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Form 10-K Timing and Information Asymmetry

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ABSTRACT

Regulators and financial statement preparers have long debated whether earlier Form 10-K filings decrease or increase information asymmetry among investors. Economic theory suggests that earlier Form 10-K timing could decrease information asymmetry around the filing date provided that the information conveyed is relevant and reliable. We examine this issue by investigating the relation between the timing of Form 10-Ks filed between 1994 and 2006 and proxies for information asymmetry. We find robust evidence that earlier Form 10-K timing is associated with a decrease in measures of information asymmetry around the Form 10-K filing date, controlling for firm financial performance news and other factors. We also find that earlier Form 10-K timing is less beneficial to firms with respect to the relation with information asymmetry when firms operate in better information environments compared to other early filers. Finally, earlier Form 10-Ks are associated with more accurate disclosures, measured by the frequency and information content of subsequent amendments to Form 10-K.

I. INTRODUCTION

We examine whether changes in Form 10-K filing time are associated with changes in information asymmetry among investors. This question has been debated by regulators and financial statement preparers, particularly since the Securities and Exchange Commission (SEC) reduced the filing time of Form 10-K from 90 days to 60 days after firms' fiscal year end for certain public companies.[1] The SEC has argued that earlier Form 10-K filings "accelerate the delivery of information to investors and the capital markets, enabling them to make more informed investment and valuation decisions more quickly" (SEC 2002).[2] This view implies that earlier Form 10-Ks should enhance resource allocation decisions by reducing information asymmetry between the firm and investors. In contrast, practitioners assert that earlier Form 10-K filings likely contain less accurate disclosures, potentially increasing in information asymmetry around the filing date. Academic studies question the value of information conveyed by Form 10-K, suggesting there can be little or no association between earlier Form 10-K filings and information asymmetry (Ball and Shivakumar 2008; Li and Ramesh 2009; Beyer, Cohen, Lys, and Walther 2010). As such, the relation between Form 10-K timing and information asymmetry remains unclear.

Economic theory and prior research provide at least two reasons to posit an association between Form 10-K timing and the degree of information asymmetry among investors. First, theory suggests that disclosure timing likely influences trading among informed and uniformed investors.[3] While timing itself does not provide relevance, a lack of timeliness can "rob

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[1] In 2003, the SEC shortened Form 10-K reporting deadlines for accelerated filers from 90 days to 75 days. The SEC further shortened reporting deadlines in 2006 for large accelerated filers from 75 days to 60 days.

[2] Audit firms' responses to SEC proposals to accelerate Form 10-K deadlines suggest that earlier disclosure timing may reduce disclosure quality. Comment letters are available at http://www.sec.gov/rules/proposed/s70805.shtml.

[3] Economics-based models of disclosure indicate that disclosure timing is an important aspect of the corporate information environment. Models consider information environments in which (i) the likelihood managers receive private information increases over time (Dye 1985; Jung and Kwon 1988), (ii) managers release information earlier to signal their ability (Trueman 1986; Hughes 1986) or to revise investor beliefs of managers' human capital (Nagar 1999), and (iii) timing is associated with the dissipation of proprietary costs (Verrecchia 1983; Verrecchia 2001).

information of relevance it might otherwise have had" (FASB 1980) and can motivate investors to engage in costly private information search or make investment decisions conditional on order flow (Kyle 1985; Kim and Verrecchia 2001). If informed traders' information advantage is reduced by public disclosure, earlier (later) disclosure could be associated with lower (higher) information asymmetry. Earlier disclosure could also substitute for private information search, while later disclosure could have the opposite effect. These arguments imply that earlier Form 10-K timing could be associated lower information asymmetry among investors.

Prior research provides a second reason to expect a relation between Form 10-K timing and information asymmetry—financial performance. In particular, studies find that firm financial performance is inversely related to information asymmetry (Brown, Lo, and Hillegeist 2009; Ng, Verrecchia, and Weber 2009; Rogers, Skinner, and Van Buskirk 2009), suggesting that timing could be related to information asymmetry via changes in firm financial performance. While studies find that delayed disclosure is associated with lower financial performance (Dyer and McHugh 1975; Chambers and Penman 1984; Alford, Jones, and Zmijewski 1994, Bagnoli, Kross, and Watts 2002), there is little evidence that earlier disclosure is related to better financial performance. Bagnoli et al. (2002) find that late earnings announcements are associated with poorer firm financial performance. However, the authors do not find an association between earlier earnings announcements and better financial performance. While later filings could be associated with increases in information asymmetry, the evidence does not support a similar performance-based relation for earlier filings.

We begin the analysis by examining the distribution of Form 10-K filing time using a sample of 38,850 Form 10-Ks filed from 1994 to 2006. We measure Form 10-K filing time relative to the SEC-mandated reporting deadline that is enforced by regulators and monitored by the capital

market (Bartov, DeFond, and Konchitchki 2011). This provides an explicit disclosure benchmark to categorize Form 10-K timing that is not readily present in other disclosure settings, such as earnings announcements or press releases. Following Alford et al. (1994), we define Form 10-Ks as "early" if filed at least five calendar days prior to the SEC deadline. We define Form 10-Ks filed after the deadline as "late," while remaining Form 10-Ks are "on-time.[4]" In our sample, we find that 37.9 percent of Form 10-Ks are filed early, 9.5 percent are filed late, with the remaining 52.6 percent filed on-time. For comparison, Alford et al. (1994) show that from 1978 through 1985 only 14 percent of Form 10-Ks were filed early and nearly 20 percent were filed late. This comparison highlights an apparent shift to earlier Form 10-K filings relative to existing SEC deadlines, suggesting that firms experience some potential benefits from earlier filings that at least partially offset any associated costs of preparing earlier periodic reports.

We extend the findings of the prior literature on the relation between disclosure timing and financial performance by shifting the focus to examining the relation between timing and information asymmetry. Specifically, we test whether Form 10-K filing time is related to information asymmetry using changes in bid/ask spread and share price volatility as proxies for changes in the information asymmetry among investors (Leuz and Verrecchia 2000).[5] We use an event study research design to measure the behavior of our information asymmetry proxies around the Form 10-K filing date, mitigating the possibility that omitted variables are responsible for the cross-sectional differences in the proxies. To address the potential relation between disclosure timing and firm financial performance, we include controls for the change in stock market returns during the pre- and post-event windows of our study. We also include controls for the stock return

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[4] Our results continue to hold using different filing windows to categorize early and late Form 10-Ks.
[5] PIN is an alternative measure of the degree of information asymmetry among investors. In our empirical design, this measure is likely inadequate because it requires a long time series to estimate, making it difficult to measure information asymmetry at a specific point in time (Ali et. al 2008). In addition, recent evidence questions whether there is an association between PIN and cost of capital in the predicted direction (Mohanram and Rajgopal 2009).

news in short event windows around the earnings announcement and the Form 10-K filing. These performance-based controls should capture investors' beliefs about how financial performance could influence Form 10-K timing.

Our first contribution establishes that early Form 10-K filings are associated with a decrease in relative bid/ask spread and lower share price volatility around the date Form 10-K is released to investors, on average. Because we control for financial performance, this evidence indicates that the relation between changes in Form 10-K timing and changes in proxies for the degree of information asymmetry is not due solely to performance-based explanations. In particular, including measures of firm financial performance in the analysis does not have a significant influence on the coefficient estimates for our changes in Form 10-K timing variables. In addition, our results are robust to controlling for changes in the timing of firms' earnings announcements and to including a variable that reflects the mandated changes in Form 10-K deadlines that occur during the sample period.

We investigate the economic importance of this evidence to better examine differences between early and late Form 10-K timing. We separate firms that change from on-time or late Form 10-K timing to filing early from those that change from on-time or early timing to filing late and perform additional tests. We find that firms that change to early (late) Form 10-K timing experience a 2 percent decrease (4 percent increase) in relative bid/ask spread and have 2 percent lower (7 percent higher) share price volatility around the Form 10-K filing date. We also find that regulatory changes that mandate earlier Form 10-K filing times are associated with decreases in relative bid/ask spread and lower share price volatility around the first Form 10-K subject to the new reporting rules. This further supports the information-based explanation for an association between Form 10-K timing and information asymmetry. This evidence is relevant to studies that

examine the relation between disclosure quantity/quality and information asymmetry in settings with mandated changes in regulatory regimes and enforcement (Bushee and Leuz 2005; Leuz, Triantis, and Wang 2008; Christensen, Hail, and Leuz 2010; Lang, Lins, and Maffett 2010).

Our second contribution provides fresh evidence regarding whether the relation between Form 10-K timing and information asymmetry depends in predictable ways on firms' information environment. We expect that earlier Form 10-Ks are less beneficial to firms that operate in high information environments, as there are likely to be fewer privately informed investors in such settings. Specifically, we examine how the relation between changes in Form 10-K timing and changes in relative bid/ask spread varies with accounting performance, analyst following, and restatement activity. Prior studies provide support that these variables are associated with firms' information environments and the degree of information asymmetry among investors (Hayn 1995; Lang and Lundholm 1996; Ertimur 2004; Frankel and Li 2004; Hribar and Jenkins 2004; Brown et al. 2009). Consistent with expectations, we find that the relation between earlier Form 10-Ks and information asymmetry is less negative for firms with better information environments (e.g. higher return on assets, higher analyst following, and no restatements). In contrast, late Form 10-Ks are associated with increases in information asymmetry around the filing date irrespective of the information environment.

The third contribution of our study examines the claim by financial statement preparers that firms with earlier Form 10-K timing have less accurate Form 10-K disclosures (SEC 2002). We shed light on this issue by examining the association between the frequency and information content of amended Form 10-K filings (Form 10-K/A) and the timing of the corresponding Form 10-K. We find that earlier Form 10-Ks are associated with less frequent amendments and that when earlier Form 10-Ks are amended, the market reaction to such amendments is significantly lower

when compared with the market reaction to amendments of on-time and late Form 10-Ks. This suggests that earlier Form 10-Ks do not sacrifice accuracy, contrary to many practitioner arguments against the adoption of earlier Form 10-K filing times.

Section II reviews the related literature and Section III develops the main hypothesis. Section IV presents the main results and additional analysis and Section V concludes.

II. RELATED LITERATURE

Our study relates to three prominent streams of literature, which examine issues related to firms' disclosure activities and information asymmetry among investors. First, prior research uses measures of stock market liquidity to proxy for information asymmetry, and investigates the liquidity benefits of greater voluntary disclosure. Second, other work focuses on the economic consequences of regulatory changes, including assessing any associated changes in information asymmetry that arise due to changes in regulatory regimes or enforcement standards. Third, studies explore the determinants of disclosure timing and the relation between disclosure timing and firm performance, particularly whether late disclosures (i.e., filed after SEC reporting deadlines) convey worse firm performance compared with disclosures filed on-time.

The first stream of related literature examines the stock market liquidity benefits of greater voluntary disclosure. Welker (1995) examines the relation between a "well-regarded" disclosure policy, measured using analysts' perceptions of large U.S. firms' disclosure activities issued by the Association for Investment Management and Research (AIMR), and information asymmetry (measured as relative bid/ask spread). In cross-sectional tests, the study does not find a relation between disclosure quality/quantity and information asymmetry. Healy, Hutton, and Palepu (1999) extends this analysis by investigating whether a small sample of firms with sustained increases in disclosure quantity/quality (using increases in AIMR scores) show reductions in information

asymmetry, and finds evidence accordingly.[6] Similarly, Brown and Hillegeist (2007) find evidence of a negative relation between information asymmetry and disclosure quality.

Our study differs from these approaches in several ways. First, we shift the focus from the quantity/quality aspects of disclosure to the timing of disclosure, which economic theory indicates is an important aspect of the corporate information environment. In addition, AIMR scores likely measure the multidimensional nature of disclosure quality, limiting inferences on whether and how one specific aspect of disclosure, such as its timing, is related to important capital market consequences for the firm. Second, we use a broad cross-section of firms across a twelve-year disclosure period, providing nearly 39,000 firm-year observations for analysis. This is important because AIMR scores mainly focus on large, established firms with limited cross-sectional variation (Healy and Palepu 2001). Third, we use an event study research design to measure changes in several information asymmetry proxies around the Form 10-K filing date, reducing the potential for omitted variables to influence observed cross-sectional differences.

The second stream of related literature investigates the association between information asymmetry and disclosure quantity/quality by examining the capital market consequences of significant changes in regulatory regimes and enforcement. Leuz and Verrecchia (2000) proxy for changes in disclosure quantity/quality using firms listed in Germany that (voluntarily) adopt International Accounting Standards or U.S. GAAP. The study finds that adopting a more stringent disclosure regime is associated with lower bid/ask spread and higher trading volume as compared with firms that retain German GAAP. Bushee and Leuz (2005) show that Over-the-Counter Bulletin Board (OTCBB) firms that adopt new listing standards to comply with SEC regulations experience a decrease in bid/ask spread, while firms that did not adopt and delisted from the

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[6] Lang and Lundhlom (1993) and Healy et al. (1999) provide institutional background of the AIMR score and discuss the advantages and disadvantages of using this score as a measure of the adequacy of firms' disclosure policy. Healy and Palepu (2001) and Leuz and Wysocki (2008) discuss limitations of the AIMR data.

OTCBB show an increase in bid/ask spread. Leuz et al. (2008) find similar results for firms that voluntarily deregister from the SEC after the passage of the Sarbanes-Oxley Act. Christensen et al. (2010) find that information asymmetry decreases with better regulatory enforcement in the European Union. Lang et al. (2010) find for a global sample of firms that disclosure quantity/quality (measured as earnings management, higher quality auditor, commitment to international accounting standards, higher analyst following, smaller analyst forecast errors) is associated with lower information asymmetry (measured as bid/ask spread and percent of zero return days). We differ from these studies by examining the relation between the timing of SEC disclosures and information asymmetry within a single regulatory regime (i.e., U.S. public firms) rather than emphasizing the differences in disclosure quantity/quality across regulatory regimes.

The third stream of related literature examines whether the timing of earnings announcements and Form 10-Ks are associated with firm financial performance. These studies generally examine whether late disclosures are associated with worse firm financial performance compared with disclosures filed on-time. Consistent with Alford et al. (1994) and Chambers and Penman (1984), recent studies find that late Form 10-Ks (i.e., filed after SEC deadlines) convey on average worse firm financial performance compared with prior year performance and expected performance (Griffin 2003; Li and Ramesh 2009). Similarly, Bagnoli et al. (2002) find that late earnings announcements, using First Call earnings announcement dates as the timing benchmark, are associated with worse firm performance. However, the authors do not find a link between early earnings announcements and better firm performance. We extend these studies, which typically classify Form 10-Ks or earnings announcements as either on-time or late, by focusing instead on Form 10-Ks filed well in advance of SEC deadlines. We use this new approach to examine the

relation between Form 10-K timing and information asymmetry after controlling for firm performance and other factors.

III. HYPOTHESIS DEVELOPMENT

Studies that examine the firm-specific costs and benefits of disclosure typically focus on the direct capital market outcomes (e.g., market liquidity, firm valuation, cost of capital) of firms' disclosure activities. Perhaps the firm-specific benefit of disclosure best supported by economic theory is the relation between disclosure and liquidity (Verrecchia 2001; Beyer et al. 2010).

Economics-based disclosure models based on imperfect competition suggest that investors may be required to pay or offer a liquidity premium when assets are exchanged (Verrecchia 2001). This transaction cost protects parties on the other side of the trade (e.g., liquidity providers) against the adverse selection problem inherent in trading with investors or corporate insiders who have superior information (or superior information processing ability) about the fundamental value of the firm (Amihud, Mendelson, and Pedersen 2005). In particular, less informed or uninformed investors are concerned that more informed investors are willing to sell (buy) at the prevailing market price only because the price is currently too high (too low) relative to the information possessed by the informed investor (Glosten and Milgrom 1985). As a result, uninformed investors decrease (increase) the price at which they are willing to buy (sell) to protect against the likelihood of trading with an informed investor.[7] This type of price protection is captured in bid/ask spreads.

The quantity and quality of disclosure can mitigate the adverse selection problem inherent among investors with varying degrees of informedness and narrow bid/ask spreads in at least two ways (Leuz and Wysocki 2008). First, an increase in the quantity/quality of public information likely makes it more difficult and more costly for investors to become privately informed, as more

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[7] When the likelihood of trading with an informed investor equals one the market exhibits the "lemons" problem (Akerlof 1970).

investors obtain additional information about the firm. As a result, fewer investors are likely to be better informed, which reduces the likelihood of trading with a better informed investor. Second, an increase in the quantity/quality of public information can help reduce uncertainty about firm value, which in turn reduces the potential information advantage that an informed investor might possess (Leuz and Wysocki 2008). Both effects reduce the extent to which uninformed investors need to price protect via wider bid/ask spreads.[8]

In addition to the quantity/quality of public information firms disclose to investors, the timing of disclosure is also likely related to information asymmetry in at least two ways. First, disclosure timing likely influences trading between privately informed investors and investors who rely primarily on public disclosure. The longer disclosure is delayed the more likely informed investors can maintain an information advantage.[9] Second, disclosure timing can influence investors' need to acquire information. When disclosure is delayed, some investors will engage in information search about firm fundamentals. Both effects indicate that disclosure timing, in addition to disclosure quantity/quality, could influence the likelihood of trading among investors of varying degrees of informedness. Hence, we hypothesize that disclosure timing is related to information asymmetry such that earlier disclosure reduces the degree of information asymmetry among investors as compared with later disclosure.

Several pre-conditions must exist for disclosure timing to influence the degree of information asymmetry between firms and shareholders, or among investors. First, the information conveyed in the disclosure must be relevant. Recent studies question whether mandatory

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[8] Similarly, information asymmetry and adverse selection reduce the number of shares that relatively less informed investors are willing to trade. See Leuz and Wysocki (2008) for a related discussion.
[9] Consistent with the view that disclosure timing is related to the concentration of information, the law firm Chadbourne & Park LLP (2005) states that, given Rule 10b-5, "If material nonpublic information concerning the reasons for a late SEC report is in possession of the company or its officers and directors, company share repurchases and insider trading should be halted. Companies should also consider refraining from granting stock options during this period."

disclosures and Form 10-K in particular convey significant value relevant information (Ball and Shivakumar 2008; Li and Ramesh 2009; Beyer et al. 2010). Second, corporate insiders or a subset of investors must have access to the "withheld" information (Welker 1995). If either of these preconditions is not satisfied, we are unlikely to find a relation between disclosure timing and information asymmetry. Finally, financial statement preparers believe that earlier disclosure timing could generate less accurate disclosures, implying that earlier timing could increase information asymmetry if investors disagree on the potential accuracy of the disclosed information.[10] Consistent with these arguments, earlier disclosure timing could have no relation to, or possibly increase, the degree of information asymmetry among investors as compared with later disclosure.

We also investigate the relation between disclosure timing and information asymmetry in the cross-section. Specifically, we predict that the likelihood that uninformed investors trade with informed investors is higher for firms that operate in poorer information environments. Prior studies identify proxies for the quality of firms' information environments (Hayn 1995; Lang and Lundholm 1996; Ertimur 2004; Frankel and Li 2004; Hribar and Jenkins 2004; Brown et al. 2009). We expect that firms with higher accounting performance, higher analyst following, and firms without recent restatements are likely to benefit less with respect to the relation between earlier disclosure timing and information asymmetry compared with other firms.

<div align="center">IV. EMPIRICAL ANALYSIS</div>

Sample Determination, Descriptive Statistics, and Form 10-K Timing

Our empirical analysis uses a sample of 38,850 Form 10-Ks filed with the SEC between 1994 and 2006, excluding Form 10-KSB filings. Table 1, Panel A describes the sample, which consists of firms in EDGAR that have sufficient COMPUSTAT, CRSP, and Trade and Quote

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[10] For example, according to one professional association, two-thirds of its survey respondents expected a reduction in the precision of reported information under the SEC's proposal to reduce Form 10-K filing deadlines, suggesting a negative association between Form 10-K timing and information asymmetry (SEC 2002).

(TAQ) data for the variables that we require in the analysis. Table 1, Panel B reports descriptive statistics of the distribution of Form 10-K filing time measured with respect to the number of days the SEC permits firms to file Form 10-K. We obtain firms' SEC filing status from the first page of Form 10-K via a download from 10kWIZARD to determine firms' permitted reporting deadline.[11]

Table 1, Panel B reveals some important changes in Form 10-K filing activity since the 1978-1985 reporting period examined in Alford et al. (1994). For example, from 1994 through 2006, 61.4 percent of Form 10-Ks are filed prior to the SEC deadline, with 37.9 percent of filings available to investors at least five days early as compared with Alford et al.'s 42 percent and 14 percent, respectively. Nearly 30 percent of Form 10-Ks are filed on the deadline (compared with 38 percent). In addition, 9.5 percent of Form 10-Ks are filed after the SEC deadline, with 8 percent more than two days late (compared with 20 percent and 15 percent, respectively). Taken together, these differences highlight a shift in Form 10-K filing patterns such that a greater percentage of Form 10-Ks are filed early, despite regulatory changes that reduced filing times for some firms.

We establish the economic importance of the SEC Form 10-K reporting deadline in unreported tests of the short-window market reaction to missing the deadline. We find a negative and significant (-2,+2) cumulative abnormal return in excess of 1 percent when firms miss the current-year SEC reporting deadline, whether or not firms notify investors via Form 12b-25 of a forthcoming late Form 10-K.[12] This suggests that the market on average expects firms to file Form 10-K by the SEC deadline (Dee, Hillison, and Pacini 2010).

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[11] The 10kWIZARD database accesses SEC filings from EDGAR directly. We adjust Form 10-K deadlines for weekends. Our results are similar if we obtain filing status by calculating the firm's market value of equity based on the voting and non-voting shares outstanding held by non-affiliates using share price at fiscal year end.

[12] The SEC requires firms to submit Form 12b-25 within one business day after the expiration of the Form 10-K reporting deadline when firms are unable to file on-time. Form 12b-25 requires firms to disclose the reason(s) for a late Form 10-K. The documented negative return is for a sample of firms without confounding events.

Using the SEC deadline as our measure of investors' reporting deadline, we define Form 10-K timing as the difference between the number of days the firm takes to file Form 10-K and the permitted number of days per SEC guidelines. We then multiply this measure by negative one to ensure that higher values correspond to earlier Form 10-Ks. We incorporate the prior-year filing as an expectation using the change in Form 10-K timing (Δ10-K Timing) as our variable of interest.[13]

Table 2, Panel A presents descriptive statistics for our sample of 38,850 firm-year observations. The mean revenue, net income, and market value of equity for the sample is $1,744m, $91m, and $5.59m, respectively. For comparison, all firms on COMPUSTAT during the sample period have mean revenue, net income, and log of market value of $1,549m, $81m, and $4.74m, respectively (untabluated). Hence, our data restrictions yield a sample that is somewhat larger and more profitable compared with all COMPUSTAT firms. The average (median) sample Form 10-K is filed approximately five (three) days prior to the SEC deadline over the sample period. The mean change in Form 10-K timing (Δ10-K Timing) is -0.06 days, indicating that timing is relatively constant across time. In addition, 13 percent of filings change from on-time or late to "early" (Δ to Early; Form 10-Ks filed at least five days prior to the SEC deadline), while 6 percent of filings change from early or on-time to "late" (Δ to Late; Form 10-Ks filed at least one day after the SEC deadline). Six percent of firm-year observations experience a change in permitted filing time either due to a change in filing status or to a change in the SEC regulations (ΔReg Timing). Table 2, Panel B presents descriptive statistics for the Δ to Early, No Change, and Δ to Late subsamples.

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[13] In untabulated tests, we confirm that our measure of Form 10-K timing has similar properties to alternative measures of disclosure timing. In particular our measure is negatively associated with accounting-related issues (Qualified Opinion, Unqualified w/ Language, Restatement, Irregularity, Late Prior), operating complexity (Foreign, Negative Special Items, Operating Cycle, Growth, and Mergers), and financial distress (loss). The measure is positively associated with greater financial resources (Log(MVE), Big N). These results are generally consistent with prior related research (e.g., Alford et al. 1994; Sengupta 2004; Ettredge, Li, and Sun 2006).

Form 10-K Timing and Information Asymmetry

We predict that the timing of Form 10-K dissemination to investors is related to information asymmetry among investors such that earlier disclosure reduces asymmetry when compared with later disclosure. To test this hypothesis, we examine whether changes in the number of days the firm takes to file Form 10-K relative to the SEC deadline (changes in Form 10-K timing) are related to changes in proxies for information asymmetry.

Our primary measure of information asymmetry is relative bid/ask spread; we corroborate our results using share price volatility.[14] Bid/ask spread is commonly thought to measure information asymmetry explicitly—less information asymmetry implies less adverse selection, which, in turn, implies a smaller bid/ask spread. Copeland and Galai (1983) model the quoting decision of a profit-maximizing market maker, with profit defined as the gains from liquidity traders minus losses to informed traders. The model's implication is that increased asymmetry/uncertainty (volatility) widens the bid/ask spread. From this structural foundation, share price volatility has been used in prior studies to proxy for information asymmetry among investors (Lang and Lundholm 1993), although with some qualification (Bushee and Noe 2000; Leuz and Verrecchia 2000). Bid/ask spread and share price volatility are associated with cost of capital, Tobin's Q, and stock returns (Amihud, Mendelson, and Pederson 2005; Lang et al. 2010).[15]

We examine changes in average daily relative bid/ask spread and share price volatility to investigate the relation between disclosure timing, measured using Form 10-K timing, and

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[14] We refrain from using changes in trading volume as a measure of information asymmetry and instead use this variable as a control throughout our empirical analysis. Leuz and Verrecchia (2000) argue that trading volume can be influenced by a number of factors unrelated to information, including liquidity shocks and portfolio rebalancing.

[15] While studies debate the costs and benefits of various proxies for information asymmetry, our primary analysis focuses on the percentage change in relative bid/ask spread due to the event-driven nature of our research design and our interest in assessing the decline in information asymmetry between the firm and investors via public disclosure. While the PIN measure has conceptual appeal (Brown and Hillegiest 2007), it requires a relatively long time-series to estimate, making it difficult to implement when measuring information asymmetry at a specific point in time (Ali, Klasa, and Li 2008). To corroborate our primary results, we include a measure of change in share price volatility and conduct additional cross-sectional tests to further validate our primary results.

information asymmetry. We obtain bid/ask spreads from the TAQ database and calculate the average daily relative bid/ask spread for each firm-year observation. We calculate relative bid/ask spread as $(P_A - P_B)/\frac{1}{2}(P_A + P_B)$, where P_A and P_B are ask and bid prices quoted by the market-maker throughout the trading day. We compute the average daily relative bid/ask spread and then calculate the average spread across the 22 trading days between (-24,-3) as the pre-event window and (-2,+19) as the post-event window. Day zero represents the Form 10-K filing date for early and on-time filings and the SEC deadline for late filings.[16] We determine the percentage change in relative bid/ask spread (%ΔSpread) by taking the first difference at the firm level of the post- less the pre-event window spread and divide by the pre-event window level. We calculate share price volatility as the standard deviation of the stock return residuals in the pre- and post-event windows for each firm using the Fama and French (1993) three factor model. We use the same pre- and post-event windows as defined for relative bid/ask spreads and divide by the level of the pre-event window (%ΔVolatility).

Table 2, Panel A reports a median value for the percentage change in relative bid/ask spread (percentage change in share price volatility) of -0.0031 (0.0215), indicating that around the Form 10-K event date, bid/ask spreads narrow and share price volatility increases, on average. Table 2, Panel B shows that the narrowing of median spreads is largely associated with firms that change to filing Form 10-K early (Δ to Early; %ΔSpread=-0.0124) compared with the No Change and Δ to Late subsamples (No Change; %ΔSpread=0.0032, Δ to Late; %ΔSpread=0.0271). We use %ΔSpread and %ΔVolatility as dependent variables in the following regressions to test our main hypothesis:

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[16] An alternative day zero would be the SEC Form 10-K filing date as the event date for late Form 10-Ks. In robustness tests all results are qualitatively similar when we use this alternative day zero date (untabulated).

$$\%\Delta\text{Spread}_{it} = \beta_0 + \beta_{1,2,3}(\Delta\text{10-KTiming}_{it}) + \beta_4(\Delta\text{Reg Timing}_{it}) + \beta_5(\Delta\text{Volume}_{it}) +$$
$$\beta_6(\Delta\text{Returns}_{it}) + \beta_7(\text{EANews}_{it}) + \beta_8(\text{Quarter End Effect}_{it}) +$$
$$\beta_9(\text{10-K News}_{it}) + \square_{it} \tag{1}$$

$$\%\Delta\text{Volatility}_{it} = \beta_0 + \beta_{1,2,3}(\Delta\text{10-K Timing}_{it}) + \beta_4(\Delta\text{Reg Timing}_{it}) + \beta_5(\Delta\text{Volume}_{it}) +$$
$$\beta_6(\Delta\text{Returns}_{it}) + \beta_7(\text{EANews}_{it}) + \beta_8(\text{Quarter End Effect}_{it}) +$$
$$\beta_9(\text{10-K News}_{it}) + \square_{it} \tag{2}$$

As discussed previously, Δ10-K Timing is the difference between the number of days the firm takes to file Form 10-K and the permitted number of days per SEC guidelines in year t minus year t-1, multiplied by negative one to ensure that higher values correspond to earlier Form 10-Ks. We include several variables to control for the potential influence of firm performance in the analysis. We include changes in trading volume (ΔVolume) and cumulative stock return performance (ΔReturns) around the event date because studies find that changes in trading activity and investor beliefs regarding future firm value likely influence the market-maker's inventory-holding costs (Jones, Kaul, and Lipson 1994; Bollen, Smith, and Whaley 2004; Biais, Glosten, and Spratt 2005).

Studies also find that Form 10-K filing delays are associated with worse firm financial performance (Alford et al. 1994). We include two additional controls for performance—EA News, defined as the cumulative abnormal return in the (-1,+1) window around the earnings announcement if the announcement date is included in either the pre- or post-event window, zero otherwise, and 10-K News, measured as the (-1,+1) cumulative abnormal return around the Form 10-K filing date. We control for the Quarter End Effect, defined as the cumulative absolute market return in last three trading days of the calendar quarter if these days are included in either the pre- or post-event window, zero otherwise (Li and Ramesh 2009).[17] We include an additional control

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[17] Our results are robust to including return on assets and changes in return on assets (calculated as NI/AT) to equations 1 and 2 as additional controls for firm performance (untabulated).

variable that is correlated with Form 10-K timing during our sample period. Specifically, we include ΔReg Timing, which is equal to one if the firm must respond to a change in SEC accelerated filing rules in year *t* compared with year *t-1*, zero otherwise.

Studies of the determinants of bid/ask spreads argue that in addition to inventory-holding and information asymmetry costs, spreads also reflect the market maker's order processing costs. Order-processing costs include costs directly associated with providing the market making service such as the exchange seat, floor space rent, computer costs, labor costs, and the opportunity cost of the market maker's time (Bollen, Smith, and Whaley 2004). Because these costs are largely fixed, at least in the short run, our changes research design should difference out such costs, and including ΔVolume should reduce any residual contribution of order-processing costs to changes in bid/ask spreads. Table 3 presents Spearman and Pearson correlations among the variables included in equations 1 and 2.

Table 4 reports the results of ordinary least squares regressions of equation 1. Consistent with expectations, column 1 of Table 4 reports a negative and significant coefficient estimate on Δ10-K Timing (β = -0.0007, p<0.01). This suggests that earlier Form 10-K timing is associated on average with a decrease in relative bid/ask spreads around the date Form 10-K is released to investors. The firm performance control variables are generally significant. The significance of the firm performance control variables that capture earnings announcement news (EA News; β=-0.3581, p<0.01) and Form 10-K news (10K News; β=-0.4799, p<0.01) in column 1 indicates that firm performance influences changes in information asymmetry and market-maker inventory-holding costs around the Form 10-K filing date. The significance of Quarter End Effect (β=2.2844, p<0.01) implies that seasonality influences changes in information asymmetry and market-maker

inventory-holding costs around Form 10-K filings. This extends prior work that shows calendar

quarter-end timing influences short-window market reactions to Form 10-K (Li and Ramesh 2009).

Column 2 of Table 4 reports whether changes in Form 10-K timing from on-time or late in

the prior year to early in the current year (Δ to Early) and from early or on-time in the prior year to

late in the current year (Δ to Late) are associated with changes in information asymmetry among

investors. Following our theoretical framework, if changes in disclosure timing are associated with

changes in information asymmetry, firms that change to filing early (change to filing late) should

experience a decrease (increase) in of the degree of information asymmetry. Consistent with this

notion, column 2 reports that filing Form 10-K early or late has directionally different economic

consequences, controlling for earnings announcement and Form 10-K performance news.

Specifically, a change in Form 10-K timing from on-time or late to early is associated with a

decrease in relative bid/ask spread compared with filing Form 10-K on-time (Δ to Early;

β=-0.0203, p<0.01). In contrast, a change in Form 10-K timing from early or on-time to late is

associated with an increase in relative bid/ask spread compared with filing Form 10-K on-time (Δ

to Late; β=0.0412, p<0.01). These documented changes are economically important; compared

with Form 10-Ks filed on-time, early (late) Form 10-Ks exhibit a 2.03 percent decrease (4.12

percent increase) in relative bid/ask spread around the Form 10-K filing date.[18]

Column 3 of Table 4 includes the change in earnings announcement timing (ΔEA Timing)

as an additional independent variable to examine whether the acceleration or delay of an earnings

announcement is correlated with changes in Form 10-K timing. For example, if managers simply

file Form 10-K within a certain number of days after the earnings announcement date, then there

could be a mechanical relation between the timing of earnings announcements and Form 10-Ks.

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[18] While the absolute coefficient on Δ to Late is directionally higher than that on Δ to Early, it is not statistically different (untabulated). For comparison, Coller and Yohn (1997) find that the issuance of a management forecast is associated with a 3 percent decrease in bid/ask spread, on average.

Although coefficient estimates show ΔEA Timing is associated with a decrease in relative bid/ask spread (p<0.05), Δ10-K Timing retains its statistical significance (p<0.01). Column 4 shows that Δ to Early and Δ to Late remain statistically significant, of same sign, and have similar economic importance after augmenting the model with ΔEA Timing.

Throughout Table 4, we include ΔReg Timing as an independent variable to ensure that our results hold after controlling for changes in Form 10-K timing that are due to mandated changes in SEC regulations. However, ΔReg Timing can also be interpreted as a proxy for disclosure timing in the following sense. If changes in disclosure timing are associated with changes in information asymmetry, then exogenous regulatory changes that require firms to file Form 10-K earlier should yield a decrease in information asymmetry around the first disclosure subject to the new reporting guidelines. Consistent with this argument, the coefficient estimate on ΔReg Timing is negative and significant in columns 1 through 4 (p<0.01 in each column). This is consistent with an association between earlier disclosure timing, measured using a mandated regulatory change in Form 10-K timing, and a decrease in the degree of information asymmetry among investors. These changes in information asymmetry are economically important; firms that are required by the SEC to change to earlier Form 10-K timing show an 8 percent decrease in relative bid/ask spread around the first Form 10-K subject to the earlier Form 10-K reporting deadline.[19]

As discussed previously, we corroborate our relative bid/ask spread results reported in Table 4 using changes in share price volatility (%ΔVolatility) as an alternative measure of the degree of information asymmetry among investors. Table 5 reports the results from this supporting analysis. The pattern of results in Table 5 is consistent with a relation between changes in Form 10-K timing and changes in information asymmetry. The firm performance control variables that

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[19] For comparison, Daske, Hail, Leuz and Verdi (2008) find that the mandatory adoption if IFRS is associated with a 6 percent to 11 percent decrease in bid/ask spread, on average.

capture earnings announcement news (EA News; β=-0.2392, p<0.01) and Form 10-K news (10K News; β=-0.3925, p<0.01) remain highly significant, suggesting that firm performance influences changes in the degree of information asymmetry among investors around the Form 10-K filing date. Consistent with expectations, column 1 reports a negative and significant coefficient estimate on Δ10-K Timing (β=-0.0017, p<0.01), indicating that earlier Form 10-K timing is associated with smoother transitions in share price and, thus, less information asymmetry between the firm and shareholders, or among investors, around the Form 10-K filing date.

Consistent with the relative bid/ask spread evidence presented in Table 4, column 2 of Table 5 reports that compared with on-time filings, early (late) Form 10-Ks exhibit 2.5 percent lower (7.8 percent higher) share price volatility around the Form 10-K filing date, after controlling for firm performance news and calendar quarter-end effects, among other factors.[20] Columns 3 and 4 report that the changes in disclosure timing from on-time or late to early (Δ to Early; β=-0.0238) and from early or on-time to late (Δ to Late; β=0.0728) remain significant, controlling for changes in the firm's earnings announcement timing (p<0.01 for both variables). In untabulated analysis, we find that the absolute coefficient on Δ to Late is significantly higher than that on Δ to Early, consistent with studies that document an asymmetric response to negative events (e.g., Skinner and Sloan 2002). Overall, the results presented in Table 5 indicate that disclosure timing influences the degree of information asymmetry among investors.

Sensitivity of Relative Bid/Ask Spread Results to Model Specification

Table 5 reports evidence consistent with our relative bid/ask spread results using the change in share price volatility as an alternative proxy for the change in the degree of information asymmetry between the firm and shareholders or among investors. We perform several additional

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[20] For comparison, Leuz and Verrecchia (2000) find little evidence of a change in volatility after firms voluntarily adopt IAS or U.S. GAAP. Clayton, Hartzell, and Rosenberg (2005) find a 10 percent to 24 percent increase in volatility following CEO turnover, on average.

tests to evaluate the sensitivity of our main results to model specification. In our prior analysis, we use the percentage change in relative bid/ask spread rather than the raw change as a dependent variable to account for differences in the scale of firms' baseline bid/ask spreads. An alternative approach is to include the pre-event relative bid/ask spread as a control variable with the unscaled change as the dependent variable. In untabulated results, we find that our inferences are robust to this alternative specification. Similarly, our results are robust to using percentage changes in control variables where possible (Form 10-K timing, volume, and stock returns).

Our reported results use an event study approach to examine the percentage change in relative bid/ask spreads by calculating the percent change around the Form 10-K filing date. Alternatively, it is possible to calculate the percentage change (or unscaled change) in relative bid/ask spreads following the Form 10-K filing in year t relative to year $t-1$. This would define the percentage change in relative bid/ask spread as the average post-event relative bid/ask spread in year t less the average post-event relative bid/ask spread in year $t-1$. An advantage of this approach is that it helps adjust for differences in seasonality across the event windows (Bushee and Leuz 2005). Two disadvantages of adopting this approach is, (1) our event windows are somewhat short (22 trading days) and, (2) it makes it more difficult to control for firm events that occur during the year-long window, perhaps limiting our ability to draw proper inferences. In untabulated results, we find that our results are of similar sign and statistical significance when using this alternative changes specification.

Cross-sectional Analysis of Form 10-K Timing and Information Asymmetry

We perform cross-sectional analysis using several proxies for characteristics of firms' information environment to further examine the relation between Form 10-K timing and information asymmetry. Investors likely find Form 10-K to be less relevant when a firm operates in

a richer information environment and, hence, the timing of such disclosures could be less important. We use three proxies from prior studies to characterize a firm's information environment and interact each with Δ10-K Timing. As discussed previously, we expect that firms that have higher accounting performance (return on assets), have higher analyst following (an indicator variable equal to one if the firm's analyst following is in the top 25 percent of the sample), or have not recently announced a restatement (an indicator equal to one if the firm did not announce a restatement during the current fiscal year based on data from Hennes, Leone, and Miller 2008) are likely to benefit less with respect to the relation between earlier disclosure timing and information asymmetry compared with other firms (Hayn 1995; Lang and Lundholm 1996; Ertimur 2004; Frankel and Li 2004; Hribar and Jenkins 2004; Brown et al. 2009). Because Δ10-K Timing is defined such that larger values correspond to earlier filings, a positive coefficient estimate on an interaction term would indicate that earlier Form 10-K timing is less beneficial to firms with respect to the relation with information asymmetry.

Table 6, Panel A reports the cross-sectional results using changes in relative bid/ask spread as the proxy for changes in the degree of information asymmetry between the firm and shareholders or among investors. The regressions in columns 1 and 2 augment equation 1 with the main effects of each characteristic of the firm's information environment (ROA, High Analyst Following, and Restatement) and the three interaction terms of interest (Δ10-K Timing*ROA, Δ10-K Timing*High Analyst Following, and Δ10-K Timing*Restatement). Consistent with expectations, the coefficient estimate on each interaction is positive and statistically significant at the 5 percent level or better, controlling for main effects and the variables included in equation 1.

This indicates that earlier Form 10-K timing is less beneficial for firms that operate in richer information environments, on average.[21]

Table 6, Panel B separates Form 10-K timing into the Δ to Early and Δ to Late categories. We interact these variables with each information environment proxy to create six interaction terms. Column 2 reports positive and significant coefficient estimates on the interactions between Δ to Early and information environment proxies at the 5 percent level or better. In contrast, the interactions between Δ to Late and information environment proxies are generally insignificant, with the exception of the interaction with No Restatement (p<0.10). Hence, early Form 10-K timing is less beneficial with respect to decreases in the degree of information asymmetry around the filing date for firms that operate in richer information environments compared with on-time filings. In contrast, late Form 10-Ks are associated with increases in information asymmetry around the filing date regardless of the information environment compared with on-time filings.

We examine the economic importance of this evidence by adding interaction terms incrementally to the model reported in Table 6, Panel B (untabulated). Column 2 of Table 4 reports that the average effect of changes in Form 10-K timing from on-time or late to early (Δ to Early) is a 2 percent decrease in relative bid/ask spread. Using the analysis in Table 6, Panel B, we find that for High Analyst Following firms, the average effect of Δ to Early is not significantly different from zero. In contrast, for firms that do not have High Analyst Following, the average effect of Δ to Early is a 2.8 percent decrease in relative bid/ask spread (p<0.01). Similarly, for firms that announcement a restatement, Δ to Early is associated with an 8 percent decrease in relative bid/ask spread compared with a 2 percent decrease in spread for firms without a restatement. Overall, the

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[21] The coefficients on the interaction terms remain significant if each term is included separately or combined in the regression analysis (untabulated).

results in Table 6, Panels A and B indicate that the relation between Form 10-K timing and information asymmetry depends on information environment attributes.

Form 10-K Timing and Financial Reporting Accuracy

As discussed previously, many practitioners assert that earlier Form 10-K filings likely contain less accurate disclosures, generating the potential for an increase in information asymmetry among investors around the filing. To the extent that earlier Form 10-Ks are associated with less accurate filings, this could diminish the importance of the relation documented in Tables 4 through 6. We perform additional analysis to examine whether earlier Form 10-Ks are associated with the release of less accurate disclosures to investors.

We use two measures to capture the ex-post accuracy of Form 10-K filings—the frequency and information content of subsequent Form 10-K amendments (Form 10-K/A). We measure information content using absolute (-1,+1) cumulative abnormal returns (CAR) around the Form 10-K/A filing date. Table 7, Panel A reports that 15.8 percent of early Form 10-Ks have a corresponding amendment compared with 18.5 percent of on-time filings; the 2.7 percentage point difference is significant ($p<0.01$). In addition, 29.8 percent of late Form 10-Ks have a corresponding amendment; the 11.3 percentage point difference between late and on-time filings is significant ($p<0.01$). Panel A also reports an average absolute CAR around the amendment filing date of 4 percent for early Form 10-Ks, 5.2 percent for on-time filings, and 6.8 percent for late filings; the differences are statistically significant at the 1 percent level and are robust to using (0,+1) as the event window. Thus, early (late) disclosures are less (more) likely to have a corresponding amendment compared with Form 10-Ks filed on-time and such amendments convey less (more) information to investors.

Table 7, Panel B reports the frequency and information content of Form 10-K amendments across firms that, (1) Δ to Early, (2) have no change in disclosure timing (No Change), and (3) Δ to Late. While Panel B reports no significant difference in amendment frequency between Δ to Early and No Change filings, the average absolute CAR of 4.4 percent for Δ to Early, 5.1 percent for No Change, and 6.8 percent for Δ to Late filings are significantly different at the 5 percent level or better and are robust to using (0,+1) as the event window. Overall, the results in Table 7 do not indicate that earlier Form 10-K filings are associated with less accurate disclosures when compared with on-time and late filings.

VI. CONCLUSION

This study examines whether changes in Form 10-K filing time are associated with changes in information asymmetry between the firm and shareholders or among investors. While the SEC argues that earlier Form 10-Ks "accelerate the delivery of information to investors and the capital markets, enabling them to make more informed investment and valuation decisions more quickly" (SEC 2002), many practitioners assert that earlier Form 10-Ks likely contain less accurate disclosures, generating a potential increase in information asymmetry around the filing. In addition, recent studies call into question the value of information conveyed by Form 10-K, suggesting a lack of association between earlier Form 10-K filings and information asymmetry (Beyer, Cohen, Lys, and Walther 2010). Our study contributes to this debate by providing empirical evidence on the relation between changes in Form 10-K timing and changes in information asymmetry.

We define Form 10-K timing as the number of days the firm requires to disseminate Form 10-K to investors relative to the number of days permitted by SEC regulations. Using a large sample of Form 10-Ks filed from 1994 to 2006, we first document a shift in Form 10-K filing patterns toward earlier disclosure timing when compared with prior research (Alford et al. 1994).

Second, we provide robust evidence that earlier Form 10-K timing is associated on average with a decrease in relative bid/ask spread and lower share price volatility around the date Form 10-K is released to investors, after controlling for firm financial performance and other factors. In addition, the changes in information asymmetry are economically important—firms that change to early (late) filing times experience a 2 percent decrease (4 percent increase) in relative bid/ask spread and have 2 percent lower (7 percent higher) share price volatility around the Form 10-K filing date. We also show that the relation between changes in Form 10-K timing and changes in information asymmetry is less beneficial for firms that operate in better information environments compared with firms that file Form 10-K on-time. In contrast, late Form 10-Ks are associated with higher information asymmetry regardless of information environment characteristics compared with firms that file Form 10-K on-time.

Finally, we examine whether firms with earlier Form 10-K timing have less accurate Form 10-K disclosures. In debates with the SEC about Form 10-K filing times, many financial statement preparers argue that earlier filing times would generate less accurate disclosures. We shed light on this issue by examining the association between the frequency and information content of amended Form 10-K filings (Form 10-K/A) and the timing of firms' corresponding Form 10-K. Contrary to the view that earlier Form 10-Ks are associated with less accurate disclosure, we find that earlier Form 10-Ks are associated with less frequent amendments. We also find that when earlier Form 10-Ks are amended, the market reaction to such amendments is significantly lower when compared with the market reaction to amendments of on-time and late Form 10-Ks. Taken together, the results suggest that earlier Form 10-K timing is associated with lower information asymmetry among investors, and that earlier Form 10-Ks do not necessarily sacrifice accuracy.

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APPENDIX
Variable Definitions

Variable Name	Description
Δ10-K Timing	Defined as 10-K Timing$_t$ – 10-K Timing$_{t-1}$. 10-K timing is the difference between the number of days it takes the firm to file Form 10-K and the permitted days per SEC deadlines, multiplied by negative 1. Filing data is obtained from 10kWIZARD (obtained directly from EDGAR) which includes the conforming date of the fiscal year end, filing date, and filing status. Higher values reflect earlier timing.
Δ to Early	An indicator variable equal to one if the firm filed Form 10-K five or more days before the SEC deadline, but did not file five or more days before the SEC deadline in the prior year.
Δ to Late	An indicator variable equal to one if the firm filed Form 10-K after the SEC deadline, but did not after the SEC deadline in the prior year.
%ΔSpread	The difference between the average daily relative bid/ask spread in the post-event window (-2,+19) and pre-event window (-24,-3) divided by the pre-event window, where day zero represents the Form 10-K filing date for late filers and is the Form 10-K filing date otherwise. The relative bid/ask spread is computed as (ask - bid)/(ask + bid)/2.
%ΔVolatility	The difference between share price volatility in the post-event window (-2,+19) and pre-event window (-24,-3) divided by the pre-event window, where day zero represents the Form 10-K filing date for late filers and is the 10-K filing date otherwise. Share price volatility is measured as the standard deviation of the stock return residuals computed using the Fama and French (1993) three-factor model.
ΔReg Timing	An indicator variable equal to one if the firm experienced a reduction in the allowed filing time due either to a SEC rule change or to a change in filing status.
ΔEA Timing	The difference between the number of days it takes the firm to announce earnings following its fiscal year-end as compared with the prior year, multiplied by negative 1.
ΔVolume	The average daily turnover in the in the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing deadline. Daily turnover is calculated as the total daily shares traded divided by the total shares outstanding.
ΔReturns	The difference between firms' cumulative stock return performance during the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing date.
10-K News	Market-adjusted cumulative abnormal return in the (-1,+1) window around the Form 10-K filing.
EA News	Cumulative abnormal return in the (-1,+1) window around the earnings announcement date if the announcement date is prior to the Form 10-K filing date and is within 30 days of the Form 10-K filing (event window). Earnings announcement dates were obtained from COMPUSTAT.

Quarter End Effect	Cumulative absolute market return in last three trading days of the calendar quarter-end (March, June, September, and December) if the last trading day of a calendar quarter-end is included in either the pre-event or post-event windows, zero otherwise.
ROA	Computed as NI/AT from COMPUSTAT.
High Analyst Following	An indicator variable equal to one if the number of analysts covering the firm is in the top 25% of the sample, zero otherwise.
No Restatement	Equal to one when there was no restatement announcement during the fiscal year following Hennes, Leone, and Miller (2008), zero otherwise.

TABLE 1
Sample Determination and Distribution of Form 10-K Filings

PANEL A: Sample Determination

Criteria	# of Observations
Form 10-Ks on EDGAR (excluding 10-KSBs) from 1994-2006	103,861
Less observations without CIK matches in COMPUSTAT	(29,737)
Less observations without sufficient data to analyze capital market consequences (TAQ and CRSP data) of Form 10-K timing	(35,274)
Total Sample Observations	38,850

PANEL B: Distribution of Form 10-K Filing Times (1994 – 2006)

Form 10-K Filing Times	# of Filings	% of Total
31+ days early	1,247	3.3%
16 – 30 days	3,884	10.0%
10 – 15 days	4,261	11.0%
6 – 9 days	3,730	9.6%
5 days	1,544	4.0%
4 days	1,929	5.0%
3 days	3,280	8.4%
2 days	1,181	3.0%
1 day	2,380	7.1%
Total Filed Before SEC Deadline	**23,836**	**61.4%**
Total Filed On SEC Deadline	**11,334**	**29.2%**
1 day late	591	1.5%
2 days	75	0.2%
3 days	107	0.3%
4 days	75	0.2%
5 days	42	0.1%
6 – 9 days	289	0.7%
10 – 15 days	1,773	4.6%
16 – 30 days	453	1.2%
31 – 60 days	105	0.3%
61+ days	170	0.4%
Total Filed After SEC Deadline	**3,680**	**9.5%**
Total All Form 10-Ks	**38,850**	**100%**

Form 10-K timing is the difference between the number of days the firm takes to file Form 10-K and the permitted number of days per SEC guidelines. In subsequent tables, we multiply this measure by negative one to ensure that higher values correspond with earlier disclosure. Submission data is obtained from 10kWIZARD, which includes the conforming date of the fiscal year end, filing date, and filing status. The SEC deadline is either 60, 75, or 90 days depending on the firm's filing status and fiscal year.

TABLE 2
Descriptive Statistics

PANEL A: Descriptive Statistics for Full Sample

Variable	Mean	Median	Standard Deviation
Total Assets ($millions)	3,333	253	27,981
Revenue ($millions)	1,744	205	7,763
Net Income ($millions)	91	6	812
Log Market Value of Equity ($millions)	5.59	5.50	2.06
Book-to-Market	0.62	0.48	0.62
Loss	0.33	0.00	0.47
10-K Timing (Days)	4.57	3.00	12.55
Δ 10-K Timing	-0.06	0.00	10.30
Δ to Early	0.13	0.00	0.34
Δ to Late	0.06	0.00	0.24
Spread (pre-event window)	0.0429	0.0199	0.0648
Spread (post-event window)	0.0445	0.0198	0.0687
ΔSpread	0.0016	-0.0001	0.0251
%ΔSpread	0.0426	-0.0031	0.2992
%ΔVolatility	0.1341	0.0215	0.5356
ΔVolume	0.00	0.00	0.00
ΔReturns	0.00	0.00	0.25
ΔReg Timing	0.06	0.00	0.24
ΔEA Timing	-0.76	0.00	18.11
10-K News	0.00	0.00	0.07
EA News	0.00	0.00	0.06
Quarter-End Effect	0.02	0.02	0.01
ROA	-0.05	0.03	0.30
Analyst Following	3.60	1.00	5.80
No Restatement	0.97	1.00	0.18

PANEL B: Descriptive Statistics for Δ to Early, No Change, and Δ to Late Form 10-Ks

	Δ to Early (n=5,124)		No Change (n=31,402)		Δ to Late (n=2,324)	
Variable	Mean	Median	Mean	Median	Mean	Median
Total Assets ($millions)	3,000	316	3,500	262	1,900	107
Revenue ($millions)	1,700	241	1,800	213	744	95
Net Income ($millions)	81	8	101	7	-23	-2
Log Market Value of Equity ($millions)	5.85	5.84	5.63	5.55	4.43	4.30
Book-to-Market	0.58	0.45	0.62	0.48	0.72	0.57
Loss	0.30	0.00	0.32	0.00	0.58	1.00
10-K Timing (Days)	12.01	10.00	4.83	2.00	-15.32	-14.00
Δ 10-K Timing	11.35	8.00	-0.78	0.00	-15.53	-15.00
Spread (pre-event window)	0.0351	0.0163	0.0417	0.0195	0.0757	0.0425
Spread (post-event window)	0.0351	0.0161	0.0434	0.0195	0.0799	0.0449
ΔSpread	0.0000	-0.0001	0.0017	0.0000	0.0042	0.0005
%ΔSpread	0.0229	-0.0124	0.0425	-0.0032	0.0872	0.0271
%ΔVolatility	0.1039	0.0039	0.1321	0.0206	0.2286	0.0739
ΔVolume	0.00	0.00	0.00	0.00	0.00	0.00
ΔReturns	-0.01	0.00	0.01	0.00	0.00	0.00
ΔReg Timing	0.03	0.00	0.06	0.00	0.13	0.00
ΔEA Timing	3.60	1.00	-0.28	0.00	-16.96	-8.00
10-K News	0.00	0.00	0.00	0.00	-0.01	-0.01
EA News	0.00	0.00	0.00	0.00	-0.01	0.00
Quarter-End Effect	0.02	0.02	0.02	0.02	0.02	0.02
ROA	-0.04	0.03	-0.04	0.03	-0.17	-0.02
Analyst Following	4.00	1.00	3.67	1.00	1.91	0.00
No Restatement	0.97	1.00	0.97	1.00	0.88	1.00

This table reports descriptive statistics for the variables used throughout the study. *Total Assets*, *Revenue*, and *Net Income* are computed at the end of the fiscal year. *10-K Timing* is the difference between the number of days the firm takes to file Form 10-K and the permitted number of days per SEC guidelines multiplied by negative one. We multiply the measure by negative one to ensure that higher values of 10-K timing correspond with earlier disclosure. Submission data is obtained from 10kWIZARD (obtained directly from Edgar) which includes the conforming date of the fiscal year end, filing date, and filing status. Higher values correspond to earlier filing times. *Log Market Value of Equity* is defined as the natural logarithm of the product of price and outstanding shares (PRCC_F*CSHO) at the end of the fiscal year from COMPUSTAT. *Book-to-*

Market is the ratio of book value to market value at the end of the fiscal year [CEQ/(PRCC_F*CSHO) from COMPUSTAT]. Δ*10-K Timing* is the year-to-year change in *10-K Timing* (10-K Timing$_t$ – 10-K Timing$_{t-1}$). Δ *to Early* is an indicator variable coded to one if the firm filed a 10-K five or more days before the SEC deadline, but did not file five or more days before the SEC deadline in the prior year. Δ *to Late* is an indicator variable coded to one if the firm filed a 10-K after the SEC deadline, but did not file after the SEC deadline in the prior year. %Δ*Spread* is calculated as the difference between the average daily relative bid/ask spread in the post-event window (-2,+19) and pre-event window (-24,-3) divided by the pre-event window, where day zero represents the Form 10-K filing date for late filers and is the 10-K filing date otherwise. . The relative bid/ask spread is computed as (ask - bid)/(ask + bid)/2. %Δ*Volatility* is calculated as the difference between share price volatility in the post-event window (-2,+19) and pre-event window (-24,-3) divided by the pre-event window, where day zero represents the Form 10-K filing date for late filers and is the 10-K filing date otherwise. Share price volatility is measured as the standard deviation of the stock return residuals computed using the Fama and French (1993) three-factor model. Δ*Reg Timing* is equal to one if the firm experienced a reduction in the allowed filing time due either to a SEC rule change or to a change in filing status. *ΔEA Timing* is the difference between the number of days it takes the firm to announce earnings following its fiscal year-end as compared to the prior year, multiplied by negative 1. Δ*Volume* is computed as the average daily turnover in the in the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing deadline. Daily turnover is calculated as the total daily shares traded divided by the total shares outstanding. Δ*Returns* is computed as the difference between the firms' cumulative stock return performance during the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing. *10-K News* is the market-adjusted cumulative abnormal return in the (-1,+1) window around the 10-K filing. *EA News* is the cumulative abnormal return in the (-1,+1) window around the earnings announcement if the announcement date is prior to the 10-K filing date and is within 30 days of the 10-K filing (event window). *Quarter-End Effect* is the cumulative absolute market return in last three trading days of the calendar quarter-end (March, June, September and December) if the last trading day of a calendar quarter-end is included in either the pre or post event windows, zero otherwise. *ROA* is return on assets computed as NI/AT from COMPUSTAT. *Analyst Following* is the number of analysts covering the firm. *No Restatement* is equal to one when a restatement was not identified following Hennes, Leone, and Miller (2008), zero otherwise.

TABLE 3
Pearson (Spearman) Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) %ΔSpread	**1.00**	**0.16**	-0.03	-0.03	0.04	**-0.14**	-0.07	**-0.15**	**-0.11**	**0.12**	**-0.08**	-0.04
(2) %ΔVolatility	**0.15**	**1.00**	-0.04	-0.02	0.04	**0.41**	**0.16**	-0.02	-0.04	**0.10**	-0.04	-0.02
(3) Δ10-K Timing	-0.02	-0.03	**1.00**	**0.43**	**-0.38**	-0.01	-0.01	0.01	0.04	-0.08	**-0.15**	**0.34**
(4) Δ to Early	-0.02	-0.02	**0.50**	**1.00**	**-0.10**	0.00	-0.02	-0.01	0.02	-0.03	-0.06	**0.09**
(5) Δ to Late	0.03	0.03	**-0.34**	**-0.10**	**1.00**	0.01	0.00	-0.04	-0.03	0.02	**0.07**	**-0.23**
(6) ΔVolume	**-0.15**	**0.43**	-0.01	-0.01	0.02	**1.00**	**0.16**	0.04	0.03	-0.02	-0.02	0.00
(7) ΔReturns	**-0.06**	**0.15**	0.00	-0.01	-0.01	**0.14**	**1.00**	**0.23**	-0.05	**0.06**	-0.01	-0.01
(8) 10-K News	**-0.14**	-0.01	0.00	-0.02	-0.03	0.02	**0.20**	**1.00**	**0.26**	-0.04	0.00	0.01
(9) EA News	**-0.09**	-0.03	0.03	0.02	-0.03	0.01	-0.06	**0.19**	**1.00**	-0.02	0.00	0.04
(10) Quarter End Effect	**0.12**	**0.11**	-0.06	-0.02	0.02	-0.01	**0.06**	-0.01	-0.01	**1.00**	**-0.15**	-0.02
(11) ΔReg Timing	**-0.08**	-0.04	**-0.18**	-0.06	**0.07**	-0.03	-0.02	-0.01	0.01	**-0.14**	**1.00**	0.01
(12) ΔEA Timing	-0.03	0.00	**0.26**	**0.12**	**-0.18**	0.01	-0.01	0.02	**0.05**	-0.03	0.02	**1.00**

This table reports correlation coefficients among the variables used throughout the empirical analysis. Pearson (Spearman) correlations are reported in the upper (lower) triangle. Bold terms are significant at the 5 percent level or better. %Δ*Spread* is calculated as the difference between the average daily relative bid/ask spread in the post-event window (-2,+19) and pre-event window (-24,-3) divided by the pre-event window, where day zero represents the Form 10-K filing date for late filers and is the 10-K filing date otherwise. The relative bid/ask spread is computed as (ask - bid)/(ask + bid)/2. %Δ*Volatility* is calculated as the difference between share price volatility in the post-event window (-2,+19) and pre-event window (-24,-3) divided by the pre-event window, where day zero represents the Form 10-K filing date for late filers and is the 10-K filing date otherwise. Share price volatility is measured as the standard deviation of the stock return residuals computed using the Fama and French (1993) three-factor model. Δ*10-K Timing* is the year-to-year change in *10-K Timing* (10-K Timing$_t$ − 10-K Timing$_{t-1}$). *10-K Timing* is the difference between the number of days the firm takes to file Form 10-K and the permitted number of days per SEC guidelines multiplied by negative one. We multiply the measure by negative one to ensure that higher values of 10-K timing correspond with earlier disclosure. Submission data is obtained from 10kWIZARD (obtained directly from Edgar) which includes the conforming date of the fiscal year end, filing date, and filing status. Higher values correspond to earlier filing times. Δ *to Early* is an indicator variable coded to one if the firm filed a 10-K five or more days before the SEC deadline, but did not file five or more days before the SEC deadline in the prior year. Δ *to Late* is an

indicator variable coded to one if the firm filed a 10-K after the SEC deadline, but did not file after the SEC deadline in the prior year. $\Delta Reg\ Timing$ is equal to one if the firm experienced a reduction in the allowed filing time due either to a SEC rule change or to a change in filing status. $\Delta EA\ Timing$ is the difference between the number of days it takes the firm to announce earnings following its fiscal year-end as compared to the prior year, multiplied by negative 1. $\Delta Volume$ is computed as the average daily turnover in the in the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing deadline. Daily turnover is calculated as the total daily shares traded divided by the total shares outstanding. $\Delta Returns$ is computed as the difference between the firms' cumulative stock return performance during the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing. $10\text{-}K\ News$ is the market-adjusted cumulative abnormal return in the (-1,+1) window around the 10-K filing. $EA\ News$ is the cumulative abnormal return in the (-1,+1) window around the earnings announcement if the announcement date is prior to the 10-K filing date and is within 30 days of the 10-K filing (event window). $Quarter\text{-}End\ Effect$ is the cumulative absolute market return in last three trading days of the calendar quarter-end (March, June, September and December) if the last trading day of a calendar quarter-end is included in either the pre or post event windows, zero otherwise.

TABLE 4
Changes in Form 10-K Timing and Changes in Relative Bid/Ask Spreads

$$\%\Delta Spread_{it} = \beta_0 + \beta_{1,2,3}(\Delta \text{10-K Timing}) + \beta_4(\Delta \text{Reg Timing}_{it}) + \beta_5(\Delta \text{Volume}_{it}) +$$
$$\beta_6(\Delta \text{Returns}_{it}) + \beta_7(\text{EA News}_{it}) + \beta_8(\text{Quarter End Effect}_{it}) + \beta_9(\text{10-K News}_{it}) + \square_{it}$$

	(1) %ΔSpread	(2) %ΔSpread	(3) %ΔSpread	(4) %ΔSpread
Intercept	-0.0020 [-0.14]	-0.0021 [-0.14]	-0.0026 [-0.18]	-0.0021 [-0.15]
Δ10-K Timing	-0.0007*** [-5.23]		-0.0005*** [-4.68]	
Δ to Early		-0.0203*** [-2.62]		-0.0189** [-2.51]
Δ to Late		0.0412*** [2.95]		0.0351** [2.47]
ΔReg Timing	-0.0837*** [-5.27]	-0.0832*** [-5.08]	-0.0817*** [-5.25]	-0.0825*** [-5.09]
ΔEA Timing			-0.0004** [-2.57]	-0.0004** [-2.46]
ΔVolume	-8.0205*** [-6.24]	-8.0377*** [-6.23]	-8.0088*** [-6.22]	-8.0276*** [-6.21]
ΔReturns	-0.0476 [-1.45]	-0.0478 [-1.48]	-0.0478 [-1.46]	-0.0479 [-1.48]
EA News	-0.3581*** [-17.35]	-0.3559*** [-17.71]	-0.3549*** [-17.08]	-0.3523*** [-17.11]
Quarter End Effect	2.2844*** [2.86]	2.2996*** [2.91]	2.2928*** [2.86]	2.2946*** [2.90]
10-K News	-0.4799*** [-7.18]	-0.4766*** [-7.28]	-0.4792*** [-7.22]	-0.4767*** [-7.30]
N	38,850	38,850	38,850	38,850
R^2	6.4%	6.5%	6.4%	6.5%

%Δ*Spread* is calculated as the difference between the average daily relative bid/ask spread in the post-event window (-2, +19) and pre-event window (-24, -3) divided by the pre-event window, where day zero represents the Form 10-K filing date for late filers and is the 10-K filing date otherwise. The relative bid/ask spread is computed as (ask - bid)/(ask + bid)/2. Δ*10-K Timing* is the year-to-year change in *10-K Timing* (10-K Timing$_t$ – 10-K Timing$_{t-1}$). *10-K Timing* is the difference between the number of days the firm takes to file Form 10-K and the permitted number of days per SEC guidelines multiplied by negative one. We multiply the measure by negative one to ensure that higher values of 10-K timing correspond with earlier disclosure. Submission data is obtained from 10kWIZARD (obtained directly from Edgar) which includes the conforming date of the fiscal year end, filing date,

and filing status. Higher values correspond to earlier filing times. Δ *to Early* is an indicator variable coded to one if the firm filed a 10-K five or more days before the SEC deadline, but did not file five or more days before the SEC deadline in the prior year. Δ *to Late* is an indicator variable coded to one if the firm filed a 10-K after the SEC deadline, but did not file after the SEC deadline in the prior year. Δ*Reg Timing* is equal to one if the firm experienced a reduction in the allowed filing time due either to a SEC rule change or to a change in filing status. *ΔEA Timing* is the difference between the number of days it takes the firm to announce earnings following its fiscal year-end as compared to the prior year, multiplied by negative 1. Δ*Volume* is computed as the average daily turnover in the in the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing deadline. Daily turnover is calculated as the total daily shares traded divided by the total shares outstanding. Δ*Returns* is computed as the difference between the firms' cumulative stock return performance during the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing. *10-K News* is the market-adjusted cumulative abnormal return in the (-1,+1) window around the 10-K filing. *EA News* is the cumulative abnormal return in the (-1,+1) window around the earnings announcement if the announcement date is prior to the 10-K filing date and is within 30 days of the 10-K filing (event window). *Quarter-End Effect* is the cumulative absolute market return in last three trading days of the calendar quarter-end (March, June, September and December) if the last trading day of a calendar quarter-end is included in either the pre or post event windows, zero otherwise. Statistical significance at the 1 percent, 5 percent, and 10 percent level (two-tailed) is notated with ***, **,* respectively. Standard errors are clustered by firm and by year.

TABLE 5
Changes in Form 10-K Timing and Changes in Share Price Volatility

$$\%\Delta\text{Volatility}_{it} = \beta_0 + \beta_{1,2,3}(\Delta\text{10-K Timing}) + \beta_4(\Delta\text{Reg Timing}_{it}) + \beta_5(\Delta\text{Volume}_{it}) +$$
$$\beta_6(\Delta\text{Returns}_{it}) + \beta_7(\text{EA News}_{it}) + \beta_8(\text{Quarter End Effect}_{it}) +$$
$$\beta_9(\text{10-K News}_{it}) + \square_{it}$$

	(1) %ΔVolatility	(2) %ΔVolatility	(3) %ΔVolatility	(4) %ΔVolatility
Intercept	0.0616***	0.0587***	0.0611***	0.0586***
	[2.84]	[2.69]	[2.79]	[2.68]
Δ10-K Timing	-0.0017***		-0.0015***	
	[-4.96]		[-4.52]	
Δ to Early		-0.0250***		-0.0238***
		[-3.39]		[-3.30]
Δ to Late		0.0782***		0.0728***
		[7.15]		[6.69]
ΔReg Timing	-0.0514***	-0.0471***	-0.0499***	-0.0464***
	[-3.03]	[-2.64]	[-2.90]	[-2.58]
ΔEA Timing			-0.0003	-0.0003*
			[-1.61]	[-1.80]
ΔVolume	45.5393***	45.5137***	45.5476***	45.5227***
	[14.02]	[14.03]	[14.03]	[14.03]
ΔReturns	0.2182***	0.2181***	0.2181***	0.2180***
	[7.64]	[7.73]	[7.63]	[7.72]
EA News	-0.2392***	-0.2392***	-0.2369***	-0.2360***
	[-7.50]	[-7.47]	[-7.45]	[-7.40]
Quarter End Effect	3.5164***	3.5801***	3.5223***	3.5756***
	[4.12]	[4.16]	[4.11]	[4.15]
10-K News	-0.3925***	-0.3847***	-0.3920***	-0.3848***
	[-7.02]	[-6.98]	[-7.02]	[-6.97]
N	38,850	38,850	38,850	38,850
R^2	19.4%	19.5%	19.4%	19.5%

%ΔVolatility is calculated as the difference between share price volatility in the post-event window (-2, +19) and pre-event window (-24, -3) divided by the pre-event window, where day zero represents the Form 10-K filing date for late filers and is the 10-K filing date otherwise. Share price volatility is measured as the standard deviation of the stock return residuals computed using the Fama and French (1993) three-factor model. Δ*10-K Timing* is the year-to-year change in *10-K Timing* (10-K Timing$_t$ – 10-K Timing$_{t-1}$). *10-K Timing* is the difference between the number of days the firm takes to file Form 10-K and the permitted number of days per SEC guidelines multiplied by negative one. We multiply the measure by negative one to ensure that higher values of 10-K timing correspond with earlier disclosure.

Submission data is obtained from 10kWIZARD (obtained directly from Edgar) which includes the conforming date of the fiscal year end, filing date, and filing status. Higher values correspond to earlier filing times. Δ *to Early* is an indicator variable coded to one if the firm filed a 10-K five or more days before the SEC deadline, but did not file five or more days before the SEC deadline in the prior year. Δ *to Late* is an indicator variable coded to one if the firm filed a 10-K after the SEC deadline, but did not file after the SEC deadline in the prior year. Δ*Reg Timing* is equal to one if the firm experienced a reduction in the allowed filing time due either to a SEC rule change or to a change in filing status. *ΔEA Timing* is the difference between the number of days it takes the firm to announce earnings following its fiscal year-end as compared to the prior year, multiplied by negative 1. Δ*Volume* is computed as the average daily turnover in the in the post-event window (-2,+19) less the pre-event window (-24,-3), where day zero represents the Form 10-K filing deadline. Daily turnover is calculated as the total daily shares traded divided by the total shares outstanding. Δ*Returns* is computed as the difference between the firms' cumulative stock return performance during the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing. *10-K News* is the market-adjusted cumulative abnormal return in the (-1,+1) window around the 10-K filing. *EA News* is the cumulative abnormal return in the (-1,+1) window around the earnings announcement if the announcement date is prior to the 10-K filing date and is within 30 days of the 10-K filing (event window). *Quarter-End Effect* is the cumulative absolute market return in last three trading days of the calendar quarter-end (March, June, September and December) if the last trading day of a calendar quarter-end is included in either the pre or post event windows, zero otherwise. Statistical significance at the 1 percent, 5 percent, and 10 percent level (two-tailed) is notated with ***, **,* respectively. Standard errors are clustered by firm and by year.

TABLE 6

Cross-sectional Analysis of Changes in Form 10-K Timing and Changes in Bid/Ask Spreads

PANEL A: Form 10-K Timing and Bid/Ask Spreads (Δ10-K Timing)

	(1) %ΔSpread	(2) %ΔSpread
Intercept	0.0040	0.0038
	[0.24]	[0.23]
Δ10-K Timing	-0.0006***	-0.0004**
	[-2.73]	[-2.50]
Δ10-K Timing*ROA	0.0011***	0.0010***
	[2.98]	[2.77]
Δ10-K Timing*High Analyst Following	0.0009**	0.0008**
	[2.51]	[2.53]
Δ10-K Timing*No Restatement	0.0015***	0.0012***
	[9.43]	[10.06]
ΔReg Timing	-0.0701***	-0.0689***
	[-4.57]	[-4.53]
ΔEA Timing		-0.0003**
		[-2.28]
ΔVolume	-8.0489***	-8.0412***
	[-6.59]	[-6.57]
ΔReturns	-0.0482	-0.0483
	[-1.46]	[-1.46]
EA News	-0.4602***	-0.4600***
	[-7.79]	[-7.82]
Quarter End Effect	2.2508***	2.2548***
	[2.82]	[2.83]
10-K News	-0.3431***	-0.3410***
	[-14.95]	[-14.72]
ROA	-0.0528***	-0.0518***
	[-2.81]	[-2.78]
High Analyst Following	-0.0341**	-0.0342**
	[-2.50]	[-2.52]
No Restatement	-0.0039	-0.0024
	[-0.51]	[-0.33]
N	38,850	38,850
R^2	7.0%	7.1%

PANEL B: Form 10-K Timing and Bid/Ask Spreads (Δ to Early and Δ to Late)

	(1) %ΔSpread	(2) %ΔSpread
Intercept	0.0052	0.0053
	[0.32]	[0.32]
Δ to Early	-0.0222***	-0.0208***
	[-2.93]	[-2.80]
Δ to Early*ROA	0.0608**	0.0595**
	[2.29]	[2.25]
Δ to Early*High Analyst Following	0.0255***	0.0247***
	[4.91]	[4.76]
Δ to Early*No Restatement	0.0626***	0.0614***
	[3.06]	[3.05]
Δ to Late	0.0314**	0.0279*
	[2.10]	[1.91]
Δ to Late*ROA	0.0367	0.0378
	[1.48]	[1.52]
Δ to Late*High Analyst Following	-0.0242	-0.0254
	[-1.02]	[-1.06]
Δ to Late*No Restatement	-0.0444**	-0.0358*
	[-2.36]	[-1.94]
ΔReg Timing	-0.0716***	-0.0710***
	[-4.52]	[-4.52]
ΔEA Timing		-0.0003**
		[-2.39]
ΔVolume	-8.0493***	-8.0414***
	[-6.55]	[-6.52]
ΔReturns	-0.0484	-0.0485
	[-1.48]	[-1.48]
EA News	-0.4607***	-0.4609***
	[-7.90]	[-7.93]
Quarter End Effect	2.2403***	2.2362***
	[2.85]	[2.85]
10-K News	-0.3406***	-0.3380***
	[-15.03]	[-14.62]
ROA	-0.0640***	-0.0630***
	[-2.81]	[-2.80]
High Analyst Following	-0.0352**	-0.0354**
	[-2.52]	[-2.53]
Restatement	-0.0039	-0.0033
	[-0.42]	[-0.36]
N	38,850	38,850

R^2	7.1%	7.2%

%ΔSpread is calculated as the difference between the average daily relative bid/ask spread in the post-event window (-2,+19) and pre-event window (-24,-3) divided by the pre-event window, where day zero represents the Form 10-K filing date for late filers and is the 10-K filing date otherwise. The relative bid/ask spread is computed as (ask - bid)/(ask + bid)/2. Δ10-K Timing is the year-to-year change in 10-K Timing (10-K Timing$_t$ – 10-K Timing$_{t-1}$). 10-K Timing is the difference between the number of days the firm takes to file Form 10-K and the permitted number of days per SEC guidelines multiplied by negative one. We multiply the measure by negative one to ensure that higher values of 10-K timing correspond with earlier disclosure. Submission data is obtained from 10kWIZARD (obtained directly from Edgar) which includes the conforming date of the fiscal year end, filing date, and filing status. Higher values correspond to earlier filing times. Δ to Early is an indicator variable coded to one if the firm filed a 10-K five or more days before the SEC deadline, but did not file five or more days before the SEC deadline in the prior year. Δ to Late is an indicator variable coded to one if the firm filed a 10-K after the SEC deadline, but did not file after the SEC deadline in the prior year. ΔReg Timing is equal to one if the firm experienced a reduction in the allowed filing time due either to a SEC rule change or to a change in filing status. ΔEA Timing is the difference between the number of days it takes the firm to announce earnings following its fiscal year-end as compared to the prior year, multiplied by negative 1. ΔVolume is computed as the average daily turnover in the in the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing deadline. Daily turnover is calculated as the total daily shares traded divided by the total shares outstanding. ΔReturns is computed as the difference between the firms' cumulative stock return performance during the post-event window (-2,+19) less that of the pre-event window (-24,-3), where day zero represents the Form 10-K filing. 10-K News is the market-adjusted cumulative abnormal return in the (-1,+1) window around the 10-K filing. EA News is the cumulative abnormal return in the (-1,+1) window around the earnings announcement if the announcement date is prior to the 10-K filing date and is within 30 days of the 10-K filing (event window). Quarter-End Effect is the cumulative absolute market return in last three trading days of the calendar quarter-end (March, June, September and December) if the last trading day of a calendar quarter-end is included in either the pre or post event windows, zero otherwise. ROA is return on assets computed as NI/AT from COMPUSTAT. High Analyst Following is an indicator variable equal to one if the firm's analyst following (the number of analyst covering the firm) is in the top 25% of the sample, zero otherwise. No Restatement is equal to one when a restatement announcement was not identified during the fiscal year following Hennes, Leone, and Miller (2008), zero otherwise. Statistical significance at the 1 percent, 5 percent, and 10 percent level (two-tailed) is notated with ***, **,* respectively. Standard errors are clustered by firm and by year.

TABLE 7
Frequency and Information Content of Form 10-K Amendments across Form 10-K Timing Categories

PANEL A: Frequency and Information Content of Amended Form 10-K Filings across Early, On-time, and Late Form 10-K Timing

		Early	On-time	Late	Test of Differences	
					Early vs. On-time	On-time vs. Late
Frequency of Amended Filings	Mean	15.8%	18.5%	29.8%	-6.50***	-15.90***
Absolute CAR (-1, +1)	Mean	4.0%	5.2%	6.8%	-7.09***	-5.76***
Absolute CAR (0, +1)	Mean	3.3%	4.3%	5.6%	-7.42***	-5.38***
Number of observations		14,693	20,477	3,680		

PANEL B: Frequency and Information Content of Amended Form 10-K Filings across Δ to Early, No Change, and Δ to Late Form 10-K Timing

		Δ to Early	No Change	Δ to Late	Test of Differences	
					Δ to Early vs. No Change	No Change vs. Δ to Late
Frequency of Amended Filings	Mean	18.0%	17.4%	28.6%	1.04	-13.32***
Absolute CAR (-1, +1)	Mean	4.4%	5.1%	6.8%	-2.48**	-5.41***
Absolute CAR (0, +1)	Mean	3.7%	4.2%	5.6%	-2.04**	-5.00***
Number of observations		5,124	22,049	2,324		

Consistent with Alford et al. (1994), Form 10-Ks are "early" if the firm files Form 10-K at least five calendar days prior to the SEC deadline. Form 10-Ks filed after the deadline are "late," and remaining Form 10-Ks are "on-time." Amendment frequency is computed by matching Form 10-K/As on EDGAR (via 10kWIZARD) with the original filing. Amendment information content is measured using the absolute CAR after Fama and French (1993) adjustments, requiring a minimum of 100 observations between (-250, -30), with the day of amended filing as zero. In Panel B, Δ to Early, No Change, and Δ to Late are defined by comparing period *t* with period *t-1*. For example, Δ to Early are firms that were not early filers in period *t-1*, but were early filers in period *t*. No Change is restricted to observations with absolute changes in Form 10-K timing of less than 5 days. Statistical significance at the 1 percent, 5 percent, and 10 percent level (two-tailed) is notated with ***, **,* respectively. Tests of differences are based on two sample t-tests of means.