \beta_2 NEWFIN + \beta_3 USA + \beta_4 BIG4 + \beta_5 ROA + \beta_6 GC + \varepsilon \quad (3)$$

Variables ^a	Sign	Coef.	Std. Error	p-value ^b
<i>Ln(Assets)</i>	+	0.25	0.03	< .01
<i>NEWFIN</i>	+	0.35	0.13	0.01
<i>USA</i>	+	0.21	0.10	0.04
<i>BIG4</i>	+	0.03	0.12	0.81
<i>ROA</i>	+	-0.51	0.20	0.01
<i>GC</i>	-	-0.42	0.12	< .01
<i>Intercept</i>		-2.60	0.31	< .01
<i>Pseudo R²</i>		0.26		
<i>Likelihood ratio test</i>		340.65		< .01

Panel B: Descriptive Statistics for the Matched Sample

	Review		No Review		Difference			
	Mean	Median	Mean	Median	Means/Freq.		Medians	
					Stat ^b	Pr. ^c	Stat ^b	Pr. ^c
Determinants of <i>REVIEW</i>								
<i>Ln(Assets)</i>	10.99	10.90	10.93	11.03	0.53	0.60	0.82	0.41
<i>NEWFIN</i>	0.05		0.05		0.00	1.00		
<i>USA</i>	0.19		0.22		1.20	0.27		
<i>BIG4</i>	0.76		0.74		0.52	0.47		
<i>ROA</i>	-0.02	0.06	-0.04	0.05	0.84	0.40	1.07	0.28
<i>GC</i>	0.20		0.23		1.17	0.27		
Dependent variables								
<i>lnAuditFees</i>	11.60	11.61	11.412	11.48	2.53	0.01	1.58	0.11
N (firm-years)	503		503					
<i>ACCRUALS Q1-Q3</i>	0.038	0.022	0.040	0.020	0.61	0.54	4.00	0.05
<i>ACCRUALS Q4</i>	0.065	0.028	0.065	0.033	0.15	0.88	1.43	0.23
N (firm-quarters)	1507		1507					

a. The variables are defined in Table 1. The sample consists of 1,580 firm-years from Canadian listed firms over 2004-2005.

b. Test of difference in means with a t-test, in medians with a median test (based on median scores), and in frequency with a chi-square test for dichotomous variables.

c. p-values are for two-tailed tests.

Table 5
Regression Results: Effect of Interim Review on Audit Fees

$$LnAuditFees = \alpha + \beta_1 REVIEW + \beta_2 Ln(Assets) + \beta_3 REVIEW * Adj Ln(Assets) + \beta_4 INVREC + \beta_5 GEOSEG + \beta_6 MGREORG + \beta_7 NEWFIN + \beta_8 ROA + \beta_9 GC + \beta_{10} USA + \beta_{11} BIG4 + \beta_{12} Y2005 + Industry Fixed Effect + \varepsilon \quad (1)$$

Variables ^a	Sign	Model 1(a)			Model 1(b)		
		Coef.	S.E. ^b	p-value ^c	Coef.	S.E. ^b	p-value ^c
<i>REVIEW</i>	+	0.165	0.053	< .01	0.166	0.052	< .01
<i>Ln(Assets)</i>	+	0.437	0.025	< .01	0.415	0.033	< .01
<i>REVIEW * Adj Ln(Assets)</i>	-				0.044	0.029	0.14
<i>INVREC</i>	+	0.871	0.146	< .01	0.878	0.147	< .01
<i>GEOSEG</i>	+	0.223	0.053	< .01	0.224	0.053	< .01
<i>MGREORG</i>	+	0.284	0.058	< .01	0.284	0.058	< .01
<i>NEWFIN</i>	+	-0.009	0.083	0.91	-0.006	0.083	0.94
<i>ROA</i>	-	-0.326	0.147	0.02	-0.311	0.148	0.02
<i>GC</i>	+	0.051	0.083	0.54	0.059	0.080	0.46
<i>USA</i>	+	0.128	0.091	0.08	0.123	0.091	0.09
<i>BIG4</i>	+	0.328	0.074	< .01	0.329	0.074	< .01
<i>Y2005</i>	?	0.103	0.029	< .01	0.102	0.029	< .01
<i>Industries</i>	?		included			Included	
<i>Intercept</i>	?	6.243	0.463	< .01	6.477	0.504	< .01
F		98.4		< .01	94.04		< .01
Adj. R²			0.66			0.66	

- a. All variables are defined in Table 1. The sample consists of from 503 pairs of firm-year observations from Canadian listed firms over 2004-2005, matched on propensity scores.
- b. Robust standard errors (clustered on firms).
- c. p-value are for one-tailed tests when the expected sign is positive or negative.

Table 6

Regression Results: Effect of Interim Reviews on Quarterly Current Absolute Unexpected Accruals

$$ACCRUALS = \alpha + \beta_1 REVIEW_Q1-Q3 + \beta_2 REVIEW_Q4 + \beta_3 Q4 + \beta_4 Ln(Assets) + \beta_5 MGREORG + \beta_6 USA + \beta_7 BIG4 + \beta_8 ROA + \beta_9 Y2005 + Industry\ fixed\ effect + \varepsilon \quad (2)$$

Variables ^a	Sign	Coef.	S.E. ^b	p-value ^c
<i>Review_Q1-Q3</i>	-	-0.002	0.003	0.44
<i>Review_Q4</i>	-	-0.002	0.007	0.80
<i>Q4</i>	+	0.026	0.006	<.01
<i>Ln(Assets)</i>	-	-0.007	0.001	<.01
<i>MGREORG</i>	+	0.007	0.005	0.18
<i>USA</i>	-	-0.001	0.004	0.89
<i>BIG4</i>	-	0.004	0.004	0.33
<i>ROA</i>	+/-	-0.060	0.012	<.01
<i>Y2005</i>	?	0.001	0.003	0.84
<i>Industries</i>	?		Included	
<i>Intercept</i>		0.234	0.014	< .01
F		29.24		< .01
Adj. R²			0.14	

- a. All variables are defined in Table 1. The sample consists of from 1,507 pairs of firm-quarter observations from Canadian listed firms over 2004-2005, matched on propensity scores.
- b. Robust standard errors (clustered on firms)
- c. p-value are for one-tailed tests when the expected sign is positive or negative.

Table 7

Effect of Interim Review on the Timing of Quarterly Non-routine Adjustments

Panel A Number of non-routine adjustments per quarter per firm

	Review (n=330)			No Review (n=203)			t-stat ^a	Wilcoxon Z ^b
	Mean	Median	Std	Mean	Median	Std		
Interim quarters	1.94	1.00	1.80	1.39	1.00	1.32	4.04**	3.15**
Fourth quarter	1.28	1.00	0.84	1.08	1.00	0.80	2.62**	2.82**
Proportion in fourth quarter ^c	0.48	0.40	0.34	0.51	0.50	0.37	1.03	1.03

Panel B Results from the regression model

$nq13 = \alpha_0 + \alpha_1 REVIEW + \alpha_2 SIZDEC + \beta_1 NQ14 + \varepsilon$ (4)				
Variables	Sign	Coef.	S.E.	p-value ^d
<i>REVIEW</i>	+	-0.003	0.090	0.98
<i>SIZE10</i>	+	0.014	0.015	0.36
<i>NQ14</i>	+	0.749	0.019	< 0.01
<i>Intercept</i>	-	-0.642	0.097	< 0.01
F		621.70		< 0.01
Adj. R²			0.846	

Sample of 533 Canadian firm-year observations with special items in their annual financial statements in 2004-2005. *nq13* is the number of non-routine adjustments recorded in interim quarters, *NQ14* is the total number of non-routine adjustments in all four quarters and *SIZE10* is the decile of $\ln(Assets)$ to which the firm belongs, all other variables are defined in Table 1.

a. t-tests are for the difference in means between review and no-review firms.

b. Wilcoxon tests are for the difference in medians between review and no-review firms.

c. For each firm-year, proportion of total non-routine adjustments that are recorded in Q4.

d. p-values are for one-tailed tests.

*,** Significant at the 5%, 1% level, for two-tailed tests.