On Controlling for Misstatement Risk

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ABSTRACT: *Ex ante* misstatement risk confounds nearly all settings relying on restatements as a measure of audit quality, but researchers continue to debate how to effectively control for this construct. In this study, we consider a recent approach that involves controlling for prior period restatements ("Lagged Restatements"). Using a controlled simulation as well as a basic archival analysis, we show that a lagged restatement control can significantly bias coefficient estimates. We demonstrate this bias using audit fees as a variable of interest but also show the same issue persists for other constructs that respond to the identification of a restatement (i.e., internal control material weaknesses and auditor changes). We conclude by discussing alternative approaches for controlling for *ex ante* misstatement risk and providing guidance for future research. Taken together, this study provides an important methodological contribution to the broad literature using restatements as a measure of audit quality.

Keywords: Misstatement Risk, Restatements, Audit Quality

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1. INTRODUCTION

Empirical financial accounting and audit research often investigates the relation between client or audit traits and financial restatements. A restatement reflects low *financial reporting quality* because the originally filed financial statements contain a material misstatement. A restatement suggests low *audit quality* because the auditor issued an unqualified opinion on the misstated financial statements. Because financial statement quality jointly reflects the quality of both the client's financial reporting process and the audit, "it is important for researchers to disentangle the effect of audit quality from the company's innate characteristics and the strength of its financial reporting system" to isolate the effects of the audit process from other confounding factors (DeFond and Zhang 2014, p. 284). In other words, researchers must adequately control for the risk of misstatement in pre-audited financial statements to credibly rely on restatements as a signal of audit quality. For example, if companies with higher innate financial reporting quality tend to employ a Big 4 auditor, then a naïve analysis will almost certainly give an inflated impression of Big 4 audit quality. In this scenario, failure to adequately control for differences in pre-audit reporting quality, or "*ex ante* misstatement risk," leads to biased (inflated) estimates of the causal effects of a Big 4 auditor.

Researchers generally acknowledge the importance of controlling for *ex ante* misstatement risk, and most empirical studies control for company-specific traits that likely relate to misstatement risk. However, the unobservable and nuanced nature of misstatement risk makes it difficult to adequately capture with common controls (e.g., proxies for client size and complexity). Lobo and Zhao (2013; hereafter, LZ) discuss this issue and advocate for the inclusion of a lagged restatement control (hereafter, *Lag Restate* as in LZ) that measures whether a firm eventually restates financial statements from the prior year.[1] LZ suggests that *Lag Restate* measures "the company's prior record of reporting quality (p. 1390)" because "whether the prior-year's reports are subsequently restated is likely to be associated with whether the current-year financial reports will also be restated (p. 1393)." LZ's approach likely appeals to researchers for a couple of reasons. First, LZ appear to resolve an inconsistency between the "theoretically predicted negative relation" (p. 1385) between audit fees and restatements after including *Lag Restate*, serving as evidence of its efficacy as a control. Second, regression models using restatements as the dependent variable tend to have low predictive power with few variables exhibiting strong associations; however, *Lag Restate* strongly predicts subsequent restatements, significantly improving model fit. Such strong empirical correlations often serve as justification for a control's necessity even for inappropriate controls (Swanquist and Whited 2018).

We show that controlling for *Lag Restate* biases estimates in a number of settings, including the one investigated in LZ (i.e., audit fees). In particular, we note that when the test variable "reacts" to the correction of the misstatement (i.e., restatement announcement), *Lag Restate* introduces significant bias. We consider this phenomenon in the context of a common setting in archival audit research, the relation between audit fees and restatements (e.g., Blankley, Hurtt, and MacGregor 2012; Lobo and Zhao 2013; Moon, Shipman, Swanquist, and Whited 2019). The problem arises because *Lag Restate* fails to differentiate between prior-year misstatements that have been detected and those that have not. This presents complications because the detection of a misstatement simultaneously (1) affects audit fees (as well as a number of other audit traits), due to both increased audit work and a revised risk assessment (we refer to this as the

[1] We use the term "misstatement" ("misstate", "lag misstate", "misstated") to refer to the material misstatement of financial statements. We use the term "restatement" ("restate", "lag restate", "restated") to refer to misstatements that are revealed in a subsequent restatement.

announcement effect), and (2) reduces the likelihood that the misstatement persists into future periods since the misstatement is identified and presumably corrected (we refer to this as the correction effect). In other words, misstatements generally persist until detected and corrected. For the client-years where existing misstatements are detected (relative to client-years where existing misstatements are not detected), misstatement rates decline precipitously while audit fees simultaneously increase. This results in a negative relation that does not reflect misstatement reducing audit effort; rather, it reflects the unmodeled effects of misstatement detection.[2]

To demonstrate these effects, we begin our analyses with a realistic, simulated setting where we specify a "true" relation between audit fees and restatements. The simulation clearly demonstrates the bias from the announcement and correction effects. In the absence of *Lag Restate*, we estimate relations between fees and restatements that predictably follow the relation we specify in the data. However, when controlling for *Lag Restate*, we observe a significant, negative bias, which increases with the magnitude of the fee response to the restatement announcement. We corroborate this pattern with archival data. Specifically, we document no significant relation between audit fees and restatements absent *Lag Restate* but document a significant negative relation after including *Lag Restate*, consistent with the inferences in LZ. However, we then show that the negative association between audit fees and restatements is limited to observations where *Lag Restate* = 1 (where the correction effect can exist). This result indicates that the announcement and correction effects drive the negative association between audit fees and restatements when controlling for *Lag Restate* rather than quality-enhancing auditor effort.

[2] In some sense, *Lag Restate* results in overcontrol, but it does not fall cleanly into any of the three "bad control" categories (mediator, collider, or same-construct) discussed by Swanquist and Whited (2018). We refer the reader to that study for a holistic discussion of considerations when selecting control variables.

We next show that this issue extends to other empirical settings where the test variable responds to restatement announcements. Specifically, we demonstrate the generalizability of this effect using two other variables commonly considered in audit and financial reporting research: internal control material weaknesses and auditor switches. Like audit fees, both of these measures respond to the detection of a prior period misstatement (i.e., companies identify control weaknesses and/or companies change auditors following restatement announcements), so controlling for *Lag Restate* could again introduce significant bias. In both settings, we show that the inclusion of *Lag Restate* alters inferences.[3]

Our evidence strongly suggests that researchers should *not* control for misstatement risk with a lagged restatement control. However, the potential bias arising from an association between *ex ante* misstatement risk and audit-related test variables remains a significant concern for audit research. Therefore, we also discuss the relative merits of a variety of alternative approaches. We suggest that controlling for prior period restatement announcements captures a firm's history of financial reporting failures while avoiding issues with the announcement and correction effects. Recognizing that this approach will not fully control for *ex ante* misstatement risk in all settings, we also discuss several other common approaches to provide guidance for future research on best practices for controlling for misstatement risk.

2. CONTROLLING FOR LAGGED RESTATEMENTS

LZ argue that prior research fails to consistently document the expected negative relation between excess (abnormal) audit fees and restatements, in part, due to inadequate control for *ex*

[3] *Lag Restate* does not introduce bias when the test variable is unresponsive to the identification of a prior period misstatement (i.e., where the "announcement effect" does not exist). However, it is not clear what is gained by the inclusion of *Lag Restate* as it is unlikely to represent a confounding construct.

ante misstatement risk.[4,5] LZ correctly point out that *ex ante* misstatement risk theoretically confounds the causal association between audit fees and the likelihood of misstatement. That is, increased risk both causes auditors to charge higher fees and increases the chance of subsequent restatement. Thus, failure to properly control for *ex ante* misstatement risk biases *against* detection of a negative association between audit fees and restatements (or, more generally, a positive relation between audit effort and financial reporting quality). Consistent with their arguments, LZ only detect a negative relation between audit fees and restatements after controlling for whether the company eventually restates year *t-1* financial statements (*Lag Restate*).

While *ex ante* misstatement risk represents a likely confounder in settings such as that in LZ, we identify a significant issue with their prescribed approach. Appropriate control variables should adjust for factors that causally determine both a dependent variable and a test variable (Gow, Larcker, and Reiss 2016; Swanquist and Whited 2018). However, *Lag Restate* does not meet these criteria for at least two reasons. First, a risk-induced fee premium due to a prior year misstatement requires auditor awareness of the misstatement. Second, while *ex ante* misstatement risk should relate positively to the likelihood of restatement, the association between a prior year restatement and a restatement of current period financial statements is less clear. If a prior period misstatement is not identified, the likelihood of the misstatement persisting into the current period is very high. However, if the misstatement is identified in the current period, the likelihood that the misstatement persists greatly declines. Thus, similar to audit fees (discussed above), the

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[4] LZ also suggest that commingling quarterly and annual restatements affects this relation. We agree that it is important to exclude quarter only restatements in tests of audit quality, as auditors do not opine on the accuracy of quarterly financial statements. Our measure of restatements excludes those limited to quarterly financial statements.

[5] Most studies identify determinants of audit fees that almost certainly relate to risk (e.g., client size and complexity) and include such determinants as control variables, at least partially controlling for *ex ante* misstatement risk. We discuss the sufficiency of such controls in Section 6.

relation between *Lag Restate* and current year restatements likely depends on whether the underlying misstatement has been uncovered.

To illustrate the implications of these issues, we consider the audit of two hypothetical clients, each with a prior period misstatement (*Lag Restate* = 1), identical fundamentals and *ex ante* misstatement risk. Company A's and Company B's misstatements both originated in FY2004. Company A detects the misstatement in FY2006, while company B detects the misstatement in FY2007. We summarize this information below:

Company A: Misstatements from FY2004-FY2005 that were detected in FY2006.

Company B: Misstatements from FY2004-FY2006 that were detected in FY2007.

The identification of a misstatement for Company A likely triggers an audit fee increase in FY2006 due to both a revision of the auditor's risk assessment and additional audit work related to restating FY2004-2005 financial statements. Furthermore, the misstatement does not persist in FY2006 for Company A due to its correction prior to the FY2006 year-end. On the other hand, for Company B, the misstatement remains undetected in FY2006 and does not trigger an increase in audit fees relating to auditor-assessed risk. Furthermore, the misstatement persists into FY2006 financial statements because the accounting error remains unidentified. Thus, in FY2006, Company A's audit fees increase and its financial statements are no longer misstated. Conversely, Company B exhibits no such fee increase *and* the financial reporting error continues into the FY2006 financial statements, resulting in a future restatement.

We refer to these phenomena as the announcement and correction effects. The announcement effect refers to the fee increase driven by the identification of a past restatement. The correction effect refers to the fact that, once the specific underlying cause of a past misstatement is identified, that particular misstatement should not persist into a future period. For instance, assume Company A and B in the example above each applied inappropriate revenue recognition for a long-term contract originating in FY2004. Assuming Company A (B) corrects this issue after identifying the misstatement in FY2006 (FY2007), the likelihood Company A's (B's) financial statements are misstated in FY2006 due to this specific issue should be low (high). Thus, the company experiencing a fee increase in 2006, Company A, will be substantially less likely to subsequently restate FY2006 financials (for this specific reason) than Company B. Therefore, in a sample of companies with lagged restatements, those companies without fee increases will be more likely to restate year *t* financials since they have not yet corrected the prior period misstatements. Importantly, this relation *is not* the product of a negative relation between audit effort and restatements, but rather a manifestation of the announcement and correction effects. Controlling for *Lag Restate* isolates this portion of the relation between fees and *Restate*, inducing a negative bias to the coefficient on an audit fees variable in a restatements model. In the following sections, we illustrate this phenomenon using both simulations and archival data.

3. SIMULATIONS

We begin with a series of simulations to illustrate the announcement and correction effects in a controlled setting. One drawback in assessing the announcement and correction effects using archival data is that we do not know the "true" relation between audit fees and restatements. However, a simulation allows us to circumvent this issue.

We begin by generating datasets with varying relations between audit fees, misstatements, and restatement announcements. Specifically, we generate a panel of 1,000 companies (subscripted *i*) with 20 years per company (subscripted *t*). We assume that innate characteristics of companies (like *ex ante* misstatement risk) are similar and focus only on differences in auditors. For simplicity, we assume there are two discrete levels of audit quality, "good" and "bad," and that good auditors deliver uniformly high audit quality while bad auditors deliver uniformly low audit quality. Each of the 1,000 companies is randomly assigned either a good or bad auditor for the duration of the 20-year period, and we operationalize audit quality by seeding relatively lower (higher) restatement rates for good (bad) auditors. Importantly, we vary the relative cost of a good auditor, which effectively manipulates the true association between audit fees and the likelihood of a misstatement. We assume that a misstatement persists until corrected and announced (correction effect), and that restatement announcements trigger fee increases in the year of the announcement. We illustrate the announcement effect by varying the fee response to restatement announcements. The specific procedures used to generate the simulation for the 20,000 observations are as follows:

1) The likelihood of any individual company having a good auditor is 50 percent: $P(Good\ Audit_i = 1) = 0.50$.
2) Companies with "good" auditors are randomly assigned "first-year" misstatements for 5 percent of company years: $P(FYRestate_{i,t} = 1 \mid Good\ Audit_i = 1) = 0.05$.[6]
3) Companies with "bad" auditors are randomly assigned "first-year" misstatements for 15 percent of company years: $P(FYRestate_{i,t} = 1 \mid Good\ Audit_i = 0) = 0.15$.
4) Misstatements persist and affect between 0 and 3 subsequent company-years. Therefore, each first-year misstatement is randomly assigned a persistence duration (p) from 0 to 3, indicating the number of *additional* years the restatement will persist: $p \sim U([0,3])$ and $FYRestate_{i,t} = 1 \rightarrow Restate_{i,t} = 1 \ldots Restate_{it+p} = 1$ for a maximum of 4 total misstated years.
5) Restatement announcements (*Restate Announce*) refer to the discovery and disclosure of a restatement and occur in the period following the end of the restatement persistence period ($t+p+1$): $FYRestate_{i,t} = 1 \rightarrow Restate\ Announce_{i,t+p+1} = 1$.
6) The following function determines audit fees:

   $$Audit\ Fees_{i,t} = 20{,}000 + \alpha Good\ Audit_i + \beta Restate\ Announce_{i,t} + \nu_{i,t}$$

   a. The base level of audit fees (intercept) is \$20,000.
   b. The pricing for a "good" audit (α) takes the values of \$5,000 (high), \$0 (no effect), or -\$5,000 (low) (3 total values).

[6] A "first year" misstatement is the first year a specific misstatement begins. The misstatements persist for a varied number of years (see parameter #4).

c. The pricing for a restatement announcement (β) varies from \$0 to \$5,000 in increments of \$100 (51 total values).
d. Audit fees have a random variation (v) component drawn from a normal distribution with a mean of 0 and standard deviation of \$2,000.

The first condition results in half of the companies in the sample having "good" auditors.[7] The sample is then seeded with "first year" misstatements at a frequency dependent on audit quality that indicates the misstatement origination year. Since we hold *ex ante* misstatement risk constant, non-random variations in misstatement rates are entirely attributable to audit quality. The second and third conditions impose that "good" auditors have lower misstatement rates than "bad" auditors. The fourth condition indicates that misstatements persist undetected for 1 to 4 years (i.e., 0 to 3 years after the first-year).[8] The fifth condition requires misstatement detection and correction to occur in the year following the misstatement period. Together, the fourth and fifth conditions indicate that, if company-year t has a misstatement originating in year t that persists for 2 additional years, then company-years t, $t+1$, and $t+2$ are restated and the restatement is announced in year $t+3$.

Condition 6 describes the determination of audit fees. We set the "base" level of audit fees at \$20,000 and allow audit fees to vary based on the quality of the auditor and the fee response to a restatement announcement. Specifically, the incremental price of a "good" auditor takes the value of \$5,000, \$0, or -\$5,000, and the fee response to a restatement announcement takes a value of \$0 to \$5,000. Varying the fee response to a restatement announcement manipulates the announcement effect, or the degree to which fees respond to the identification of a past restatement. The correction effect naturally arises (i.e., requires no manipulation) since misstatements persist until the year the

[7] For simplicity, we require all companies to retain the same auditor over the entire period (i.e., we do not allow auditor switches). This condition does not affect the generalizability of the simulation.
[8] We elected not to make p a function of audit quality to retain simplicity. However, one could argue that high quality auditors detect misstatements faster, resulting in lower values for p. The inferences are qualitatively similar if make the longest misstatement duration period half as long for good auditors.

client announces the restatement (the fifth condition described above). Note that the likelihood of a first-year misstatement is independent of whether the firm is currently misstating or detects and corrects a previous misstatement. So, identifying a misstatement in year *t* does not preclude a separate misstatement in year *t+1*. Finally, we add a random component to audit fees, and we scale this total value by 1,000 for exposition (i.e., fees are in thousands).

We begin by presenting descriptive statistics for the simulated sample in Table 1, Panel A. Following the parameters above, half of the observations are assigned "good audits" and the other half "bad audits." The restatement rate for "bad audits" is 20 percent higher than the restatement rate for "good audits." Because misstatements span up to 4 total years, pooled restatement rates are significantly higher than the 5 percent and 15 percent rates prescribed above.[9] Note that conditions 2 and 3 describe the rate of "first time misstatements," which roughly corresponds to the final column of Panel A (Restatement Announcements). The average restatement rate of 10 percent in conditions 2 and 3 slightly exceeds the overall announcement rate (9 percent) since companies occasionally announce multiple restatements in the same year.

(Insert Table 1)

Next, we present regression estimates of the relation between *Audit Fees* and *Restate* after varying both (1) the pricing of "good" audits relative to "bad" audits (i.e., $5,000, $0, and -$5,000) and (2) the fee sensitivity to restatement announcements (i.e., $0 and $5,000). We begin by examining the effect of audit fees on restatements without controlling for lagged restatements in Panel B of Table 1. Columns 1 through 3 present the relation between audit fees and restatements when restatement announcements have no effect on audit fees (i.e., no announcement effect). The

[9] This difference is also affected by instances where restatements "overlap" with one another because years with overlapping restatements are simply treated as having one rather than multiple restatements. We acknowledge that these rates are higher than in practice (i.e., LZ report a 10-K restatement rate of approximately 7.7 percent in Panel A of Table 5); however, this difference in rates does not affect the conclusions.

estimation results are consistent with the expected direction. That is: (1) when "good" audits are more expensive, audit fees exhibit a negative relation with restatements (column 1); (2) when no pricing difference exists for good audits, audit fees exhibit no significant relation with restatements (column 2); and (3) when good audits are cheaper, audit fees exhibit a positive relation with restatements (column 3).[10] Columns 4 through 6 repeat the estimation results, but in the more realistic setting where restatement announcements trigger audit fee increases. Here, coefficient estimates in columns 4 through 6 are similar to columns 1 through 3, though slightly smaller in magnitude. The magnitude declines because of a correlated omitted variable—restatement announcements drive changes in fees (per our simulation parameters) and are more likely for bad auditors, generating a correlation with *Restate*. Nonetheless, the coefficient estimates in Panel B generally conform to the specified relation between fees and restatements for each simulation.

We introduce the *Lag Restate* control in each of these tests in Panel C, consistent with the approach suggested by LZ.[11] Columns 1 through 3 suggest that, in the absence of an announcement effect (i.e., when restatement announcements have no effect on audit fees), controlling for lagged restatements does not affect the expected pattern of the results. That is, we find a positive (insignificant, negative) coefficient estimate in column 1 (2, 3), consistent with the relations

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[10] Based on the simulation parameters, the "true" relation between *Audit Fees* and *Restate* in columns 1 through 3 should be -0.04, 0, and 0.04, respectively. To illustrate, Panel A of Table 1 suggests that clients of "good" auditors have restatement rates that are 20 percent lower than bad auditors (32 percent - 12 percent). Given the magnitude of the fee differential (in thousands) is $5 in column 1, -20 percent / 5 = -0.04 (similar logic applies to column 3). We observe a coefficient of -0.025 in column 1 because we add noise to audit fees so that the correction effect is not deterministic. The variance of fees without noise is 6.25 (the mean fee is 2.5, so $\frac{1}{2}(5 - 2.5)^2 + \frac{1}{2}(0 - 2.5)^2 = 6.25$). Parameter 6d suggests that the actual variance of fees is 10.25 since the noise has a standard deviation of 2 ($6.25 + 2^2$). The attenuation bias introduced by this noise is the quotient of 6.25 divided by 10.25, or 61 percent. Multiplying 0.04 by 61 percent yields, 0.024, which is similar to the coefficients in columns 1 and 3.

[11] We define all restatements (*Restate*, *Lag Restate*, etc.) based on annual (and therefore audited) financial statements. We do this for expositional purposes since annual restatements serve as the source of bias and represent the majority (68 percent) of *Lag Restate* instances in observed data. We recognize that LZ define their *Lag Restate* variable based on the eventual restatement of *either* a quarterly or annual financial statement from the prior year. As we discuss in more detail in Section 4, both definitions induce substantial bias.

imposed in the simulation.[12] However, as shown in columns 4 through 6, controlling for *Lag Restate* severely biases the estimated relation between fees and restatements by isolating the fee increase following a restated period. More specifically, audit fees have large and significant negative associations with restatements, even when we impose a *positive* relation (i.e., column 6) where restatement announcements trigger fee increases. The intuition is as follows: following the announcement of a restatement, fees increase, but the likelihood of a restatement decreases; however, for companies where the misstatement remains undetected, fees do not increase and the misstatement persists. These estimates also illustrate that *both* the announcement and correction effects must be present to introduce this bias. More specifically, even though the correction effect exists in columns 1 through 3, the estimates do not exhibit substantial bias since the announcement effect is not present.[13] Finally, the prior discussion suggests that the bias from the announcement and correction effects arises due to the subsample of companies where *Lag Restate* = 1 (because there is no announcement *or* correction effect for *Lag Restate* = 0 companies). To illustrate, we split the samples in Panel B, columns 4-6 based on *Lag Restate* and present the results in Panel D. Consistent with expectations, the bias only exists in the *Lag Restate* = 1 sample, where the coefficients on *Audit Fees* are uniformly negative and larger in magnitude than Panel C estimates.[14]

The magnitude of the "announcement effect" fee response to restatement announcements affects the severity of the bias in our simulations. To illustrate, we vary the price effect from $0 to $5,000 in increments of $100 (unlike the tables that present a price effect of either $0 or $5,000)

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[12] Note that the magnitude of estimates is smaller than in Panel B because controlling for *Lag Restate* causes the model to isolate variation in the dependent variable that does not relate to restatement persistence (i.e., first-time restatements). Following the discussion above, the difference in first-time restatement rates between good and bad audits is smaller than the difference in overall restatement rates, which leads to smaller coefficients on *Audit Fees*.

[13] There would likewise be no bias associated with a *Lag Restate* control in the presence of the announcement effect if all misstatements lasted just one year (i.e., no correction effect).

[14] Splitting the sample on *Lag Restate* causes the coefficient estimates in the *Lag Restate* = 0 sample to reflect the relation between *Audit Fees* and first year restatements by removing the effects of restatement persistence, so the coefficient estimates are smaller than Panel B and similar in magnitude to Panel C.

and graphically present the results in Figures 1 and 2, respectively. In Figure 1 (2), the y-axis represents the observed coefficient on audit fees from regressions that exclude (include) a lagged restatement control variable. The x-axis represents an imposed price effect of restatement announcements. The data points are color and shape coded as follows: the blue circles indicate instances where good audits cost more, the green triangles indicate instances where good audits cost the same as bad audits, and the red squares indicate instances where good audits cost less.

Figure 1 confirms that, in the absence of a *Lag Restate* control, increasing the fee sensitivity to a restatement announcement results in slight coefficient attenuation but does not significantly alter inferences (i.e., the lines are relatively flat). Figure 2 illustrates the audit fee coefficient when including a lagged restatement control. Unlike Figure 1, these plots illustrate a significant downward bias in the estimated relation between fees and restatements. As expected, the extent of this bias increases as the fee response to restatement announcements increases (i.e., as the announcement effect increases). Additionally, the strongest bias occurs when audit quality is *unrelated* to audit pricing (green triangles). This occurs because the correlation between fees and restatements is completely determined by restatement announcements and corresponding corrections rather than jointly determined by quality and restatement announcements. In other words, the magnitude of the coefficients corresponding to the green triangles are 100 percent bias, as fees should have no association with restatements in these regressions. Importantly, the bias exists in each setting and increases as the announcement effect increases.

(Insert Figures 1 and 2)

4. EMPIRICAL TESTS OF THE ANNOUNCEMENT AND CORRECTION EFFECTS

Data and Variables

To examine the announcement and correction effects in archival data, we utilize a sample of 48,738 observations between 2004 and 2017 (Compustat fiscal year convention). We obtain financial statement data from Compustat and audit fee and restatement data from Audit Analytics. We present descriptive statistics for our sample in Table 2 and define all variables in Appendix 1. Continuous variables are winsorized at the 1st and 99th percentiles.

(Insert Table 2)

Our dependent variable, *Restate*, captures restatements of annual (i.e., audited) financial statements; we define *Lag Restate* as $Restate_{t-1}$ to be consistent with our simulation and to highlight the announcement and correction effects. As noted in footnote 6, LZ define *Lag Restate* using prior year restatements of both quarterly and annual financial statements. We consider this alternative definition at the end of this section.[15]

Validation of Simulation Assumptions in Observed Data

For *Lag Restate* to induce bias, the observed data must exhibit three characteristics (each of which we embedded into our simulation above): 1) misstatements often persist across multiple periods, 2) restatement announcements occur at the end of a misstated period, and 3) restatement announcements trigger audit fee increases. Consistent with condition 1, we observe that 46 (20) percent of restatements in our sample span two (three) or more audited financial statements. Consistent with condition 2, the length of time between the restatement end date and the

[15] In addition, LZ also control for lagged restatements indirectly when estimating abnormal audit fees, their proxy for auditor effort. That is, they include a lagged restatement control when estimating the audit fee residual and then test the relation between the residual and restatements. Including a lagged restatement control in the estimation of the fee residual induces the same problems as including lagged restatements in the outcome equation by orthogonalizing fees to lagged restatements.

restatement announcement date is generally under a year, with more than 73 percent of restatements in our sample announced less than 365 days following the end of the misstatement period. To evaluate condition 3, we examine the timing of audit fee increases around restatement announcements by estimating the following regression:

$$ln(Audit\ Fees_{it}) = \sum_{k=0}^{6} \beta_k Restate\ Announce_{i,t+k-3} + \delta X_{it} + \varepsilon_{it} \quad [1]$$

For parsimony, we use the same variable names as in the prior section, though from this point forward we use actual, rather than simulated, data. We also use the natural log of total audit and audit related fees (*ln(Audit Fees)*), consistent with prior research. *Restatement Announce* indicates announcements of restatements of annual financial statements, consistent with the simulation. We include a basic set of control variables, *X*, to capture company size, complexity, profitability, operations as well as industry and year fixed effects. The β coefficients capture estimated fee differentials in year *t* for clients with restatement announcements in year *t-3* through *t+3*. Table 3 presents results from estimating equation 1.

(Insert Table 3)

We do not observe a substantial fee premium in years *preceding* restatement announcements except for a modest premium of approximately 2 percent in the year immediately preceding a restatement announcement (i.e., *Restate Announce* in *t+1*). However, the fee premium spikes in the year of the restatement announcement (approximately 15 percent). Moreover, the fee premium persists, but at a declining rate, in the years following a restatement announcement. The larger fee premium in the year of the restatement announcement is consistent with the auditor also performing additional audit work related to the restated financial statements. Together, evidence suggests that the empirical setting exhibits the conditions necessary for the announcement and correction effects to induce bias.

The Announcement and Correction Effects

We next estimate the following regressions to illustrate the effects of the announcement and correction effects in the data.[16]

$$Restate_{it} = \beta_0 + \beta_1 ln(Audit\ Fees)_{it} + \beta X_{it} + \varepsilon_{it} \quad [2]$$

$$Restate_{it} = \beta_0 + \beta_1 ln(Audit\ Fees)_{it} + \beta_2 Lag\ Restate_{it} + \beta X_{it} + \varepsilon_{it} \quad [3]$$

Restate = 1 if the company eventually restates the annual (i.e., audited) financial report and zero otherwise, and *Lag Restate* takes the value of *Restate* in *t-1*. Each of the other variables is as defined above. Table 4 presents estimates of equations 2 and 3 in columns 1 and 2 respectively. We estimate a positive association between *ln(Audit Fees)* and *Restate* using equation 2 (*t*-stat = 1.83). However, after controlling for *Lag Restate* in equation 3, the coefficient estimate becomes negative and statistically significant (t-stat = -3.93). In columns 3 and 4, we split the sample on *Lag Restate*, similar to the simulation in Panel D of Table 1. Consistent with the results from our simulation, the negative coefficient on *ln(Audit Fees)* manifests only in the subsample where *Lag Restate* = 1. In the *Lag Restate* = 0 subsample (which represents 89 percent of the sample), the coefficient is small and statistically insignificant. Because the announcement and correction effects only relate to the *Lag Restate* = 1 subsample, we attribute the negative coefficient in column 2 largely to the announcement and correction effects.

(Insert Table 4)

To further elucidate the announcement effect, we compute a measure, *Residual Fees*, which equals the residual from equation 1 using only the control variables (*X*) and fixed effects (i.e., excluding the *Restate Announce* variables). We then cross tabulate *Residual Fees* by *Restate*

[16] For simplicity, we use linear probability models (i.e., OLS) for all regressions in this study. Inferences are unchanged if we instead use logit models. In addition, if we expand our set of control variables to be the same as LZ, inferences are again unchanged.

Announce and *Lag Restate* so that we can examine residual fees based on whether the client subsequently restates the prior period and whether the client announces a restatement in this period. We present this analysis in Table 5, Panel A.

(Insert Table 5)

Consistent with the announcement effect, we observe significantly larger *Residual Fees* for *Lag Restate* = 1 observations when *Restate Announce* = 1 (*Residual Fees* = 0.1542) versus those when *Restate Announce* = 0 (*Residual Fees* = 0.0024). This difference is consistent with the announcement of a prior period misstatement leading to increased audit fees, rather than the existence of a misstatement affecting fees. In fact, *Lag Restate* does not appear associated with *Residual Fees* when *Restate Announce* = 0 (-0.0115 when *Lag Restate* = 0 versus 0.0024 when *Lag Restate* = 1). We examine the correction effect in Panel B using a similar approach that examines current period restatement rates. We observe a 96.47 percent restatement rate for observations with an "uncorrected" lagged restatement in year *t* (i.e., *Lag Restate* = 1 and *Restate Announce* = 0). However, 17.36 percent of companies subsequently restate year *t* if a past misstatement is corrected in the current year (i.e., *Lag Restate* = 1 and *Restate Announce*= 1).[17] The 79.11 percent difference in the restatement rates is highly significant and indicates a significant correction effect (i.e., identifying a prior period misstatement greatly reduces the likelihood that a misstatement persists into the current year).

Overall, our evidence strongly suggests that fee responses to restatement identification severely bias the association between audit fees and the likelihood of restatements when controlling for lagged restatements.

[17] We note that this rate exceeds the restatement rate in the broader sample, indicating that firms with a history of restatements are more likely to restate again, indicating the need to control for restatement history in some fashion. As discussed further in Section 6, we suggest including a control for restatement announcements (i.e., the announcement of prior identified misstatements).

Including Annual and Quarterly Restatements in *Lag Restate*

As discussed above, we only include prior period annual restatements in our measure of *Lag Restate*. LZ include both quarterly and annual restatements in *Lag Restate* because either represents a reporting failure. Commingling quarterly restatements in *Lag Restate* could dilute the bias shown above because prior year quarterly restatements usually do not trigger the announcement and correction effects (since they are generally identified in the prior year or else they would result in annual misstatements). We demonstrate here that using LZ's definition still results in significant bias. To do so, we replicate Table 4 using LZ's definition of *Lag Restate* and present results in Table 6.

Consistent with prior results, the inclusion of a lagged restatement control (*Lag Restate LZ* in this case) biases results and alters statistical inferences. Together, our results strongly suggest that including a control for prior period misstatements that does not consider whether the misstatement has been detected induces considerable bias.

(Insert Table 6 here)

5. ADDITIONAL EMPIRICAL SETTINGS

We use audit fees to demonstrate the announcement and correction effects because the association between audit fees and audit quality is the subject of an extensive line of research. Nonetheless, the bias induced by the lagged restatement control extends to other settings where the test variable "responds" to the identification and correction of a misstatement. In this section, we demonstrate the implications of including *Lag Restate* when the test variable is either an internal control material weakness (*ICMW*) or the selection of a new auditor (*New Auditor*).

Internal Control Material Weaknesses

Since the passage of the Sarbanes Oxley Act, ICMWs have been the subject of many accounting studies (e.g., Ashbaugh-Skaife, Collins, Kinney, and LaFond 2009, DeFond and Lennox 2017, Doyle, Ge, and McVay et al. 2007, Schroeder and Shepardson 2016, and Seidel 2017). Intuition and casual observation suggest that firms frequently identify ICMWs in conjunction with the detection of a past misstatement. This likely occurs because, upon uncovering a past misstatement, management or the auditor identifies the control weakness(es) that led to the accounting issue. Consistent with this, we note that 31.6 percent of company-years with restatement announcements receive an ICMW; however, only 4.7 percent of companies that do not announce a restatement in the current year receive an ICMW. Thus, the announcement effect in this setting makes identification and disclosure of an ICMW far more likely (similar to fee increases) while the correction effect again leads to a reduction in the likelihood of a future misstatement.

To assess the validity of these arguments, we estimate the following empirical model for a sample of companies that receive an internal control audit under Sox Section 404(b):

$$Restate_{it} = \beta_0 + \beta_1 ICMW_{it} + \beta X_{it} + \varepsilon_{it} \quad [4]$$

where *Restate* is as previously defined and *ICMW* is an indicator equal to 1 if management discloses an ICMW in year *t. X* denotes the same vector of control variables as in equation 1, except we remove *Sox 404B* because all firms in this sample receive an internal control audit opinion. Table 7 reports results of estimations of equation 4. Column 1 (2) reports results excluding (including) *Lag Restate* as a control. Consistent with expectations, we estimate a positive and significant coefficient on *ICMW* in column 1, suggesting that restatements occur more often for companies with weak internal controls. However, consistent with the fees analyses, *Lag Restate* induces a negative bias between *ICMW* and *Restate*. In fact, the coefficient estimate on *ICMW* changes from significantly positive, to significantly negative after conditioning on *Lag Restate*. In other words, controlling for *Lag Restate* could lead to the conclusion that companies with internal control weaknesses are *less* likely to restate. We note that this relatively pronounced effect occurs because the announcement effect has a greater impact on the incidence of ICMW disclosures than on audit fees. Similar to Table 4, we further demonstrate the source of bias by splitting the sample on *Lag Restate*. We observe the expected, positive coefficient on *ICMW* in the *Lag Restate* = 0 sample, but a negative and highly significant coefficient on *ICMW* in the *Lag Restate* = 1 sample.

(Insert Table 7)

New Auditors

Mandatory rotation, auditor tenure, and auditor selection are common topics in auditing research (e.g., Bell, Causholli, and Knechel 2015, Ghosh and Moon 2005, and Myers, Myers, and Omer 2003). Prior research suggests that companies are more likely to change auditors following the announcement of a past restatement (Mande and Son 2013). Consistent with this, we note that, 15.5 percent of clients that announce a restatement in the current year enlist a new auditor, while just 6.9 percent of clients that do not announce a restatement in the current year enlist a new auditor. Similar to audit fees and material weaknesses, the announcement effect triggers an increase in the likelihood that a company enlists a new auditor, while the correction effect will reduce the likelihood of a persistent misstatement. As above, we estimate the following empirical model both with and without a *Lag Restate* control to explore the ramifications of the announcement and correction effects in this setting.

$$Restate_{it} = \beta_0 + \beta_1 New\ Auditor_{it} + \beta X_{it} + \varepsilon_{it} \quad [5]$$

where *Restate* is previously defined and *New Auditor* is an indicator equal to 1 if the company employs a different auditor in year *t* than in year *t-1*. *X* denotes the same vector of control variables as in equation 1. We present results from the estimation of equation 5 in Table 8. In column 1, with no *Lag Restate* control, we note an insignificant coefficient (t-stat = -0.31). However, as shown in column 2, the inclusion of *Lag Restate* again induces a negative bias and we observe a highly significant, negative coefficient on *New Auditor.* Similar to prior settings, columns 3 and 4 illustrate that the bias arises from the sample of companies where *Lag Restate* = 1. The ramifications of the bias in this setting are particularly salient given the policy implications of such a finding. Namely, the results in column 2 imply that new auditors appear to provide better audit quality, which could serve as evidence supporting mandatory auditor rotation. However, column 3 suggests that clients without prior period restatements that do not experience improvements in quality, as the coefficient on *New Auditor* is *positive* (*t*-stat = 1.74).

(Insert Table 8)

6. ALTERNATIVE APPROACHES AND SUGGESTIONS FOR FUTURE RESEARCH

Our evidence demonstrates that controlling for lagged restatements introduces significant bias in settings where variables respond to the identification of a restatement. However, we agree with LZ that endogeneity introduced by *ex ante* misstatement risk is a significant concern when trying to isolate a causal relation between a treatment and restatements. Therefore, we discuss alternative approaches used to address unobservable misstatement risk and provide general suggestions for future research. We note that no universal solution will perfectly control for the confounding nature of misstatement risk, and all approaches involve tradeoffs. Regardless of the approach taken, we encourage researchers to consider the strengths and weaknesses of each approach in the context of their specific setting.

Using Observed Company Characteristics to Control for Misstatement Risk

Nearly all studies using restatements as a financial reporting outcome include controls that attempt to address *ex ante* misstatement risk. These generally include client characteristics such as company complexity, size, or industry. However, as evidenced in the extensive prior research and our earlier tables, these characteristics tend to weakly predict restatements. In fact, regressing *Restate* on our simple set of control variables and fixed effects produces low adjusted R^2 (e.g., 1.8 percent in Table 4 column 1). This is somewhat unsurprising, as factors that strongly predict future restatements would allow investors and regulators to easily identify misreporting companies. Although client controls only weakly predict restatements, researchers should still include these controls because even a weak relation with restatements can result in significant omitted variable bias given client controls strongly relate to many auditor traits (e.g., client size strongly relates to Big 4 auditor selection or audit fees).

A closely related approach involves constructing a composite measure of misstatement risk based on financial statement traits, such as the F-Score (Dechow, Ge, Larson, and Sloan 2011) or P-Score (Lobo and Zhao 2013).[18] The appeal of these measures is obvious, as they parsimoniously quantify a company's risk of misstatement. However, these measures simply reflect transformations of client specific variables such as those discussed in the preceding paragraph. As such, they introduce no new information to the model beyond their component variables and therefore offer no discernible advantages in a regression relative to simply controlling for the components used to calculate the measures.

[18] Note that Dechow et al. (2011) do not suggest that F-score be used as a control for misstatement risk, though subsequent research has used the measure as such.

Using Restatement Announcements as an Alternative to a "Lagged Restatement" Control

The bias from the *Lag Restate* control originates from the commingling of known (i.e., detected) and unknown (i.e., undetected) misstatements. As an alternative, we suggest controlling for whether the company announces a restatement in the current year (*Restate Announce Q/A*) or prior years (*Restate Announce Q/A* in *t-1*, *t-2*, and *t-3*), since *Restate Announce Q/A* reflects only *known* prior reporting failures and thus will not induce the bias we document with *Lag Restate*. In this instance, it is also reasonable to include both quarterly and annual restatements since both reflect low financial reporting quality and neither introduces the bias discussed above. We augment equation 2 with a vector of *Restate Announce Q/A* controls and present results in column 2 of Table 9 (we present original estimates of [2] in column 1 for comparison purposes). In these tests, *Restate Announce Q/A* strongly predicts current period restatements and could therefore serve as a valuable control for *known* misstatement risk.[19] In column 3, we also include lagged restatement announcement controls for *t-1*, *t-2,* and *t-3*. All three variables exhibit significant associations with current period restatements but decrease monotonically (consistent with increased relevance of more recent information). Together, these results suggest that one or more controls for prior period restatement announcements at least partially accounts for *ex ante* misstatement risk. This is of particular importance when restatement announcements trigger responses by the test variable (e.g., audit fees, ICMW, or auditor changes), as this suggests potential omitted variable bias if the researcher does not control for restatement announcements.

(Insert Table 9)

[19] Neither quarterly nor annual restatement *announcements* introduce the announcement and correction effects, so it is reasonable to include these in one variable. In untabulated analysis, when concurrently including *t-3* through year *t* restatement announcements for annual, and quarter only restatement announcements (as separate regressors), all regressors load significantly and positively with the exception of *t-3* quarterly restatement announcements (*t-2* quarterly announcements are marginally significant). Consistently, annual restatement announcements predict current year restatements more strongly than quarterly restatement announcements. Nonetheless, it seems reasonable to commingle them in this setting, though researchers may separately specify them.

Limiting the Sample to Instances Where the Prior Period is *Not* Restated

Similar in spirit to controlling for *Restate Announce*, an alternative approach is to limit the sample to instances where the prior period is *not* restated (i.e., *Lag Restate = 0*), as is done in Moon et al. (2019), for example. This method controls for prior misstatement risk in a sense (i.e., all sample firms do not restate the prior year's financial statements), but the correction effect does not bias estimates. Note that this approach produces estimates of the relation between a test variable and the likelihood of misstatement *origination* (i.e., includes only the first year of a restatement period). In addition, the sample excludes observations where a company corrects a prior year misstatement in the current year (i.e., did not persist into year *t* financial statements), so the sample excludes some "first-time restatements" if a company has a new misstatement occur in the current year due to a different accounting issue. This approach limits the generalizability to restatement origination and researchers should consider whether this approach facilitates suitable inferences for the research question at hand.

New Proxies for Misstatement Risk

A recent approach to quantifying reporting complexity and misstatement risk goes beyond simple transformations of financial statement data and attempts to capture holistic measures by evaluating more nuanced and qualitative traits of companies' financial reporting. Examples include: Hoitash and Hoitash (2018) who use XBRL data to capture reporting complexity; Moon and Swanquist (2018) who develop a measure of misstatement risk from textual analysis of 10-Ks; Bertomeu, Cheynel, Floyd, and Pan (2020) who use machine learning to predict restatements; and Chychyla, Leone, and Minutti-Meza (2019) who develop a measure based on the complexity of accounting standards. Each of these studies use non-traditional data sources to develop measures of reporting complexity or misstatement risk and provide evidence that these measures exhibit statistically and economically strong associations with restatements. These variables are appealing because they introduce new information about misstatement risk that is not captured in traditional measures of reporting quality. The extent to which these measures also determine test variables will relate to how effectively they address omitted variable bias related to *ex ante* misstatement risk.

Internal Control Material Weaknesses to Control for Misstatement Risk

Our analysis in Section 5 considers ICMW as the test variable. However, ICMWs can also serve as reasonable proxies for financial reporting quality, making it a potentially appealing control for client financial reporting quality and the strong positive relation between ICMWs and restatements supports this position. We note, however, that the researcher should also consider the theoretical relation between the audit-related test variables and ICMWs. For example, high-quality audits may prompt the disclosure of an ICMW. As such, some of the variation in observed ICMWs could be due to the audit process, possibly resulting in over control (Swanquist and Whited 2018). If the researcher believes this could affect results, it may be reasonable to evaluate the findings with and without the ICMW control.

Approaches other than Explicit Control

As noted above, *ex ante* misstatement risk introduces endogeneity concerns when it also relates to the treatment (i.e., the variable of interest). Exogenous variation in treatment mitigates the need to control for *ex ante* misstatement risk. For example, Jiang, Wang, and Wang (2019) use Big N auditor acquisitions of non-Big N audit practices to evaluate the Big N effect. Because the companies presumably did not select into their auditor's acquisition, researchers can more reliably attribute changes in audit quality following the acquisition to audit quality than client reporting quality. Natural experiments such as this provide evidence on the effects of an audit treatment on audit quality that is less susceptible to common omitted variable bias concerns, but they are, unfortunately, rare.

Falsification tests can also reduce concerns that *ex ante* misstatement risk confounds inferences by identifying outcomes where the treatment is unlikely to have an effect (but the omitted variables still present endogeneity concerns). For example, Moon et al. (2019) evaluate the relation between their treatment (auditor fee premium) and restatements of quarterly (i.e., non-audited) financial reports as a falsification test. The restatement of quarterly financial statements signals low client reporting quality (high *ex ante* financial statement risk) but is less likely to reflect low audit quality since the quarterly financials are not audited. Because their test variable (auditor fee premiums) does not exhibit the same relation with quarter-only restatements as it does with annual restatements, it suggests that the relation with the test variable in primary tests is more likely driven by audit quality than client reporting quality.

7. CONCLUSION

In this study, we evaluate a popular method for controlling for misstatement risk, using restatements of the prior year's financial statements. We explain how the combination of announcement and correction effects contribute to significant bias in the association between audit fees and restatements in this approach. Using both a controlled simulation and archival data, we illustrate this bias in a series of empirical analyses. We also show these findings extend to other settings where treatment variables respond to restatement identification: internal control material weaknesses and auditor changes. We conclude by discussing the relative merits of several alternative approaches to controlling for misstatement risk and provide suggestions for future research using restatements as a proxy for financial reporting quality.

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Appendix 1: Variable Definitions

Variables	Definition
ln(Audit Fees)	Natural log of total audit and audit related fees.
Restate	1 if the client eventually restates the current year's annual financial statements, and 0 otherwise.
Lag Restate	1 if the client eventually restates the prior year's annual financial statements, and 0 otherwise.
Lag Restate LZ	1 if the client eventually restates the prior year's quarterly or annual financial statements, and 0 otherwise.
Restate Announce	1 if the client announces a restatement of annual financial statement(s) between the prior year's financial statement filing date and the current year's financial statement filing date.
ICMW	1 if the client discloses a Sox Section 404(b) material weakness in internal controls, and 0 otherwise.
New Auditor	1 if the client has a different auditor fkey (per Audit Analytics) in the current year than in the prior year, and 0 otherwise.
Restate Announce Q/A	1 if the client announces a restatement of annual or quarterly financial statement(s) between the prior year's financial statement filing date and the current year's financial statement filing date.
ln(Assets)	Natural log of total assets (in millions).
ROA	Net income divided by average total assets.
Asset Turn	Revenue divided by average total assets.
Current Ratio	Current assets divided by current liabilities.
Leverage	Total liabilities divided by total assets.
Growth	Change in revenue divided by lagged revenue.
BTM	Book value of equity divided by market value of equity.
ln(Age)	Natural log of number of years the firm has data in Compustat.
Acquisition	1 if Compustat variable aqs > 0, and 0 otherwise.
Sox 404B	1 if the client has a Sox Section 404(b) opinion, and 0 otherwise.

Figure 1: Simulation Estimates without a Lagged Restatement Control

Figure 1 presents the output from restatement regressions of simulated data without including a lagged restatement control. The y-axis represents the observed coefficient on audit fees (*Audit Fees*), while the x-axis represents an imposed price effect of restatement announcements (where the price effect is varied from $0 to $5,000 in increments of $100) (*Restate Announce*). The red squares indicate instances where good audits (*Good Audit*) are less expensive, the green triangles indicate instances where good audits are not reflected in audit fees, and the blue circles indicate instances where good audits are more expensive.

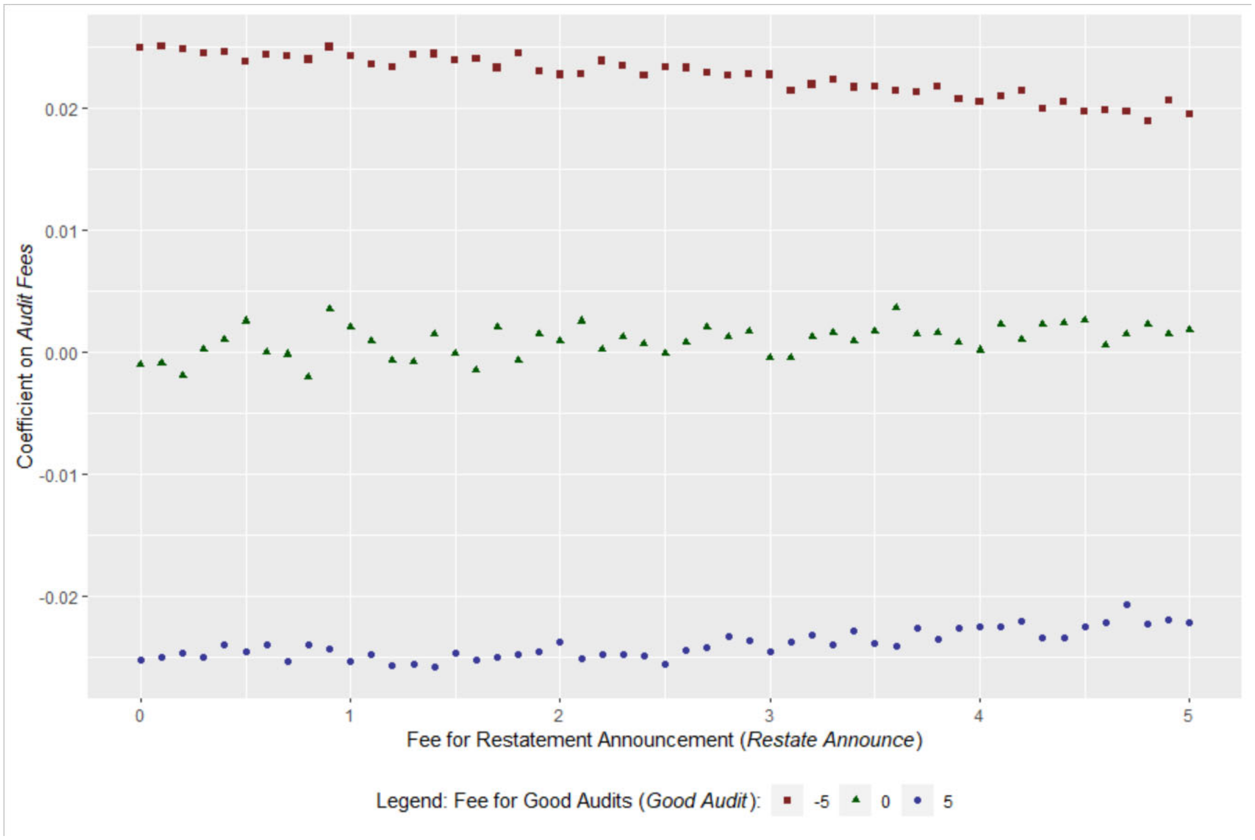

Figure 2: Simulation Estimates with a Lagged Restatement Control

Figure 2 presents the output from restatement regressions of simulated data when including a lagged restatement control. The y-axis represents the observed coefficient on audit fees (*Audit Fees*), while the x-axis represents an imposed price effect of restatement announcements (where the price effect is varied from $0 to $5,000 in increments of $100) (*Restate Announce*). The red squares indicate instances where good audits (*Good Audit*) are less expensive, the green triangles indicate instances where good audits are not reflected in audit fees, and the blue circles indicate instances where good audits are more expensive.

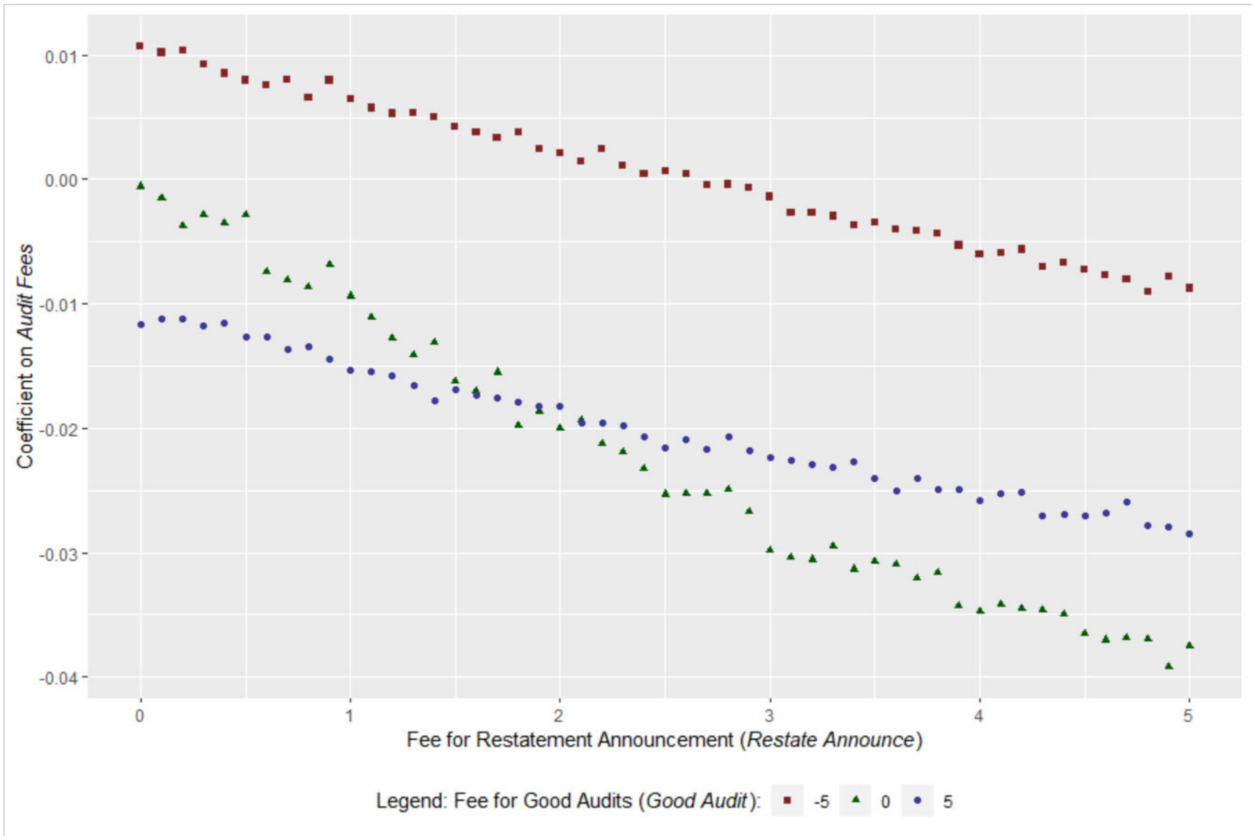

Table 1: Simulation Results

Table 1 presents results from simulated data. Panel A presents descriptive statistics and seeded restatement rates for our simulated sample. Panels B and C present results from estimating a model where restatements (*Restate*) are a function audit fees (*Audit Fees*). Panel B (C) presents results excluding (including) *Lag Restate* as a control variable. In Panels B and C, columns 1 and 4 (2 and 5, 3 and 6) correspond to simulations where "good" audits correspond to an audit premium (in thousands) of -\$5 (\$0, \$5), and columns 1 through 3 (4 through 6) correspond to restatement announcement premiums (in thousands) of \$0 (\$5). Panel D presents analyses from Panel B columns 4-6 for subsamples with and without lagged restatements. In Panels B through D, t-statistics are reported in parentheses. ***, **, * denote significance at the p<0.01, p<0.05, and p<0.10 levels, respectively (based on two-tailed tests).

Panel A: Sample Composition for Simulated Data

	n	Periods Restated	Restatement Announcements
"Bad Audits"	10,000 (50%)	3,234 (32%)	1,393 (14%)
"Good Audits"	10,000 (50%)	1,197 (12%)	506 (5%)
Total	20,000 (100%)	4,431 (22%)	1,899 (9%)

Panel B: Regressions Illustrating the Effect of Varying "Prices" (in thousands) of Good Audits and Restatement Announcements without Controlling for Lagged Restatements

	(1)	(2)	(3)	(4)	(5)	(6)
	Restatement Announcement Price (β)=\$0			*Restatement Announcement Price (β)=\$5*		
	Good Audit Price (α)=\$5	Good Audit Price (α)=\$0	Good Audit Price (α)=-\$5	Good Audit Price (α)=\$5	Good Audit Price (α)=\$0	Good Audit Price (α)=-\$5
VARIABLES	*Restate*	*Restate*	*Restate*	*Restate*	*Restate*	*Restate*
Audit Fees	***-0.0252****	***-0.0010***	***0.0250****	***-0.0222****	***0.0018***	***0.0195****
	(-27.94)	***(-0.68)***	***(27.71)***	***(-25.83)***	***(1.55)***	***(24.88)***
Adjusted R^2	0.038	0.000	0.037	0.032	0.000	0.030
Observations	20,000	20,000	20,000	20,000	20,000	20,000

Panel C: Regressions Illustrating the Effect of Varying "Prices" of Good Audits and Restatement Announcements when Controlling for Lagged Restatements

	(1)	(2)	(3)	(4)	(5)	(6)
	Restatement Announcement Price (β)=\$0			*Restatement Announcement Price (β)=\$5*		
	Good Audit Price (α)=\$5	Good Audit Price (α)=\$0	Good Audit Price (α)=-\$5	Good Audit Price (α)=\$5	Good Audit Price (α)=\$0	Good Audit Price (α)=-\$5
VARIABLES	*Restate*	*Restate*	*Restate*	*Restate*	*Restate*	*Restate*
Audit Fees	***-0.0116****	***-0.0006***	***0.0107****	***-0.0285****	***-0.0375****	***-0.0088****
	(-15.40)	***(-0.47)***	***(14.22)***	***(-41.78)***	***(-37.65)***	***(-12.43)***
Lag Restate	0.5685***	0.5849***	0.5690***	0.6042***	0.6633***	0.6165***
	(98.10)	(102.08)	(97.93)	(109.58)	(112.13)	(98.66)
Adjusted R^2	0.350	0.343	0.349	0.395	0.386	0.348
Observations	20,000	20,000	20,000	20,000	20,000	20,000

Panel D: Regressions on Samples Split by Lagged Restatements (Where Restate Announcement Price (β) = $5)

	(1)	(2)	(3)	(4)	(5)	(6)
		Lag Restate=0			*Lag Restate=1*	
	Good Audit	Good Audit	Good Audit	Good Audit	Good Audit	Good Audit
	Price (α)=$5	Price (α)=$0	Price (α)=-$5	Price (α)=$5	Price (α)=$0	Price (α)=-$5
VARIABLES	*Restate*	*Restate*	*Restate*	*Restate*	*Restate*	*Restate*
Audit Fees	***-0.0122******	***0.0001***	***0.0115******	***-0.0670******	***-0.0906******	***-0.0560******
	(-16.91)	***(0.06)***	***(15.96)***	***(-44.48)***	***(-51.48)***	***(-35.32)***
Adjusted R^2	0.018	0.000	0.016	0.308	0.374	0.219
Observations	15,560	15,560	15,560	4,440	4,440	4,440

Table 2: Descriptive Statistics

Table 2 presents descriptive statistics for the full sample of client-year observations. All variables are defined in Appendix 1.

VARIABLES	**n**	**Mean**	**S.D.**	**P(25)**	**Median**	**P(75)**
Restate	48,738	0.10	0.30	0.00	0.00	0.00
ln(Audit Fees)	48,738	13.56	1.39	12.56	13.65	14.51
Restate Announce	48,738	0.07	0.25	0.00	0.00	0.00
Lag Restate	48,738	0.11	0.32	0.00	0.00	0.00
ICMW	32,210	0.07	0.25	0.00	0.00	0.00
New Auditor	48,738	0.08	0.26	0.00	0.00	0.00
ln(Assets)	48,738	5.72	2.34	4.03	5.77	7.41
ROA	48,738	-0.08	0.37	-0.09	0.03	0.08
Asset Turn	48,738	1.09	0.85	0.49	0.89	1.45
Current Ratio	48,738	2.82	2.94	1.22	1.94	3.21
Leverage	48,738	0.57	0.44	0.31	0.50	0.69
Growth	48,738	0.20	0.77	-0.04	0.07	0.22
BTM	48,738	0.48	1.01	0.21	0.41	0.72
ln(Age)	48,738	2.77	0.78	2.20	2.77	3.33
Acquisition	48,738	0.10	0.30	0.00	0.00	0.00
Sox 404B	48,738	0.66	0.47	0.00	1.00	1.00

Table 3: Empirical Evidence of the Announcement Effect

Table 3 presents estimates of equation 1. The model is estimated using OLS with standard errors that are robust to heteroskedasticity and clustered by client (Petersen 2009). t-statistics are presented in parentheses below the coefficients. ***, **, * denote two-tailed significance at the p<0.01, p<0.05, and p<0.10 levels, respectively. All variables are defined in Appendix 1.

VARIABLES	*ln(Audit Fees)*
***Restate Announce**$_{t+3}$*	***-0.005***
	(-0.37)
***Restate Announce**$_{t+2}$*	***0.006***
	(0.52)
***Restate Announce**$_{t+1}$*	***0.021****
	(2.06)
***Restate Announce**$_{t}$*	***0.150*****
	(13.58)
***Restate Announce**$_{t-1}$*	***0.092*****
	(8.74)
***Restate Announce**$_{t-2}$*	***0.065*****
	(6.05)
***Restate Announce**$_{t-3}$*	***0.059*****
	(4.85)
ln(Assets)	0.547***
	(133.54)
ROA	-0.391***
	(-21.57)
Asset Turn	0.112***
	(11.77)
Current Ratio	-0.017***
	(-8.12)
Leverage	0.044***
	(2.81)
Growth	-0.038***
	(-8.77)
BTM	-0.030***
	(-5.61)
ln(Age)	-0.029***
	(-3.35)
Acquisition	0.070***
	(6.74)
Sox 404B	0.300***
	(20.28)
Industry and Year FE	Yes
Observations	48,738
Adjusted R^2	0.849

Table 4: Empirical Evidence of Bias from a *Lag Restate* Control in the Fees Setting

Table 4 presents estimates of equations 2 and 3. Models are estimated using OLS with standard errors that are robust to heteroskedasticity and clustered by client (Petersen 2009). t-statistics are presented in parentheses below the coefficients. ***, **, * denote two-tailed significance at the p<0.01, p<0.05, and p<0.10 levels, respectively. All variables are defined in Appendix 1.

	(1)	(2)	(3)	(4)
			Lag Restate = 0	*Lag Restate* = 1
VARIABLES	*Restate*	*Restate*	*Restate*	*Restate*
ln(Audit Fees)	***0.007****	***-0.009*****	***0.001***	***-0.084*****
	(1.83)	***(-3.93)***	***(0.48)***	***(-7.83)***
Lag Restate		0.450***		
		(65.72)		
ln(Assets)	0.001	0.008***	0.000	0.070***
	(0.30)	(5.40)	(0.30)	(9.72)
ROA	-0.002	-0.008*	-0.007	-0.012
	(-0.37)	(-1.73)	(-1.52)	(-0.50)
Asset Turn	-0.004	0.001	-0.003	0.031***
	(-1.26)	(0.46)	(-1.58)	(3.33)
Current Ratio	-0.002***	-0.001	-0.001	-0.001
	(-2.69)	(-1.55)	(-1.47)	(-0.40)
Leverage	0.018***	0.005	0.008**	-0.015
	(3.20)	(1.14)	(2.35)	(-0.70)
Growth	0.006***	0.004**	0.005***	-0.002
	(2.86)	(2.23)	(3.06)	(-0.19)
BTM	0.011***	0.006***	0.005***	0.010
	(5.51)	(3.93)	(3.74)	(1.27)
ln(Age)	-0.010***	-0.005***	-0.007***	0.012
	(-3.29)	(-2.82)	(-4.44)	(1.30)
Acquisition	0.015***	0.021***	0.021***	0.020
	(2.82)	(4.69)	(5.23)	(0.89)
Sox 404B	0.013**	0.006*	-0.003	0.085***
	(2.30)	(1.76)	(-1.07)	(4.17)
Industry and Year FE	Yes	Yes	Yes	Yes
Observations	48,738	48,738	43,225	5,513
Adjusted R^2	0.018	0.243	0.007	0.051

Table 5: Residual Fees, Restatements, and the Announcement and Correction Effects

Table 5 evaluates the announcement and correction effects in 2×2 tables defined based on whether the prior period was subsequently restated and whether a restatement announcement was made. Panel A considers the announcement effect by examining differences in average abnormal fees between the groups, while Panel B considers the correction effect by examining differences in restatement rates between the groups. ***, **, * denote two-tailed significance at the p<0.01, p<0.05, and p<0.10 levels, respectively. Variables are defined in Appendix 1.

Panel A: The Announcement Effect

Residual Fees	*Lag Restate* = 0	*Lag Restate* = 1	Difference
Restate Announce = 0	-0.0115	0.0024	0.0139
Restate Announce = 1	-0.0526	0.1542	0.2068***
Difference	-0.0411	0.1518***	

Panel B: The Correction Effect

Restate	*Lag Restate* = 0	*Lag Restate* = 1	Difference
Restate Announce = 0	4.46%	96.47%	92.01%***
Restate Announce = 1	13.22%	17.36%	4.14%
Difference	8.76%***	-79.11%***	

Table 6: Including Quarterly Restatements in *Lag Restate*

Table 6 presents tests from Table 4 after including quarter-only restatements from the prior year in the lagged restatement variable (i.e., *Lag Restate LZ* Models are estimated using OLS with standard errors that are robust to heteroskedasticity and clustered by client (Petersen 2009).t-statistics are presented in parentheses below the coefficients. ***, **, * denote two-tailed significance at the p<0.01, p<0.05, and p<0.10 levels, respectively. All variables are defined in Appendix 1.

	(1)	(2)	(3)	(4)
			Lag Restate LZ=0	*Lag Restate LZ=1*
VARIABLES	*Restate*	*Restate*	*Restate*	*Restate*
ln(Audit Fees)	***0.007****	***-0.011******	***0.000***	***-0.064******
	(1.83)	***(-4.18)***	***(0.07)***	***(-6.89)***
Lag Restate LZ		0.317***		
		(50.93)		
Controls	Included	Included	Included	Included
Industry and Year FE	Yes	Yes	Yes	Yes
Observations	48,738	48,738	40,634	8,104
Adjusted R^2	0.018	0.170	0.007	0.058

Table 7: Empirical Evidence of Bias from a *Lag Restate* Control in the ICMW Setting

Table 7 presents estimates of equation 4. Models are estimated using OLS with standard errors that are robust to heteroskedasticity and clustered by client (Petersen 2009). t-statistics are presented in parentheses below the coefficients. ***, **, * denote two-tailed significance at the p<0.01, p<0.05, and p<0.10 levels, respectively. All variables are defined in Appendix 1.

	(1)	(2)	(3)	(4)
			Lag Restate=0	Lag Restate=1
VARIABLES	*Restate*	*Restate*	*Restate*	*Restate*
ICMW	***0.090****	***-0.050****	***0.051****	***-0.241****
	(9.41)	***(-5.80)***	***(6.14)***	***(-12.00)***
Lag Restate		0.497***		
		(62.07)		
ln(Assets)	-0.000	-0.001	-0.001	-0.002
	(-0.08)	(-1.05)	(-0.64)	(-0.38)
ROA	0.010	0.003	-0.001	0.054
	(0.73)	(0.37)	(-0.12)	(1.05)
Asset Turn	-0.009*	-0.005**	-0.006**	0.000
	(-1.95)	(-2.01)	(-2.52)	(0.03)
Current Ratio	-0.001	-0.001	-0.000	-0.002
	(-0.88)	(-0.87)	(-0.47)	(-0.57)
Leverage	0.035***	0.018***	0.016***	0.013
	(3.24)	(2.71)	(2.88)	(0.40)
Growth	-0.001	0.001	0.001	-0.001
	(-0.41)	(0.60)	(0.62)	(-0.03)
BTM	0.019***	0.009***	0.007***	0.021
	(5.38)	(3.74)	(3.60)	(1.54)
ln(Age)	-0.003	-0.001	-0.003	0.014
	(-0.62)	(-0.37)	(-1.49)	(1.19)
Acquisition	0.019***	0.023***	0.021***	0.030
	(3.00)	(4.61)	(4.67)	(1.24)
Industry and Year FE	Yes	Yes	Yes	Yes
Observations	32,210	32,210	28,364	3,846
Adjusted R^2	0.023	0.285	0.010	0.060

Table 8: Empirical Evidence of Bias from a *Lag Restate* Control in the New Auditor Setting

Table 8 presents estimates of equation 5. Models are estimated using OLS with standard errors that are robust to heteroskedasticity and clustered by client (Petersen 2009). t-statistics are presented in parentheses below the coefficients. ***, **, * denote two-tailed significance at the p<0.01, p<0.05, and p<0.10 levels, respectively. All variables are defined in Appendix 1.

	(1)	(2)	(3)	(4)
			Lag Restate=0	Lag Restate=1
VARIABLES	*Restate*	*Restate*	*Restate*	*Restate*
New Auditor	***-0.002***	***-0.029******	***0.008****	***-0.191******
	(-0.31)	***(-5.59)***	***(1.74)***	***(-8.81)***
Lag Restate		0.451***		
		(65.94)		
ln(Assets)	0.004***	0.003***	0.001	0.019***
	(3.23)	(3.18)	(1.47)	(3.99)
ROA	-0.005	-0.005	-0.007*	0.015
	(-0.81)	(-1.03)	(-1.65)	(0.61)
Asset Turn	-0.003	-0.000	-0.003	0.020**
	(-1.02)	(-0.14)	(-1.50)	(2.23)
Current Ratio	-0.002***	-0.001	-0.001	0.000
	(-2.90)	(-1.29)	(-1.48)	(0.11)
Leverage	0.019***	0.004	0.008**	-0.017
	(3.27)	(1.07)	(2.35)	(-0.79)
Growth	0.005***	0.004**	0.005***	0.005
	(2.74)	(2.52)	(3.04)	(0.59)
BTM	0.011***	0.006***	0.005***	0.012
	(5.43)	(4.22)	(3.67)	(1.50)
ln(Age)	-0.010***	-0.005***	-0.007***	0.010
	(-3.37)	(-2.78)	(-4.45)	(1.03)
Acquisition	0.015***	0.020***	0.021***	0.023
	(2.92)	(4.65)	(5.22)	(1.05)
Sox 404B	0.015***	0.003	-0.003	0.040**
	(2.70)	(0.73)	(-0.90)	(2.05)
Industry and Year FE	Yes	Yes	Yes	Yes
Observations	48,738	48,738	43,225	5,513
Adjusted R^2	0.018	0.243	0.007	0.054

Table 9: Controlling for Restatement Announcements

Table 9 presents estimates of equations 2 and 3 with restatement announcements (of quarterly *or* annual financial statements) instead of lagged restatements. Models are estimated using OLS regression with standard errors that are robust to heteroskedasticity and clustered by client (Petersen 2009). t-statistics are presented in parentheses below the coefficients. ***, **, * denote two-tailed significance at the p<0.01, p<0.05, and p<0.10 levels, respectively. All variables are defined in Appendix 1.

	(1)	(2)	(3)
VARIABLES	*Restate*	*Restate*	*Restate*
ln(Audit Fees)	***0.007****	***0.004***	***0.001***
	(1.83)	***(1.04)***	***(0.42)***
Restate Announce Q/A$_t$		***0.060*******	***0.056*******
		(10.19)	***(10.04)***
Restate Announce Q/A$_{t-1}$			***0.043*******
			(8.24)
Restate Announce Q/A$_{t-2}$			***0.023*******
			(4.46)
Restate Announce Q/A$_{t-3}$			***0.015*******
			(2.79)
Controls	Included	Included	Included
Industry and Year FE	Yes	Yes	Yes
Observations	48,738	48,738	48,738
Adjusted R^2	0.018	0.021	0.024