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## Voluntary and mandatory disclosures: Do managers view them as substitutes?☆

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## ABSTRACT

We examine the relation between firms' voluntary guidance and mandatory 8K filings. We find a negative relation between guidance and 8Ks, which strengthens following the 2004 expansion of mandatory 8K requirements, consistent with firms using the disclosures as substitutes. Increases in 8Ks coincide with declines in firms' profits, but this negative relation weakens after the 2004 regulation, consistent with firms broadening the scope of information conveyed through 8Ks. Together, our findings suggest firms became more reliant on 8Ks to convey general types of information after the 2004 regulation, rather than primarily negative news, which reduces their incentives to issue guidance.

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## 1. Introduction

A large literature in accounting shows that firms commonly use a mixture of mandatory and voluntary disclosures to convey information to agents outside the firm. Prior research examining how firms trade off their mandatory and voluntary disclosures yields mixed results (see Section 2 for a discussion of related research). Our study is motivated by the idea that this tradeoff is likely context specific. This is because the net benefits of a given disclosure are conditional on the firms' other disclosures, and thus likely depend on the similarities between alternative forms of disclosure in terms of both content and timeliness.

In this study, we examine the relation between firms' voluntary earnings guidance and mandatory 8K filings. The nature of this relation is unclear *ex ante*. For example, the two forms of disclosure could serve as complements, as 8Ks tend to convey granular information about firms' performance and managers may opt to supplement these disclosures with earnings guidance to provide context and/or discussion to help investors interpret 8Ks. Alternatively, 8Ks and guidance could serve as

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imperfect substitutes because they both provide information useful in assessing and forecasting firms' operating performance. Thus, the provision of mandatory 8Ks could reduce the net benefits of voluntary guidance.

Our paper explores whether these two forms of disclosure are substitutes or complements. Our main analysis tests whether changes in the extent of firms' 8K disclosures are associated with changes in the frequency of firms' earnings guidance. We then exploit a significant change to mandatory 8K requirements in 2004, which sought to expand the timeliness and content of firms' 8K disclosures. Specifically, as part of the Sarbanes-Oxley Act, Congress enacted new rules legislating that publicly traded firms employ greater use of real-time disclosures for material changes in their financial condition or operations between their periodic 10K/Q filings. The Securities and Exchange Commission (SEC) implemented these rules by increasing the reporting requirements for Form 8K filings (hereafter the "2004 regulation"), applicable on August 23, 2004.

The 2004 regulation increased both the breadth of economic events subject to mandatory 8K filing requirements, and the timeliness of these disclosures by mandating the prompt filing of information often delayed until firms' 10K/Qs. Thus, the 2004 regulation required timelier disclosures of granular performance information, as well as disclosures of a broader range of economic events that are likely useful in forecasting firms' future performance.

A key feature of the 2004 regulation is that its impact varied across firms. This is because the regulation expanded disclosures pertaining to a specific set of economic events, some of which are potentially irrelevant for some firms (see [Appendix A](#) for details). For example, the 2004 regulation required real-time disclosures of terminated material definitive agreements (e.g., licensing contracts). Thus, for firms that do not rely on external contracting, the regulation is less likely to impact their use of 8Ks. By contrast, for firms that rely heavily on external contracting, the regulation effectively pulls forward signals about revenues or costs of good sold into 8Ks, which are likely correlated with the information in firms' guidance, and thus likely to affect the net benefits of guidance.

Our main tests focus on the relation between within-firm variation in firms' guidance and 8K filings using a sample of 86,150 firm-quarters spanning the three years before and after the 2004 regulation. These tests focus on within-firm variation to reduce the influence of static characteristics (e.g., industry or business model) on firms' disclosures. We find an upward trend in the propensity and frequency of guidance for the average firm over our sample period, but firms that increase their 8K disclosures do not increase guidance as much. These findings suggest that within-firm variations in 8Ks and guidance are, on average, negatively related, consistent with firms using 8Ks and guidance as substitutes, rather than complements.

Furthermore, we find that the strength of the negative relation between firms' 8Ks and frequency of guidance more than doubles in the three years following the 2004 regulation. This increase is consistent with the 2004 regulation strengthening the extent to which 8Ks substitute for guidance for some firms by expanding the content and timeliness of information conveyed through mandatory 8Ks.

[Billings et al. \(2015\)](#) point out that guidance is associated with several potential benefits including lower information asymmetry and litigation risk as well as higher liquidity and analyst following, among others. Our evidence of a negative relation between 8Ks and guidance is consistent with 8K requirements reducing some of the net benefits of voluntary guidance by conveying related information through an alternative channel.<sup>1</sup>

Like prior research, we find a secular increase in the frequency of guidance in the early 2000s, which is commonly attributed to Reg FD (e.g., [Hefflin et al. \(2003\)](#); [Anilowski et al. \(2007\)](#); [Rogers and Van Buskirk \(2013\)](#)). By comparing firms within each calendar quarter, our tests explain cross-sectional variation in guidance frequency around this secular trend based on firms' use of 8K filings as a potential substitute form of disclosure.

Readers may be initially concerned that a reduction in firms' incentives to provide guidance stems from greater uncertainty, for example due to restructuring, that also triggers an increase in 8K filings. We take several steps to mitigate these concerns by (i) excluding 8Ks related to bankruptcy in all of our tests, (ii) including a host of controls to capture variation in firms' economic events, (iii) verifying our results are driven by earnings-related 8K items, and (iv) showing a stronger substitutive relation after 2004 when 8Ks became more likely to convey good news.

As part of our main tests, we show our results are primarily driven by 8Ks pertaining to earnings-related items that intuitively overlap with information conveyed through guidance. These tests confirm the intuition that, for example, 8Ks about firms' material contracts (e.g., items 1.01 and 1.02) are more likely to serve as a substitute for guidance than 8Ks about firms' code of ethics (e.g., item 5.05). Additionally, to mitigate concerns about confounding changes in the reporting or regulatory environment, we show our main results hold when focusing on observations within one year of the 2004 regulation.

We next partition our guidance sample into those providing 'good news' versus 'bad news' (i.e., whether the forecasts are above or below the prevailing analyst consensus). These tests are motivated by the idea that firms may be less likely to restrict voluntary guidance with bad news as it tends to reduce litigation risk ([Skinner \(1994\)](#)). In addition, historical reporting requirements and enforcement asymmetrically prioritized mandatory disclosures of negative compared to positive news ([Kothari et al. \(2010\)](#)). [Kothari et al. \(2010\)](#) also note that the FASB and SEC have undone some of this asymmetry, adopting a valuation view that favors more balanced information, rather than primarily negative news. Consistent with these views, our

<sup>1</sup> For example, several studies such as [Field et al. \(2005\)](#) and [Billings and Cedergrén \(2015\)](#) provide compelling evidence that guidance can reduce firms' litigation risk. Our evidence is consistent with 8Ks reducing the net benefit of guidance by providing timely disclosures of granular performance information, such as material impairments or loss of sales contracts that foreshadow a decline in earnings. In doing so, compliance with mandatory 8K requirements may reduce some of the net benefits of voluntary disclosures identified in prior research.

results show the 2004 regulation is associated with an asymmetric increase in the extent to which 8K filings substitute for good news relative to bad news guidance.

To mitigate concerns that our findings hinge upon measuring firms' *ex post* response to the 2004 regulation, we also identify firms that *ex ante* are more likely affected based on the extent to which firms filed material contracts with their 10K/Qs prior to the regulation (as these firms are likely to have granular information pulled forward by the 2004 regulation). Beginning with the 2004 regulation, these affected firms were required to disclose material contracts as 8Ks, and on a much more timely basis compared to their 10K/Qs. We find that these affected firms were more likely to decrease guidance frequency relative to the secular trend, consistent with more timely disclosures of material contracts in 8Ks reducing the net benefits of forecasting.

We conduct two sets of additional tests to shed light on firms' incentives to substitute across 8Ks and guidance. First, we show that, on average, a higher number of 8K filings coincides with declines in firms' profits, which is consistent with the argument in Kothari et al. (2010) that regulators historically mandated more timely disclosures of bad news (e.g., greater requirements to file 8Ks to report negative events). We also show, however, that the negative relation between 8Ks and firms' profits weakens after the 2004 regulation, which dovetails nicely with our findings that the regulation disproportionately increased the extent to which 8Ks substitute for good news, relative to bad news, guidance.

Second, to shed further light on firms' incentives to provide guidance, we examine whether 8K usage helps explain the timeliness with which market prices reflect firms' earnings news, as measured by intra-period timeliness (IPT). We find 8K disclosures are associated with greater IPT, consistent with contemporaneous work by McMullin et al. (2018), particularly after the 2004 regulation and for earnings-related 8Ks. Taken together, our tests of firms' incentives suggest the 2004 regulation lowered the net benefits of guidance by both pulling forward information about firms' performance into 8Ks, and by spurring firms to disclose a wider array of information through 8Ks, rather than primarily negative news.

Our findings are subject to at least two important caveats. First, although the 2004 regulation did not explicitly change the materiality threshold for 8K triggering events, variation in 8Ks potentially reflects firms' endogenous response. Similarly, our tests do not stem from random assignment of treatments and are subject to the concern that variation in firms' disclosures reflects variation in their economic events. Thus, we are not able to conclude that exogenous increases in mandatory disclosure causally impacted voluntary disclosure. Instead, our results highlight a robust negative association between firms' 8Ks and guidance, consistent with the provision of one disclosure reducing the net benefits of the other.

Our central contribution is to shed light on the link between firms' voluntary and mandatory disclosures. Prior research provides evidence of firms using aspects of their voluntary and mandatory disclosures as complements (e.g., Ball et al. (2012) and Li and Yang (2016)). By contrast, our paper provides evidence consistent with firms using mandatory 8K filings and voluntary guidance as substitutes. We also find the extent of substitution between guidance and 8Ks varies with good versus bad news, earnings versus non-earnings 8Ks, and for firms with greater versus lesser reliance on material contracts prior to the 2004 regulation. These results suggest the link between voluntary and mandatory disclosures likely depends on the specific context and attributes of the disclosure being considered.

The remainder of the paper proceeds as follows: Section 2 discusses the regulatory background of 8K requirements and related studies, and presents main hypotheses. We discuss our data in Section 3 and empirical results in Sections 4 and 5. Section 6 concludes.

## 2. Background and hypothesis development

### 2.1. Background on disclosure regime change

In 2002, as part of the Sarbanes-Oxley Act (SOX), Congress required all issuers in public markets to provide real-time disclosures. Specifically, Section 409 of SOX requires that.

"Each issuer reporting under section 13(a) or 15(d) shall disclose to the public on a rapid and current basis such additional information concerning material changes in the financial condition or operations of the issuer, in plain English, which may include trend and qualitative information and graphic presentations, as the Commission determines, by rule, is necessary or useful for the protection of investors and in the public interest."

In 2004, the SEC implemented this directive by expanding the disclosure rules for publicly traded companies as they relate to 8Ks. In particular, the SEC both increased the types of economic activities that are subject to 8K filings, and pulled forward the timing of these disclosures. It is important to note that the SEC's rules did not explicitly change the materiality thresholds for information that is required to be filed in an 8K, or the litigation risk associated with these filings.<sup>2</sup>

Focusing first on the expansion of the types of economic activities filed under an 8K, the 2004 regulation increased the number of 8K items from 12 to 22, and reorganized the disclosure items into new topical categories (see Appendix A). In general, these items represent information that is relevant to investors in evaluating elements of firms' corporate governance, capital

<sup>2</sup> The SEC did provide a limited safe harbor for the failure to file a timely 8K for a subset of items (i.e., 1.01, 1.02, 2.03, 2.04, 2.05, 2.06, and 4.02) through the due date of the next periodic report.

structure, and the economic activities in which the firm engages. Lerman and Livnat (2010) show that the new items have significant information content as measured by the abnormal trading volume and return volatility around 8K filing dates.

While the items covered in an 8K are not, typically, forecasts of future operating results, they do provide investors with information that is useful for forecasting future performance. For example, firms are required to provide material contract disclosures, which can provide information about future sales and costs of goods sold. Similarly, firms are required to disclose performance-related information via 8Ks corresponding to goodwill impairments, asset write-downs, licensing agreements, and purchase agreements.

As to the change in the timing of filings, Li (2013) documents that, prior to the regulation, over 20% of the firms in his sample waited more than 220 days to file material contracts with the SEC via 10K/Q. The 2004 regulation accelerates the 8K filing deadlines for most items to 4 business days after the occurrence of an event triggering the disclosure, and Lerman and Livnat (2010) find that nearly 95% of mandatory 8K filings in their 2005–2007 sample window are made within the new 4-business-day deadline.

Overall, these regulatory changes provide a desirable setting for our study because, unlike other regulations on Form 10K/Q, the 2004 regulation increased the timeliness of mandatory filings, where firms are now required to file an 8K in real-time within days of an expanded list of triggering events. Similarly, unlike other 8K regulations that added a few items at a time, the 2004 regulation dramatically expanded the number and scope of 8K items for public firms. After the regulation, annual 8Ks increased by 77.0% (see Appendix A), and 85.1% of our sample firms increased their quarterly average 8K filings.

## 2.2. Prior studies

Prior evidence on interdependencies between parts of firms' disclosure environment is limited (Beyer et al. (2010)). Moreover, existing research examining the relation between mandatory and voluntary disclosures yields mixed results. Several papers report complementary relations between the disclosures, where high-quality mandatory disclosures increase the credibility and usefulness of voluntary disclosure and increase managers' incentive to issue guidance. For example, Li and Yang (2016) find the adoption of International Financial Reporting Standards (IFRS) increases the frequency of guidance, because it improves earnings quality and brings in more sophisticated investors with higher demands for voluntary disclosure.

Ball et al. (2012) suggest audited financial reporting and voluntary disclosure are complementary means of communicating with investors. They find a positive correlation between resource allocation decisions for management forecasts (measured by frequency, specificity, and timeliness) and independent auditing (measured by audit fees). They also show a positive association between commitment to higher levels of audit verification (measured by audit fees) and both forecast accuracy and investor responses to management forecasts.

Prior research also points toward a potential substitutive relation between voluntary and mandatory disclosures. For example, the model proposed by Verrecchia (1990) demonstrates that, if investors know more about firm value, they exert less pressure (i.e., lower discounting of the firm value when the information is withheld) on the manager to disclose private information than when they know less. However, to the extent guidance increases the frequency and timeliness of earnings information, rather than revealing private information, it is unclear whether the predictions in Verrecchia (1990) are applicable to our setting.

Empirically, Li (2013) provides evidence that, prior to the 2004 regulation, firms facing high barriers to forecasting would voluntarily provide market participants with material contract information through their 8Ks to reduce information asymmetry. Francis et al. (2008) provide evidence of both complementary and substitutive relations between earnings quality and alternative forms of voluntary disclosure. Finally, Guay et al. (2016) study the link between firms' voluntary disclosures and the length and complexity of their mandatory disclosures. Guay et al. (2016) find the frequency of voluntary disclosures increases with the complexity of firms' prior financial statements, suggesting that firms use voluntary disclosure to overcome the loss in information quality that accompanies lengthier and more complex mandatory disclosures. These results help reinforce our central message that the relationship between mandatory and voluntary disclosure is likely to be context specific.

A few papers identify a release of proprietary information as a specific cost of mandatory disclosure that can affect managers' decision to provide voluntary disclosure. Heinle et al. (2018) show proprietary costs of disaggregated mandatory disclosure motivate managers to substitute between the quality of mandatory disclosure (measured by redaction of material contracts filed as exhibits to 10K/Q and 8K) and the quantity of voluntary disclosure (measured by the probability of an earnings forecast). Similarly, Glaeser (2018) finds firms relying on trade secrecy are more likely to substitute increased voluntary disclosure of nonproprietary information (measured by propensity to issue earnings forecasts) for decreased disclosure of proprietary information (measured by propensity to redact portions of 10Ks).

Prior studies commonly use proxies for the quality of firms' mandatory disclosures that implicitly hold constant their timeliness within a given firm-quarter. By contrast, the 2004 regulation increased both the breadth and speed of 8K disclosures. Thus, our approach allows us to examine intertemporal variation in the content and timeliness of mandatory disclosure and its relation with firms' use of voluntary guidance.

## 2.3. Hypotheses

Our first set of hypotheses pertains to the relation between changes in the frequencies of 8Ks and voluntary guidance. We argue that an increase in 8K disclosures could provide an incentive for managers to increase their use of guidance because it

allows managers to provide more context for the granular information included in an 8K. Alternatively, increased usage of 8Ks could also reduce managers' incentives to provide guidance, as the data provided in an 8K can lower the net benefits associated with forecasting.

The SEC provides guidelines for the types of information that must be filed with an 8K (see [Appendix A](#) for details). This information is typically granular in nature, in the sense that it focuses on one transaction or one set of events related to firm's current operations, and the information disclosed in an 8K often has implications for future operating performance. The items filed under an 8K are typically not "forward looking" forecasts, in the sense that they are not projections of the firms' future performance; however, they do provide data that is helpful for projecting future performance.<sup>3</sup>

For example, under the 2004 regulation, a firm would be required to file an 8K if a major sales contract with a significant customer was cancelled. This granular information is informative about future earnings (they are likely to be lower than previously anticipated) by conveying information about future revenues and/or costs of good sold, but the information in the 8K is not as precise a signal about future earnings when compared to an explicit EPS forecast. As such, managers face a tradeoff when deciding whether to provide investors with guidance to reduce the overall uncertainty surrounding earnings or related fundamental signals.

The disclosure of the terminated sales contract could incentivize managers to provide a revenue or an earnings forecast to inform investors exactly how the loss of the contract will affect next period's earnings. Alternatively, managers could choose to forgo forecasting, as the disclosure of the terminated sales contract could reduce information asymmetries between informed and uninformed investors, and/or reduce the overall uncertainty associated with future revenue realizations, thus lowering the net benefits of forecasting.

Ultimately, we argue that the effect of an increase in 8K disclosures on the frequency with which managers provide guidance depends on whether the 8K disclosures increase or decrease the net benefits associated with forecasting. Some of the key elements that managers are likely to consider in this decision are whether the 8K disclosures increased or decreased uncertainty and information asymmetry, as well as whether providing a forecast conditional on filing 8Ks will impact the litigation risk and reputation costs faced by the firm.<sup>4</sup>

We also hypothesize that, because guidance typically provides information about future earnings, 8K items that are informative about earnings are more likely to affect the net benefits associated with forecasting and thus will either increase or decrease the net benefits of guidance. As noted in the Introduction, there is a general secular increase in guidance during our sample window, and thus all of our predictions pertain to cross-sectional variation in guidance relative to this secular trend. This leads to our first two hypotheses:

**H1.** *Firms that significantly increase the amount of mandatory disclosure by increasing their 8K filings will change their management guidance frequency.*

**H2.** *Firms that increase their 8K filings pertaining to earnings-related news will change their management guidance frequency more substantially than the firms that increase their 8K filings about administrative or miscellaneous news.*

Our third hypothesis explores whether the association between firms' 8Ks and guidance differs for good versus bad news forecasts. Prior studies find that guidance mitigates litigation risks and reputation costs associated with negative performance news (e.g., [Skinner \(1997\)](#), [Field et al. \(2005\)](#), and [Billings and Cedergrén \(2015\)](#)) suggesting that firms may be more reluctant to substitute away from bad news guidance when increasing their use of 8Ks. However, other studies report firms are more willing to issue voluntary disclosures associated with positive performance news (e.g., [Lang and Lundholm \(1993\)](#) and [Miller \(2002\)](#)) suggesting that firms may be more reluctant to substitute away from good news guidance when increasing their use of 8Ks. Moreover, to the best of our knowledge, prior studies on the net benefits of guidance do not condition upon the extent to which firms provide correlated information via 8Ks, making it unclear whether the negative link between firms' 8Ks and guidance differs for good versus bad news forecasts. This leads to our third hypothesis:

**H3.** *Firms that increase the amount of mandatory disclosure by increasing their 8K filings will change their use of guidance conveying good news more than bad news.*

Additionally, we consider whether the 2004 regulation had an incremental effect on the frequency with which firms issue guidance. In any given quarter, some subset of firms will engage in one of the economic transactions that triggers a mandatory 8K filing. The 2004 regulation expanded the number of economic transactions subject to mandatory 8K requirements (e.g., asset revaluations, goodwill impairments, or changes in sales contracts), which should increase the rate of change in 8K filings. Moreover, the regulation also pulled forward the timeliness of mandatory 8K disclosures for a variety of events likely correlated with firms' earnings, including licensing agreements, purchase contracts, and joint ventures. These rule changes likely impacted the similarities between 8Ks and guidance both in terms of content and timeliness, and thus magnified the relation between changes in firms' 8Ks and guidance frequency. This leads to our fourth hypothesis:

<sup>3</sup> The information filed in an 8K is not afforded the same legal protection as forecasts are under the PSLRA, which suggests that guidance may be a more attractive option because it poses lower litigation risks. However, whereas firms are able to elect to withhold guidance, the same is not true for compliance with mandatory 8K filing requirements.

<sup>4</sup> For example, [Skinner \(1994\)](#) suggests that managers have greater incentives to provide voluntary guidance to preempt negative earnings news than other earnings news due to litigation risk or reputational costs.



**H4.** *Firms that significantly increase the amount/timeliness of mandatory disclosure by increasing their 8K filings as a result of the 2004 regulation will change their management guidance frequency even more after the regulation.*

Kothari et al. (2010) discuss that accounting rules (GAAP) and the SEC's enforcement of rules were historically based on a performance-measurement and stewardship-perspective. As a result of this perspective, the accounting rules were designed to force managers to disclose bad news in a more timely manner than good news.

Kothari et al. (2010) also notes the FASB and SEC have updated their perspectives in recent years, adopting a valuation view that benefits from more general information about firms' performance, rather than primarily negative news. As a result, many of the new rules have undone this asymmetry, and required firms to disclose good news as timely as bad news. Thus, we also predict the 2004 regulation primarily increased the extent to which 8K filings are related to good news guidance. Given the discussion above, this could either increase or decrease firms' propensity to forecast, leading to our fifth hypothesis:

**H5.** *Firms that increase their 8K filings following the 2004 regulation will change their guidance frequency more substantially for good news compared to bad news forecasts.*

### 3. Sample selection and management forecasts and 8K counts

To construct our sample, we start with the universe of firms at the intersection of Compustat and CRSP. Following Lerman and Livnat (2010), we use a three-year window after the 2004 regulation to explore its impact, and pair this data with the three-year window before the regulation to capture within-firm variation. Specifically, we keep 12 firm-quarters before and 12 firm-quarters after the August 23, 2004 enactment date for each firm, excluding the firm-quarter encompassing the regulation date, and define them as the pre-regulation period and the post-regulation period, respectively.<sup>5</sup> We then merge our sample with 8K filing data from the SEC Analytics Suite, and management guidance data from I/B/E/S.<sup>6</sup>

When computing the frequency of management forecasts and 8K filings, we count all forecasts of different horizons (i.e., FY1 versus FY2) as separate acts of guidance but treat forecasts for the same horizon provided on the same day as a single observation of guidance. As in Billings and Cedergren (2015), we calculate the frequency of guidance per quarter, rather than examining each act of guidance separately, because of our study's primary focus on broader patterns in firms' disclosure quantities.

To measure the extent of mandatory disclosure, we count the number of different 8K items filed on a particular day, which is motivated by evidence in Lerman and Livnat (2010) that the market reaction to an 8K filing is increasing in the number of individual items. Additionally, to mitigate noise in this estimate, we omit item 9.01, corresponding to figures or exhibits as in Lerman and Livnat (2010), which is almost never filed on its own, and almost always refers to a different item number in its description.

We exclude 8Ks filed under item 1.03 "Bankruptcy or Receivership" (old item 3) because, by construction, bankruptcy leads to a reduction in guidance frequency and creates a bias towards finding a substitutive relation. Similarly, throughout, we do not include 8Ks that mechanically have a complementary relation with firms' voluntary guidance (i.e., 8Ks that report that the firm issued guidance). Specifically, we exclude 8Ks filed under items 2.02 "Results of Operations and Financial Condition," 7.01 "Regulation FD Disclosure," and 8.01 "Other Events" if they are immediately preceded by management forecasts.<sup>7</sup>

Firms are required to file an 8K under items 2.02, 7.01, or 8.01 after providing voluntary disclosures such as earnings announcements, management forecasts, or press releases. Thus, it is crucial that we remove the mechanical complementarity between firms' guidance and 8Ks to examine how the regulatory change affects the substitution across firms' mandatory and voluntary disclosures.<sup>8</sup> By contrast, however, we include firms' 8Ks triggered by a firm issuing non-guidance voluntary disclosures (e.g., firm-initiated non-guidance press releases).

Due to sample restrictions imposed by data availability for 8K filings, forecasts, and control variables, our main sample consists of 86,150 firm-quarters representing 4080 firms spanning 2001 through 2007. Table 1 presents descriptive statistics for the key variables used in our main tests, including the quarterly frequency of management forecasts and the quarterly frequency of 8K items after applying the sample restrictions and 8K item exclusions discussed above. Panel A shows the

<sup>5</sup> The research design choice to focus on observations three years before and after the regulation reflects a tradeoff of power for main empirical tests (e.g., disclosure changes in response to the regulation take time to implement) and the potential for confounding events (e.g., a regulatory and/or macroeconomic shift outside of the 2004 regulation). To assess the latter, we also present results using only observations within one year of the regulation in Fig. 1.

<sup>6</sup> Anilowski et al. (2007) and Dyer et al. (2016) find changes to I/B/E/S coverage of guidance over time. It is unclear how this change potentially affects our results but we know of no reason it would systematically relate to our main findings on the link between within-firm variations in guidance and 8Ks.

<sup>7</sup> We exclude 8Ks under item 2.02 "Results of Operations and Financial Condition" (or old item 12) if they are preceded by management guidance within 5 business days in the pre-regulation period or within 4 business days in the post-regulation period. We also exclude 8Ks under item 7.01 "Regulation FD Disclosure" (or old item 9), or 8.01 "Other Events" (or old item 5) if they are preceded by guidance within 1 day. The SEC requires that firms file an 8K under item 2.02 within 5 business days after providing voluntary earnings announcements—during which guidance is often provided—in the pre-regulation and within 4 business days in the post-regulation period, and file an 8K under item 7.01 within 24 h after providing any other voluntary disclosure in both the pre- and post-regulation periods. While there is no deadline for item 8.01, which is supposed to be voluntarily filed by firms to disclose other events, many firms use 8K item 8.01 in place of item 7.01 to comply with Regulation FD (see page 15,619 and page 15,627 of Federal Register, Volume 69, Issue 58 (Thursday, March 25, 2004)). Our results are robust to including item 8.01.

<sup>8</sup> In fact, in untabulated results, we find that 8Ks and guidance tend to be positively correlated when failing to remove this source of mechanical complementarity.

**Table 1**

**Summary Statistics.** Management forecasts of different horizons are treated as separate forecasts, but forecasts for the same horizon provided on the same day are treated as a single forecast. All the 8K items, excluding item 9.01, in the same filing are counted as separate 8Ks. 8K item 1.03 (old item 3) is excluded because, by construction, bankruptcy leads to a reduction in management guidance frequency and creates a bias towards finding a substitutive relation between 8Ks and management guidance. 8Ks filed under item 2.02 (old item 12) that are preceded by management guidance within 5 days/4 days prior to the 8K filing date in the pre-/post-regulation period are not counted because they are filed as a result of providing voluntary guidance. Similarly, 8Ks filed under item 7.01 or 8.01 (old item 9 or 5) that are preceded by management guidance within 1 day prior to the 8K filing date in the pre- or post-regulation period are not counted. Refer to [Appendix B](#) for variable definitions. All variables in Panels B and C are the average values of firm-level averages based on 12 firm-quarters before and 12 firm-quarters after the regulation date August 23, 2004, excluding the firm-quarter surrounding the regulation date. All continuous variables are winsorized at the 1% and 99% levels to limit the influence of outliers. \*, \*\*, \*\*\* indicate statistical significance at less than 10%, 5%, and 1%, respectively.

			forecasts/quarter				8Ks/quarter						
			Pre		Post		Pre		Post				
Panel A: Management Forecasts and 8K Filings													
mean			0.7		1.0		1.2		2.6				
min			0		0		0		0				
10th percentile			0		0		0		0				
25th percentile			0		0		0		1				
median			0		1		1		2				
75th percentile			1		2		2		4				
90th percentile			2		2		3		6				
max			13		17		20		29				
s.d.			1.1		1.2		1.6		2.6				
N			42,971		43,179		42,971		43,179				
% of firm-quarters with none			62.9		47.56		44.9		20.01				
	MVE	1 if Loss	Volatility		Size-adjusted BHR		CEO/CFO Trade		ROA				
Panel B: Control Variables													
mean	2888	0.30	0.03		−0.01		0.46		−0.004				
min	7	0.00	0.01		−0.74		0.00		−0.26				
10th percentile	53	0.00	0.02		−0.08		0.00		−0.05				
25th percentile	153	0.04	0.02		−0.04		0.03		−0.01				
median	529	0.17	0.03		−0.01		0.21		0.00				
75th percentile	1741	0.50	0.04		0.02		0.63		0.02				
90th percentile	6450	0.86	0.05		0.04		1.30		0.03				
max	60,924	1.00	0.09		0.28		5.10		0.09				
s.d.	7941	0.32	0.01		0.06		0.63		0.04				
N	4080	4080	4080		4080		4080		4080				
	BTM	Leverage	Institutional Ownership		Illiquidity		Analyst Coverage						
mean	0.56	0.52	0.40		0.94		5.60						
min	−0.45	0.06	0.00		0.03		0.00						
10th percentile	0.19	0.20	0.00		0.17		0.50						
25th percentile	0.33	0.33	0.06		0.28		1.40						
median	0.51	0.51	0.40		0.52		3.70						
75th percentile	0.73	0.68	0.69		1.20		8.00						
90th percentile	0.99	0.89	0.84		2.40		14.0						
max	2.60	1.20	1.00		7.10		32.0						
s.d.	0.35	0.24	0.32		1.00		5.70						
N	4080	4080	4080		4080		4080						
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
Panel C: Correlation Coefficients													
[1] MVE	1.00												
[2] 1 if Loss	−0.22***	1.00											
[3] Volatility	−0.28***	0.69***	1.00										
[4] Size−adj.BHR	0.12***	−0.52***	−0.44***	1.00									
[5] CEO/CFO Trade	−0.14***	−0.14***	0.06***	0.18***	1.00								
[6] ROA	0.16***	−0.79***	−0.6***	0.53***	0.15***	1.00							
[7] BTM	−0.16***	0.1***	0.09***	−0.16***	−0.08***	−0.01	1.00						
[8] Leverage	0.13***	−0.15***	−0.25***	0.04***	−0.13***	0.03**	−0.13***	1.00					
[9] Insti.Owner.	0.1***	−0.29***	−0.32***	0.2***	0.16***	0.29***	−0.12***	−0.03*	1.00				
[10] Illiquidity	−0.23***	0.39***	0.64***	−0.35***	−0.02	−0.35***	0.31***	−0.04**	−0.43***	1.00			
[11] MFs/qtr	.21***	−0.24***	−0.22***	0.16***	0.13***	0.24***	−0.2***	−0.05***	0.33***	−0.38***	1.00		
[12] 8Ks/qtr	0.08***	0.07***	−0.06***	−0.06***	−0.05***	−0.1***	−0.02	0.28***	0.05***	−0.09***	−0.11***	1.00	
[13] Analyst Coverage	0.58***	−0.25***	−0.29***	0.15***	−0.05***	0.23***	−0.27***	0.05***	0.32***	−0.49***	0.45***	0.09***	1.00

average frequencies of forecasts and 8K items per quarter rise in the post-regulation period. In particular, the mean number of 8K items more than doubles from 1.2 to 2.6 per quarter, consistent with firms expanding their use of 8K items to comply with the 2004 regulation.

Similarly, the average number of forecasts rises from 0.7 to 1.0 per quarter after the regulation, consistent with a general time trend in guidance during our sample window (Rogers and Van Buskirk (2013) and Dyer et al. (2016)). One explanation for this upward trend is that the 2004 regulation occurred shortly after the SEC passed Regulation Fair Disclosure (Reg FD) in October 2000. Reg FD required broad dissemination of all voluntary disclosures to prevent selective information sharing. Several studies provide evidence that Reg FD led to managers, on average, increasing the extent to which they provide guidance, which we also observe in our sample (e.g., Heflin et al. (2003); Anilowski et al. (2007); Rogers and Van Buskirk (2013)).<sup>9</sup>

Panel B of Table 1 contains descriptive statistics on the main control variables used throughout our analyses and Panel C presents pairwise Pearson's correlation coefficients for key variables. Consistent with our main hypothesis, the frequencies of firms' guidance and 8Ks have a negative correlation of  $-0.11$ , which is statistically significant at the 1% level.

The samples that we use in our capital market tests are slightly smaller, because they require additional data on daily size-adjusted stock returns and earnings adjustment factors. To compute size-adjusted returns for the intra-period timeliness (IPT) measure, we subtract the corresponding return for all available firms in the same size-matched decile from daily raw returns, where size is measured using the market capitalization as of the beginning of the most recent calendar year.

## 4. Relationship between guidance and 8Ks

### 4.1. Tests on the changes in the frequency of management forecasts ( $H1 - H5$ )

Tables 2 and 3 report results from tests of our main hypothesis. Specifically, Tables 2 and 3 present results from estimating regressions of the following form:

$$\begin{aligned} \Delta \ln(1 + \text{Guidance})_{i,t} = & \alpha_1 \cdot \Delta \ln(1 + 8Ks)_{i,t} + \alpha_2 \cdot \text{Post} \times \Delta \ln(1 + 8Ks)_{i,t} \\ & + \alpha_3 \cdot \text{Post} + \sum \beta \cdot \text{Controls}_{i,t-1} + \sum \beta \cdot \Delta \text{Controls}_{i,t-1} \\ & + \sum \beta \cdot \text{Post} \times \Delta \text{Controls}_{i,t-1} + \varepsilon_{i,t}, \end{aligned} \quad (1)$$

where our dependent variable measures within-firm variation in guidance frequency, denoted as  $\Delta \ln(1 + \text{Guidance})_{i,t}$ . We measure within-firm variation as the natural log of one plus the frequency of guidance for firm  $i$  in quarter  $t$  minus the natural log of one plus guidance for firm  $i$  measured in the same fiscal quarter in the prior year.

Our main independent variable measures within-firm variation in firms' 8K item filing frequency, denoted as  $\Delta \ln(1 + 8Ks)_{i,t}$ , which is also measured using fiscal-quarter matched changes. *Post* is an indicator variable for observations following the enactment of the regulation in August 2004. To mitigate concerns over confounding factors, we include  $\text{Post} \times \Delta \text{Controls}$  which allow for pre-to-post time-varying relationships between changes in control variables and changes in guidance and 8K filing frequencies. Formal definitions of all the variables used in our paper are contained in Appendix B.

In some tests of Eq. (1), we also partition our sample based on whether a given 8K item is more or less likely to contain earnings-related news. Similarly, to explore the influence on the nature of firms' guidance, some of our tests replace the frequency of total guidance in a given quarter (our main dependent variable) with a binary variable for whether a firm provides at least one earnings guidance or with the frequencies of good and bad news guidance.

Our main coefficients of interest from estimating Eq. (1) are  $\alpha_1$  and  $\alpha_2$ , which reflect the extent to which firms' 8Ks and guidance are negatively related, and the extent to which this relation changes after the 2004 regulation. To facilitate the interpretation of the estimated coefficients, we standardize all continuous variables in Eq. (1) by year-quarter to have a mean of zero and standard deviation one. When a variable is interacted with *Post*, we standardize the variable before creating the interaction term.

To mitigate alternative explanations for our findings, we select control variables at the intersection of those used in Rogers and Van Buskirk (2013) and Billings et al. (2015): firm size ( $\ln(MVE)$ ), a loss indicator (*Loss*), return volatility (*Volatility*), past returns (*Size-adjusted BHR*), executive insider sales (*CEO/CFO Trade*), book-to-market ratio (*BTM*), the bid-ask spread as a proxy for illiquidity (*Illiquidity*), and the log of analyst coverage ( $\ln(1 + \text{Analyst Coverage})$ ). We add to that list controls for firms' return-on-assets (*ROA*), leverage (*Leverage*), and institutional ownership (*Institutional Ownership*).

We report coefficients for fiscal-quarter matched changes of the control variables listed above but also include levels of the controls throughout our tests. We also include fiscal-quarter matched changes of the control variables interacted with our post-period indicator variable, which we omit from our tables for brevity. In some tests, to further control for managers' incentives or abilities to provide guidance, we add analyst-based controls such as dispersion in analysts' forecasts and the proportion of prior earnings announcements over the past year where the firm met or exceeded analysts' expectations. Including these additional controls reduce our sample due to some firms not receiving analyst coverage.

<sup>9</sup> Another explanation is the passage of the PSLRA in 1995, which allowed high litigation risk firms to issue more earnings forecasts (Johnson et al. (2001)). Our tests seek to understand variation in the extent of this upward trend and how it relates to changes in firms' 8K filings.



**Table 2****Relation between changes in 8Ks and guidance.** Columns (1) and (5) report estimates from the following regressions:
$$\Delta \ln(1 + \text{Guidance})_{i,t} \text{ (or } \Delta \text{Guider Indicator}_{i,t}) = \alpha_1 \cdot \Delta \ln(1 + 8\text{Ks})_{i,t} + \sum \beta \cdot \text{Controls}_{i,t-1} + \sum \beta \cdot \Delta \text{Controls}_{i,t-1} + \varepsilon_{i,t}$$

Columns (2) and (6) report estimates from the following regression:

$$\alpha_3 \cdot \text{Post} + \sum \beta \cdot \text{Controls}_{i,t-1} + \sum \beta \cdot \Delta \text{Controls}_{i,t-1} + \sum \beta \cdot \text{Post} \times \Delta \text{Controls}_{i,t-1} + \varepsilon_{i,t}$$

In Columns (3), (4), (7) and (8), we

partition 8K filings based on whether they are more versus less likely to be related to firms' earnings. We classify items 1.01, 1.02, 2.01 (old item 2), 2.02 (old item 12), 2.04, 2.05, 2.06, 7.01 (old item 9), and 8.01 (old item 5) as being more informative about earnings, and all the other items are classified as less informative about earnings. See Appendix A for details on 8K items. Refer to Appendix B for the list of control variables and variable definitions. All continuous variables are winsorized at the 1% and 99% levels to limit the influence of outliers. To facilitate interpretation, we standardize all variables by year-quarter to have a mean of zero and standard deviation one. When a variable is interacted with *Post*, we standardize the variable and then interact it with *Post*. \*, \*\*, \*\*\* indicate statistical significance at less than 10%, 5%, and 1%, respectively. We estimate and report t-statistics in parentheses based on two-way cluster robust standard errors, clustered by industry and year-quarter.

Panel A: Guidance Frequency								
Dep. Variable:	$\Delta \ln(1 + \text{Guidance})$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta \ln(1 + 8\text{Ks})$	−0.127*** (−9.20)	−0.081*** (−4.34)			−0.140*** (−9.94)	−0.096*** (−4.67)		
$\text{Post} \times \Delta \ln(1 + 8\text{Ks})$		−0.092*** (−4.47)				−0.086*** (−3.71)		
$\Delta \ln(1 + \text{Earnings } 8\text{Ks})$			−0.135*** (−9.32)	−0.085*** (−4.51)			−0.146*** (−10.04)	−0.100*** (−4.83)
$\text{Post} \times \Delta \ln(1 + \text{Earnings } 8\text{Ks})$				−0.102*** (−4.94)				−0.093*** (−3.98)
$\Delta \ln(1 + \text{Non-Earnings } 8\text{Ks})$			0.008 (1.49)	0.004 (0.75)			0.007 (0.91)	0.005 (0.61)
$\text{Post} \times \Delta \ln(1 + \text{Non-Earnings } 8\text{Ks})$				0.016* (1.90)				0.013 (0.99)
<i>Post</i>		−0.000 (−0.00)		−0.000 (−0.00)		−0.011 (−0.91)		−0.010 (−0.87)
$\Delta \ln(\text{MVE})$	0.086*** (8.12)	0.106*** (9.66)	0.087*** (8.14)	0.107*** (9.62)	0.102*** (6.79)	0.121*** (7.90)	0.103*** (6.85)	0.121*** (7.88)
$\Delta 1 \text{ if Loss}$	−0.018*** (−3.14)	−0.024*** (−3.35)	−0.018*** (−3.08)	−0.023*** (−3.31)	−0.015* (−1.71)	−0.019* (−1.65)	−0.014* (−1.68)	−0.019 (−1.63)
$\Delta \text{Volatility}$	−0.009 (−1.25)	0.001 (0.14)	−0.009 (−1.25)	0.002 (0.17)	−0.012 (−0.98)	0.008 (0.52)	−0.011 (−0.95)	0.009 (0.56)
$\Delta \text{Size-adjusted BHR}$	−0.038*** (−5.04)	−0.049*** (−5.52)	−0.038*** (−5.00)	−0.049*** (−5.51)	−0.050*** (−4.93)	−0.060*** (−4.47)	−0.050*** (−4.91)	−0.060*** (−4.46)
$\Delta \text{CEO/CFO Trade}$	0.007 (1.12)	0.003 (0.46)	0.007 (1.17)	0.003 (0.46)	0.007 (0.77)	0.005 (0.50)	0.007 (0.81)	0.005 (0.52)
$\Delta \text{ROA}$	0.005 (0.99)	−0.002 (−0.20)	0.005 (1.03)	−0.002 (−0.21)	0.019*** (3.00)	0.016* (1.72)	0.019*** (3.12)	0.016* (1.74)
$\Delta \text{BTM}$	0.007 (1.23)	0.011 (1.58)	0.008 (1.28)	0.011 (1.61)	0.016 (1.31)	0.018* (1.67)	0.016 (1.36)	0.018* (1.69)
$\Delta \text{Leverage}$	0.006 (1.30)	0.001 (0.25)	0.006 (1.28)	0.002 (0.36)	−0.007 (−1.15)	−0.003 (−0.29)	−0.007 (−1.14)	−0.003 (−0.29)
$\Delta \text{Institutional Ownership}$	0.000 (0.07)	0.010 (1.46)	0.001 (0.08)	0.010 (1.44)	−0.003 (−0.43)	0.005 (0.64)	−0.003 (−0.44)	0.005 (0.61)
$\Delta \text{Illiquidity}$	0.011*** (2.84)	0.010 (1.49)	0.010*** (2.72)	0.010 (1.44)	−0.004 (−0.43)	0.009 (1.06)	−0.005 (−0.58)	0.008 (0.97)
$\Delta \ln(1 + \text{Analyst Coverage})$	0.019*** (4.34)	0.022*** (2.79)	0.019*** (4.24)	0.021*** (2.75)	0.016*** (2.74)	0.012 (1.14)	0.016*** (2.71)	0.012 (1.14)
$\Delta \text{Dispersion}$					−0.019*** (−2.70)	−0.021** (−2.31)	−0.020*** (−2.72)	−0.021** (−2.35)
$\Delta \text{Proportion Meet-or-Beat}$					0.026*** (4.03)	0.039*** (4.81)	0.026*** (3.99)	0.039*** (4.85)
N	86,150	86,150	86,150	86,150	55,384	55,384	55,384	55,384
Adj. R <sup>2</sup> (%)	2.8	3.1	3.0	3.3	3.2	3.4	3.3	3.6
Level-based Controls?	Y	Y	Y	Y	Y	Y	Y	Y
Post x Change-based Controls?	N	Y	N	Y	N	Y	N	Y
S.E. Clustering Level	Industry and year-quarter levels (two-way)							

Panel B: Guidance Propensity								
Dep. Variable:	$\Delta \text{Guider Indicator}$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta \ln(1 + 8\text{Ks})$	−0.065*** (−9.10)	−0.041*** (−4.29)			−0.070*** (−9.47)	−0.047*** (−4.52)		
$\text{Post} \times \Delta \ln(1 + 8\text{Ks})$		−0.049*** (−4.79)				−0.045*** (−3.88)		
$\Delta \ln(1 + \text{Earnings } 8\text{Ks})$			−0.069*** (−9.25)	−0.043*** (−4.46)			−0.073*** (−9.67)	−0.049*** (−4.71)

(continued on next page)

Table 2 (continued)

Panel B: Guidance Propensity								
Dep. Variable:	$\Delta$ Guider Indicator							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Post \times \Delta \ln(1 + \text{Earnings 8Ks})$				−0.053*** (−5.12)				−0.046*** (−3.94)
$\Delta \ln(1 + \text{Non-Earnings 8Ks})$			0.002 (0.98)	0.002 (0.70)			0.001 (0.32)	0.003 (0.59)
$Post \times \Delta \ln(1 + \text{Non-Earnings 8Ks})$				0.005 (1.10)				0.000 (0.07)
$Post$		0.024** (2.11)		0.024** (2.11)		−0.001 (−0.06)		−0.001 (−0.05)
$\Delta \ln(MVE)$	0.034*** (10.02)	0.044*** (14.24)	0.034*** (10.03)	0.044*** (14.01)	0.037*** (7.81)	0.047*** (8.29)	0.037*** (7.91)	0.046*** (8.21)
$\Delta 1 \text{ if Loss}$	−0.008** (−2.55)	−0.010*** (−2.79)	−0.007** (−2.50)	−0.010*** (−2.76)	−0.007* (−1.68)	−0.008 (−1.55)	−0.007* (−1.66)	−0.008 (−1.52)
$\Delta \text{Volatility}$	−0.003 (−0.63)	0.002 (0.33)	−0.003 (−0.62)	0.002 (0.37)	−0.002 (−0.32)	0.006 (0.71)	−0.002 (−0.29)	0.006 (0.76)
$\Delta \text{Size-adjusted BHR}$	−0.014*** (−4.16)	−0.020*** (−5.23)	−0.014*** (−4.10)	−0.020*** (−5.20)	−0.016*** (−3.17)	−0.024*** (−3.66)	−0.016*** (−3.17)	−0.024*** (−3.64)
$\Delta \text{CEO/CFO Trade}$	0.003 (1.29)	0.004 (1.03)	0.003 (1.35)	0.004 (1.04)	0.004 (1.35)	0.006 (1.28)	0.004 (1.44)	0.006 (1.32)
$\Delta \text{ROA}$	0.001 (0.37)	−0.003 (−1.01)	0.001 (0.41)	−0.003 (−1.03)	0.005* (1.86)	0.003 (0.74)	0.005* (1.93)	0.003 (0.75)
$\Delta \text{BTM}$	0.004* (1.67)	0.004 (1.17)	0.004* (1.74)	0.004 (1.19)	0.009* (1.79)	0.008 (1.19)	0.009* (1.85)	0.008 (1.20)
$\Delta \text{Leverage}$	0.002 (0.79)	0.000 (0.13)	0.002 (0.77)	0.001 (0.21)	−0.005* (−1.71)	−0.002 (−0.43)	−0.005* (−1.69)	−0.002 (−0.43)
$\Delta \text{Institutional Ownership}$	0.001 (0.32)	0.004 (1.03)	0.001 (0.33)	0.004 (1.01)	−0.000 (−0.08)	0.003 (0.61)	−0.000 (−0.09)	0.003 (0.59)
$\Delta \text{Illiquidity}$	0.002 (1.03)	−0.000 (−0.04)	0.002 (0.85)	−0.000 (−0.10)	0.005 (0.66)	0.015 (1.52)	0.004 (0.58)	0.014 (1.49)
$\Delta \ln(1 + \text{Analyst Coverage})$	0.009*** (4.19)	0.011*** (3.02)	0.008*** (4.15)	0.011*** (2.97)	0.001 (0.19)	−0.001 (−0.11)	0.001 (0.17)	−0.001 (−0.12)
$\Delta \text{Dispersion}$					−0.008** (−2.35)	−0.010** (−2.33)	−0.008** (−2.36)	−0.010** (−2.38)
$\Delta \text{Proportion Meet-or-Beat}$					0.014*** (4.88)	0.021*** (5.65)	0.013*** (4.82)	0.021*** (5.73)
N	86,150	86,150	86,150	86,150	55,384	55,384	55,384	55,384
Adj. R <sup>2</sup> (%)	2.8	3.3	3.1	3.5	3.5	3.8	3.7	4.0
Level-based Controls?	Y	Y	Y	Y	Y	Y	Y	Y
Post x Change-based Controls?	N	Y	N	Y	N	Y	N	Y
S.E. Clustering Level	Industry and year-quarter levels (two-way)							

Table 2 contains the first main results of the paper.<sup>10</sup> Columns (1) and (5) show a negative coefficient on  $\Delta \ln(1 + 8Ks)$ , first shown without the interaction-term with  $Post$ , indicating that within-firm changes in guidance and 8Ks are negatively related (H1). Specifically, in the pooled sample window, the coefficient of  $-0.127$  corresponding to  $\Delta \ln(1 + 8Ks)$  indicates that a one standard deviation change in  $\Delta \ln(1 + 8Ks)$  is associated with roughly a reduction in guidance equal to 13% of one standard deviation in  $\Delta \ln(1 + \text{Guidance})$ , which is directionally consistent with firms substituting across the two mediums of disclosure.

Another key result from Table 2 is the significantly negative coefficient on the interaction term between  $\Delta \ln(1 + 8Ks)$  and our post-period indicator. The coefficient magnitudes suggest that the negative association strengthens following the 2004 regulation by roughly 114% ( $=0.092/0.081$ ) relative to the pre-period. This effect appears economically large and is consistent with firms becoming significantly more likely to substitute across the two disclosure mediums following the expansion of 8K disclosure requirements (H4).

Panel A Table 2 shows our main findings are primarily driven by increases in 8K filings pertaining to earnings-related items that intuitively overlap with information in firms' guidance. Specifically, we estimate the regression specified in Eq. (1) after partitioning 8K items into those that are (a) *more* informative about earnings (referred to as 'Earnings 8Ks'), or (b) *less* informative about earnings (referred to as 'Non-Earnings 8Ks').<sup>11</sup>

Columns (3) and (7) of Panel A in Table 2 show that the negative association between changes in firms' 8K filings and guidance is concentrated among earnings-related 8K items that are more likely to substitute for the content of firms' guidance (H2). By contrast, we also find this association is generally insignificantly different from zero when considering 8Ks that are

<sup>10</sup> The adjusted R-squared of our first-difference model is low, because it captures the proportion of the variance in firm-fiscal-quarter matched changes in guidance frequency explained by the model after partialling out year-quarter fixed effects.

<sup>11</sup> Specifically, we classify items 1.01, 1.02, 2.01 (old item 2), 2.02 (old item 12), 2.04, 2.05, 2.06, 7.01 (old item 9), and 8.01 (old item 5) as being more informative about earnings, and all the other items as less informative about earnings.

**Table 3**

**Comparing Good and Bad News Guidance.** Columns (1) and (3) report estimates from the regression:

$\Delta \ln(1 + \text{Good (Bad) News Guidance})_{it} = \alpha_1 \cdot \Delta \ln(1 + 8\text{Ks})_{it} + \alpha_2 \cdot \text{Post} \times \Delta \ln(1 + 8\text{Ks})_{it} + \alpha_3 \cdot \text{Post} + \sum \beta \cdot \text{Controls}_{it-1} + \sum \beta \cdot \Delta \text{Controls}_{it-1} + \sum \beta \cdot \text{Post} \times \Delta \text{Controls}_{it-1} + e_{it}$ . 'Good' ('Bad') news guidance consists of observations where the firm reported forecasts equal to or greater than (fall below) the prevailing consensus forecast immediately preceding the forecasting date. When more than one forecast are issued on the same day, the guidance is classified as 'Good' ('Bad') if the number of forecasts at or above (below) the prevailing consensus is greater than the number of forecasts below (at or above) the prevailing consensus. In Columns (2) and (4), we partition 8K filings based on whether they are more versus less likely to be related to firms' earnings. We classify items 1.01, 1.02, 2.01 (old item 2), 2.02 (old item 12), 2.04, 2.05, 2.06, 7.01 (old item 9), and 8.01 (old item 5) as being more informative about earnings, and all the other items are classified as less informative about earnings. Refer to [Appendix B](#) for a complete list of control variables and variable definitions. All continuous variables are winsorized at the 1% and 99% levels to limit the influence of outliers. To facilitate interpretation, we standardize all variables by year-quarter to have a mean of zero and standard deviation one. When a variable is interacted with *Post*, we standardize the variable and then interact it with *Post*. \*, \*\*, \*\*\* indicate statistical significance at less than 10%, 5%, and 1%, respectively. We estimate and report t-statistics in parentheses based on two-way cluster robust standard errors, clustered by industry and year-quarter.

Panel A: Regressions of Good News Guidance Frequency				
Dep. Variable:	$\Delta \ln(1 + \text{Good News Guidance})$			
	(1)	(2)	(3)	(4)
$\Delta \ln(1 + 8Ks)$	-0.050*** (-4.13)		-0.059*** (-4.22)	
$Post \times \Delta \ln(1 + 8Ks)$	-0.049*** (-3.36)		-0.051*** (-2.98)	
$\Delta \ln(1 + \text{Earnings } 8Ks)$		-0.053*** (-4.28)		-0.062*** (-4.43)
$Post \times \Delta \ln(1 + \text{Earnings } 8Ks)$		-0.058*** (-3.97)		-0.057*** (-3.42)
$\Delta \ln(1 + \text{Non-Earnings } 8Ks)$		0.005 (1.25)		0.008 (1.29)
$Post \times \Delta \ln(1 + \text{Non-Earnings } 8Ks)$		0.015** (2.01)		0.014 (1.26)
<i>Post</i>	-0.000 (-0.00)	-0.000 (-0.00)	0.004 (0.24)	0.004 (0.26)
N	86,150	86,150	55,384	55,384
Adj. R <sup>2</sup> (%)	1.3	1.5	1.6	1.8
Level-based and Change-based Base Controls?	Y	Y	Y	Y
$Post \times \text{Change-based Base Controls?}$	Y	Y	Y	Y
Level-based and Change-based Analyst Controls?	N	N	Y	Y
$Post \times \text{Change-based Analyst Controls?}$	N	N	Y	Y
S.E. Clustering Level	Industry and year-quarter levels (two-way)			
Panel B: Regressions of Bad News Guidance Frequency				
Dep. Variable:	$\Delta \ln(1 + \text{Bad News Guidance})$			
	(1)	(2)	(3)	(4)
$\Delta \ln(1 + 8Ks)$	-0.044*** (-3.04)		-0.053*** (-3.14)	
$Post \times \Delta \ln(1 + 8Ks)$	-0.033* (-1.88)		-0.021 (-1.02)	
$\Delta \ln(1 + \text{Earnings } 8Ks)$		-0.045*** (-3.13)		-0.054*** (-3.14)
$Post \times \Delta \ln(1 + \text{Earnings } 8Ks)$		-0.035* (-1.94)		-0.022 (-1.08)
$\Delta \ln(1 + \text{Non-Earnings } 8Ks)$		-0.002 (-0.33)		-0.005 (-0.64)
$Post \times \Delta \ln(1 + \text{Non-Earnings } 8Ks)$		0.005 (0.58)		0.007 (0.53)
<i>Post</i>	0.000 (0.00)	0.000 (0.00)	-0.033 (-1.53)	-0.033 (-1.52)
N	86,150	86,150	55,384	55,384
Adj. R <sup>2</sup> (%)	2.1	2.1	2.5	2.5
Level-based and Change-based Base Controls?	Y	Y	Y	Y
$Post \times \text{Change-based Base Controls?}$	Y	Y	Y	Y
Level-based and Change-based Analyst Controls?	N	N	Y	Y
$Post \times \text{Change-based Analyst Controls?}$	N	N	Y	Y
S.E. Clustering Level	Industry and year-quarter levels (two-way)			

less likely to substitute for earnings guidance (i.e., 'Non-Earnings' 8Ks). Moreover, Columns (4) and (8) show the concentration of our results among earnings-related items increases after the 2004 regulation, consistent with firms becoming more likely to substitute away from guidance when disclosing similar information through 8Ks in a timely fashion.

Column (4), but not Column (8), shows a weak positive association between non-earnings 8Ks and guidance consistent with some firms forecasting to mitigate uncertainty surrounding non-earnings-related changes (e.g., management turnover), though this effect is economically small compared to earnings-related 8Ks and disappears when including the full set of controls from [Rogers and Van Buskirk \(2013\)](#) and [Billings et al. \(2015\)](#).

The contrast in size, sign, and robustness of our results across earnings-versus non-earnings 8Ks reinforces our inferences that the 2004 regulation increased firms' incentives to use 8Ks and guidance as substitutes by requiring more timely 8K disclosures, specifically of earnings-related information. Moreover, these findings suggest firms' incentives to substitute across voluntary and mandatory disclosures depend on the similarity of their content.

Our tests thus far focus on measuring the frequency of firms' guidance. In Panel B of [Table 2](#) we provide complementary evidence using firms' propensity to engage in some form of guidance. For these tests, our dependent variable is a fiscal-quarter matched change in *Guider Indicator*, which equals 1 for firm-quarters during which firms provide at least one forecast, and 0 otherwise.

Columns (1) and (5) in Panel B document a negative coefficient on  $\Delta \ln(1 + 8\text{Ks})$ , which is consistent with firms being less likely to use guidance when they issue more 8Ks. In Columns (2) and (6), we also document an incrementally negative coefficient when interacting  $\Delta \ln(1 + 8\text{Ks})$  with *Post*, indicating the negative relation increases after the 2004 regulation. As in

Panel A, we also find this effect is concentrated in earnings-related 8Ks (Columns (3), (4), (7), and (8)), consistent with increases in 8Ks making some firms less likely to guide than they would have in the absence of the regulation by conveying similar information through an alternative channel.

Although there are several potential trends or regulations that could contribute to variation in either guidance or 8Ks, an alternative explanation for our findings would need to simultaneously explain variation in both guidance and 8Ks in opposite directions that also strengthens after the 2004 regulation. To the best of our knowledge, we are not aware of any changes in the information environment occurring around 2004 that would produce variation in 8Ks in one direction and simultaneously produce variation in guidance in the opposite direction for the same firm, such that our inferences over substitution would be invalid.

Our next tests again estimate Eq. (1) after classifying firms' guidance into good versus bad news forecasts. We classify guidance as conveying 'good' ('bad') news for forecasts at or above (below) the prevailing analyst consensus forecast as reported in I/B/E/S. This classification implicitly treats confirming guidance—guidance that is exactly equal to analysts' consensus forecasts—as 'Good News,' which is motivated by prior evidence that firms on average walk expectations down ahead of their announcements (e.g., [Matsumoto \(2002\)](#)). When firms issue more than one forecast on the same day (e.g., EPS and revenues), we classify the guidance as 'good' ('bad') if the number of forecasts at or above (below) the prevailing consensus is greater than the number of forecasts below (at or above) the prevailing consensus, where we omit cases for which there is no prevailing analyst forecast.<sup>12</sup>

[Table 3](#) shows that, prior to the 2004 regulation, the negative relation between firms' 8Ks and guidance holds for both good and bad news forecasts. Moreover, an untabulated F-test confirms the pre-period coefficients across Panels A and B are statistically indistinguishable. However, consistent with [H5](#), [Table 3](#) also shows the change in the substitutive relation between firms' 8Ks and guidance after the 2004 regulation is larger and more robust among good news guidance.

Similar to [Table 2](#), Panel A of [Table 3](#) shows the extent of negative correlation between changes in 8Ks and good news guidance increases following the 2004 regulation, particularly for 8K items more likely related to firms' earnings. By contrast, Panel B of [Table 4](#) shows that, while the negative relation between changes in 8Ks and bad news guidance increases after 2004, this relation is economically weaker than for good news guidance.

Comparing the main and interaction coefficients across Panels A and B, we find a 109% ( $=0.058/0.053$ ) increase in the rate of substitution for good news guidance compared to 78% ( $=0.035/0.045$ ) for bad news guidance. Perhaps more importantly, comparing Column (4) results across Panels A and B, we find the post-regulation increase in substitution for bad news guidance is not robust, failing to hold once we include analyst-based controls.

The contrast in size and robustness of results across Panels A and B is consistent with the 2004 regulation spurring firms' use of 8Ks to disclose non-negative events and, in doing so, increasing the extent of substitution between the two mediums of disclosure, particularly for positive performance information. Moreover, these findings are also consistent with the argument in [Kothari et al. \(2010\)](#) that regulators have moved toward more balanced reporting requirements for good and bad news events. Taken together, the contrast in our findings across good versus bad, as well as earnings versus non-earnings related 8Ks underscore our central takeaway that the extent of substitution across alternative forms of disclosure likely depends on the specific context and attributes being considered.

Our main tests thus far use up to 12 fiscal quarters of data to estimate how the relation between 8Ks and guidance changes following the 2004 regulation. The use of 12 quarters increases the power of our tests but also raises the possibility that our results are confounded by other regulatory changes occurring near the 2004 regulation.<sup>13</sup> To mitigate this concern, [Fig. 1](#) reports coefficients from estimating a version of Eq. (1) after restricting our sample to observations in the one year before versus one year after the regulation. Because we conduct the regressions in the pre-versus post-period, we omit the *Post* period indicator and interaction effects. We again standardize all continuous variables across each subsample to make the coefficient magnitudes comparable. [Fig. 1](#) also reports the results of F-tests on whether the coefficient estimates are equal across the two periods.

[Fig. 1](#) verifies and extends our earlier findings by showing that the negative relation between changes in firms' 8Ks and guidance strengthens in the years immediately following the 2004 regulation. Specifically, the coefficient on  $\Delta \ln(1 + 8Ks)$  increases by approximately 20% ( $=(19.4-16.2)/16.2$ ) for the 'All' group, which consists of all (i.e., good and bad news) guidance. The reported F-tests indicate the negative relation between 8Ks and guidance are primarily driven by a stronger negative relation with good news guidance, rather than bad news guidance. More generally, these findings are consistent with firms intensifying their trade off between the two forms of disclosure within one year of the 2004 regulation.

<sup>12</sup> We do not classify guidance based on the sign of contemporaneous returns because many observations of guidance are bundled with earnings announcements making it unclear whether the guidance conveys good versus bad news. Moreover, as noted in [Rogers and Van Buskirk \(2013\)](#), forecast news is a distinct construct from investors' response to the news, where the former more closely aligns with our construct of interest.

<sup>13</sup> In particular, Reg FD was adopted in 2000, which contemporaneous research suggests affected a variety of different elements of firms' disclosure decisions ([Heflin et al. \(2003\)](#); [Anilowski et al. \(2007\)](#); [Bushee et al. \(2011\)](#); [Rogers and Van Buskirk \(2013\)](#); [Kothari et al. \(2009\)](#); [Beaver et al. \(2017\)](#)). In addition, [Anilowski et al. \(2007\)](#), [Chuk et al. \(2013\)](#), and [Dyer et al. \(2016\)](#) indicate that there are changes in I/B/E/S database coverage of the information contained in disclosures. Our shorter-window tests using the restricted sample partially mitigate concerns that these alternative factors materially affect the nature of our results.

**Table 4**

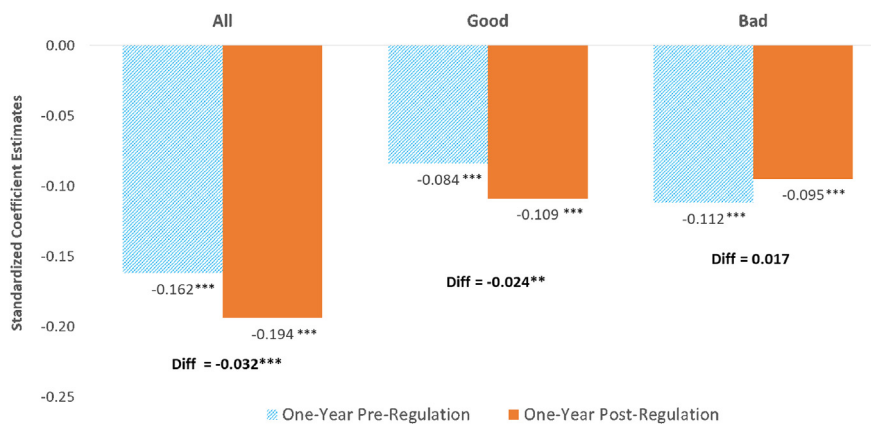
**Material Contract Filings.** This table reports estimates from the following regression of firms' quarterly guidance frequency on the pre-period incidence of material contract filings not filed as 8Ks:  $\ln(1 + \text{Guidance})_{i,t} = \alpha_0 + \alpha_1 \cdot \text{Post}_t \text{ (or } p_t) + \alpha_2 \cdot \text{PrePeriodNon8KExhibit10s}_i \text{ (or } \gamma_i) + \alpha_3 \cdot \text{Post}_t \times \text{PrePeriodNon8KExhibit10s}_i + \alpha_4 \cdot \ln(1 + \text{Exhibit 10s}) + \sum \beta \cdot \text{Controls}_{i,t-1} + \sum \beta \cdot \text{Post} \times \text{Controls}_{i,t-1} + \varepsilon_{i,t}$ , where  $p_t$  are calendar year-quarter fixed effects and  $\gamma_i$  are firm-fiscal quarter fixed effects. Note that *Pre-Period Non-8K Exhibit 10s* and *Post* are absorbed by firm-fiscal quarter fixed effects and year-quarter fixed effects, respectively, due to perfect multicollinearity. *Pre-Period Non-8K Exhibit 10s* is defined as the firm's average number of material contract filings not filed as an 8K per pre-regulation quarter scaled by the firm's average number of 8K filings per pre-regulation quarter. *Exhibit 10s* equals the total number of Exhibit 10 filings for a given firm-quarter, regardless of whether they were filed as an 8K or in the firm's 10K/Q. For this analysis, we limit the sample to firms that have at least one Exhibit 10 not filed as an 8K in the pre-period. Refer to [Appendix B](#) for a complete list of control variables and variable definitions. All continuous variables are winsorized at the 1% and 99% levels to limit the influence of outliers. \*, \*\*, \*\*\* indicate statistical significance at less than 10%, 5%, and 1%, respectively. We estimate and report t-statistics in parentheses based on two-way cluster robust standard errors, clustered by industry and year-quarter.

Dep. Variable:	$\ln(1 + \text{Guidance})$			
	(1)	(2)	(3)	(4)
<i>Post</i>	0.023 (0.24)		0.276* (1.87)	
<i>Pre-Period Non-8K Exhibit 10s</i>	0.760*** (3.26)		1.246** (2.44)	
<i>Post × Pre-Period Non-8K Exhibit 10s</i>	−0.503*** (−3.41)	−0.392** (−2.14)	−0.754*** (−3.16)	−0.670* (−1.67)
<i>ln(1 + Exhibit 10s)</i>	0.025** (2.54)	0.003 (0.32)	0.017 (1.40)	−0.005 (−0.49)
N	22,017	22,017	12,516	12,516
Adj. R <sup>2</sup> (%)	21.0	51.5	15.5	49.2
Firm-fiscal quarter Fixed-Effects	N	Y	N	Y
Year-quarter Fixed-Effects	N	Y	N	Y
Base Controls?	Y	Y	Y	Y
Analyst Controls?	N	N	Y	Y
Post x Controls?	Y	Y	Y	Y
S.E. clustering level	Industry and year-quarter levels (two-way)			

#### 4.2. Use of material definitive agreements

Our tests thus far focus on changes in firms' 8K filings surrounding the 2004 regulation, and thus implicitly rely on measuring firms' *ex post* response in terms of the frequency of 8K filings. In this section, we provide corroborating evidence for our main results using *ex ante* firm characteristics to identify firms that are more impacted by the regulation. For these tests, we would ideally like to observe recurring economic events that did not require 8K disclosure prior to the 2004 regulation but became mandatory under the new 8K rules.

Because obtaining data on all economic events is not feasible, we instead condition on firms' use of material definitive agreements. A key feature of these agreements is that prior to the 2004 regulation firms could delay disclosing them for months until filing their 10K/Qs, although some firms voluntarily did so on a more timely basis using 8Ks. Thus, to the extent



**Fig. 1. One-year prior versus after the 2004 regulation.** This figure plots coefficient estimates from the regressions of fiscal-quarter-matched changes in firms' guidance on fiscal-quarter-matched changes in firms' 8Ks in the one year prior to versus one year after the 2004 regulation. More specifically, it presents estimates of  $\alpha_1$  from estimating the following regressions after standardizing all variables to have a mean of zero and standard deviation of one within each calendar year-quarter:  $\Delta \ln(1 + \text{Guidance})_{i,t} = \alpha_1 \Delta \ln(1 + 8Ks)_{i,t} + \sum \beta \text{Controls}_{i,t-1} + \sum \beta \Delta \text{Controls}_{i,t-1} + \varepsilon_{i,t}$ . The sample for this analysis consists of 30,437 firm-quarter observations, where the pre-period (post-period) consists of the four fiscal quarters immediately prior to (after) the August 23, 2004 regulation date. Good (Bad) news guidance consists of observations where the firm reported forecasts at or above (below) the prevailing consensus forecast immediately preceding the guidance date. When more than one forecast are issued on the same day, we classify the guidance as 'Good' ('Bad') if the number of forecasts at or above (below) the prevailing consensus is greater than the number of forecasts below (at or above) the prevailing consensus. Refer to [Appendix B](#) for other variable definitions. \*, \*\*, \*\*\* indicate statistical significance of the  $\alpha_1$  coefficient estimate at less than 10%, 5%, and 1%, respectively. The figure also reports the results of F-tests on whether the coefficient estimates are equal across two periods.



the use of material definitive agreements is sticky over time, the degree to which a firm filed them outside of 8Ks provides an *ex ante* signal of whether the firm is likely required to make more timely disclosures of earnings-relevant information via 8Ks following the 2004 regulation.

The intuition for our tests in Table 4 is that firms entering or exiting material definitive agreements in the pre-regulation period could postpone the corresponding disclosure until they filed their periodic 10K or 10Q reports. However, the 2004 regulation changed this practice by requiring firms to provide this information on a more timely basis through real-time 8K disclosures. Our central prediction is that this regulatory change pulled forward some of the information that would normally be used to forecast firms' earnings and, in doing so, reduced the marginal benefit of providing guidance.

Table 4 contains results from regressing firms' quarterly guidance frequency on the pre-period incidence of material contract filings not filed as 8Ks. Specifically, in the period prior to the regulation, we measure firms' quarterly average number of material contract filings that are *not* filed as an 8K. To identify firms expected to increase their relative use of 8K filings, we scale the quarterly average of material contracts not filed as 8Ks for each firm by one plus its quarterly average of 8K filings over the pre-period, which we denote as *Pre-Period Non-8K Exhibit 10s*.

Because many firms never disclose material contracts outside of 8Ks in the pre-regulatory period, we restrict our sample to firms with at least one material contract filed outside of 8Ks in the pre-period. This sample consists of 1034 unique firms spanning 22,017 firm-quarters. Additionally, to control for changes in firms' use of material contracts over time, we control for the total number of material contract filings for a given firm-quarter, regardless of whether they were filed as an 8K or in the firm's 10K/Q.

Table 4 documents a positive relation between firms' guidance and their use of Non-8K Exhibit 10s in the pre-period. Specifically, the positive coefficients on *Pre-Period Non-8K Exhibit 10s* in columns (1) and (3) indicate firms with a greater number of pre-period material contracts not filed as 8Ks provided more guidance before the regulation.

A key result from Table 4 is that firms with a greater number of material contracts not filed as 8Ks in the pre-period were less likely to increase the frequency of guidance following the increase in 8K requirements. Specifically, the negative coefficient on *Post × Pre-Period Non-8K Exhibit 10s* across all columns of Table 4 indicate the pre-regulation difference in guidance frequency (per unit of pre-regulation filing of material contracts outside 8Ks) narrowed after the 2004 regulation. In untabulated tests, Wald tests on whether the sum of the coefficients on *Post × Pre-Period Non-8K Exhibit 10s* and *Pre-Period Non-8K Exhibit 10s* is equal to zero yield a *p*-value of 0.2639 in Column (1) and 0.2115 in Column (3), indicating the difference in guidance frequency became statistically insignificant in the post-period.<sup>14</sup> Moreover, columns (2) and (4) show our results are robust to the inclusion of both firm-fiscal quarter and year-quarter fixed effects suggesting our findings are unlikely driven by market-wide trends or static firm characteristics that vary with Exhibit 10 usage. The differing rates of substitution across firms with greater versus lesser pre-period non-8K material contract usage reinforce our inference that the extent of substitution across alternative forms of disclosure is likely context specific.

Together, these results suggest that firms that were more likely required by the 2004 regulation to disclose earnings-related information in an accelerated fashion (that they would otherwise have withheld until filing 10Qs or 10Ks) were more likely to substitute away from guidance relative to the secular trend. These findings are consistent with our broader inference that the 2004 regulation is associated with a lower marginal benefit of guidance for firms that were required to increase their use of 8K disclosures.

## 5. Incentives for substitutive behavior

In this section, we conduct two sets of additional tests to shed light on firms' incentives to substitute across 8Ks and guidance.

### 5.1. Tests on the changes in the types of information in 8Ks

We begin this section by exploring the link between firms' 8Ks and their same quarter earnings. To the extent there is an asymmetry in the nature of events disclosed through 8Ks (i.e., good versus bad), we predict the *amount* of 8K disclosures to correlate with firms' same-quarter operating performance. The intuition is that if firms primarily filed 8Ks to disclose adverse economic events (e.g., greater requirements to file 8Ks to report negative events), we expect the quantity of 8Ks to coincide with contemporaneous declines in firms' profitability that firms summarize and report at the end of the fiscal period through earnings announcements. Specifically, Table 5 reports results from the following regression estimated for the pre- and post-regulation periods, respectively:

$$\Delta SUE_{i,t} = \alpha_1 \cdot \Delta \ln(1 + 8Ks)_{i,t} + \sum \beta \cdot \Delta Controls_{i,t-1} + \sum \beta \cdot Controls_{i,t-1} + \varepsilon_{i,t}, \quad (2)$$

<sup>14</sup> Untabulated Wald tests on whether the sum of the coefficients on *Post × Pre-Period Non-8K Exhibit 10s* and *Post* is equal to zero yield *p*-value of 0.0008 in Column (3) and 0.0403 in Column (5), suggesting firms with at least one material contract filed outside 8Ks in the pre-period reduced their guidance in an *absolute* sense in the post-period.

**Table 5**

**Changes in the Type of Information Conveyed through 8K.** Columns (1)–(2) report estimates from the following regression for the pre- and post-regulation periods, respectively:

$$\Delta SUE_{i,t} = \alpha_1 \cdot \Delta \ln(1 + 8Ks)_{i,t} + \alpha_2 \cdot \Delta \ln(1 + Guidance)_{i,t} + \alpha_3 \cdot \ln(1 + Guidance)_{i,t} + \sum \beta \cdot \Delta Controls_{i,t-1} + \sum \beta \cdot Controls_{i,t-1} + \varepsilon_{i,t}.$$

$\Delta SUE_{i,t}$  is measured as  $\frac{X_{i,t} - X_{i,t-4}}{P_{i,t}}$ , where  $X_{i,t}$  is EPS before extraordinary items and  $P_{i,t}$  is price per share at the quarter-end. Refer to Appendix B for other variable definitions. In

Columns (3)–(4), we partition 8K filings based on whether they are more versus less likely to be related to firms' earnings. We classify items 1.01, 1.02, 2.01 (old item 2), 2.02 (old item 12), 2.04, 2.05, 2.06, 7.01 (old item 9), and 8.01 (old item 5) as being more informative about earnings, and all the other items are classified as less informative about earnings. The comparison of coefficients is conducted by running an F-test on  $\alpha_2$  in the following regression:

$$\Delta SUE_{i,t} = \alpha_1 \cdot \Delta \ln(1 + 8Ks)_{i,t} + \alpha_2 \cdot Post_t \times \Delta \ln(1 + 8Ks)_{i,t} + \alpha_3 \cdot Post + \sum \beta \cdot \Delta Controls_{i,t-1} + \alpha_4 \cdot \Delta \ln(1 + Guidance)_{i,t} + \sum \beta \cdot Post \times \Delta Controls_{i,t-1} + \alpha_5 \cdot Post \times \Delta \ln(1 + Guidance)_{i,t} + \sum \beta \cdot Controls_{i,t-1} + \alpha_6 \cdot \ln(1 + Guidance)_{i,t} + \varepsilon_{i,t}.$$

All continuous variables are winsorized at the 1% and 99% levels to limit the influence of outliers. To facilitate interpretation, we standardize all variables by year-quarter to have a mean of zero and standard deviation one. When a variable is interacted with *Post*, we standardize the variable and then interact it with *Post*. \*, \*\*, \*\*\* indicate statistical significance at less than 10%, 5%, and 1%, respectively. We estimate and report t-statistics in parentheses based on two-way cluster robust standard errors, clustered by industry and year-quarter.

Dep. Variable:	Pre	Post	Difference	Pre	Post	Difference
	$\Delta SUE$	$\Delta SUE$		$\Delta SUE$	$\Delta SUE$	
	(1)	(2)		(3)	(4)	
$\Delta \ln(1 + 8Ks)$	−0.011*** (−2.89)	−0.008* (−1.75)	0.004			
			F-stat = 1.4			
$\Delta \ln(1 + Earnings\ 8Ks)$				−0.014*** (−2.94)	−0.007 (−1.23)	0.007** F-stat = 5.24
$\Delta \ln(1 + Non-Earnings\ 8Ks)$				0.014* (1.71)	−0.003 (−0.43)	−0.016 F-stat = 2.02
$\Delta \ln(1 + Guidance)$	−0.017*** (−3.09)	−0.002 (−0.50)		−0.017*** (−3.08)	−0.002 (−0.50)	
$\Delta \ln(MVE)$	−0.136*** (−4.24)	−0.058*** (−3.71)		−0.136*** (−4.22)	−0.058*** (−3.72)	
$\Delta 1\ if\ Loss$	−0.116*** (−5.89)	−0.073*** (−2.93)		−0.116*** (−5.83)	−0.073*** (−2.93)	
$\Delta Volatility$	0.034** (1.98)	0.036** (2.57)		0.034** (1.98)	0.036** (2.58)	
$\Delta Size\text{-}adjusted\ BHR$	0.059*** (3.42)	0.042*** (6.22)		0.059*** (3.41)	0.042*** (6.20)	
$\Delta CEO/CFO\ Trade$	−0.007 (−0.88)	−0.008** (−2.26)		−0.007 (−0.89)	−0.008** (−2.27)	
$\Delta ROA$	0.011 (0.88)	0.039*** (2.65)		0.011 (0.91)	0.039*** (2.65)	
$\Delta BTM$	−0.147*** (−6.31)	−0.154*** (−19.13)		−0.147*** (−6.31)	−0.154*** (−19.10)	
$\Delta Leverage$	0.100*** (2.92)	0.046** (2.51)		0.100*** (2.93)	0.046** (2.51)	
$\Delta Institutional\ Ownership$	0.012** (2.44)	−0.001 (−0.16)		0.012** (2.42)	−0.001 (−0.16)	
$\Delta Illiquidity$	0.059*** (4.15)	0.058*** (6.13)		0.059*** (4.15)	0.058*** (6.09)	
$\Delta \ln(1 + Analyst\ Coverage)$	0.013 (1.05)	−0.001 (−0.07)		0.013 (1.05)	−0.001 (−0.07)	
N	41,886	41,677		41,886	41,677	
Adj. R <sup>2</sup> (%)	5.8	3.6		5.8	3.6	
Level-based Controls?	Y	Y		Y	Y	
S.E. Clustering Level	industry and year-quarter levels (two-way)					

where our dependent variable measures within-firm variation in seasonally-adjusted unexpected earnings (SUE). We proxy for within-firm changes in firms' performance using SUE as in [Livnat and Mendenhall \(2006\)](#): the difference between current and 4-quarter-lagged EPS before extraordinary items scaled by share price. The use of SUEs allows us proxy for changes in firms' performance after adjusting for seasonal trends across fiscal periods. To facilitate the interpretation of the estimated coefficients, we standardize all continuous variables in Eq. (2) by year-quarter to have a mean of zero and standard deviation one.

Comparing Columns (1) and (2) of [Table 5](#), we find a larger negative coefficient on  $\Delta \ln(1 + 8Ks)$  for the pre-regulation period. In Columns (3) and (4) we confirm that this effect is driven by earnings-related 8Ks, indicating that a larger volume of earnings-related 8K filings in pre-announcement periods tends to occur in periods when firms' report declines in their seasonally-adjusted earnings. These findings suggest that 8Ks related to earnings news were more likely to be conduits for bad news before the 2004 regulation.

[Table 5](#) also reports significance tests of the difference in coefficients across the two sample windows. We find a significantly more positive coefficient on  $\Delta \ln(1 + Earnings\ 8Ks)$  for the post-period in Column (4) than the pre-period in Column (3), suggesting the negative link between firms' earnings-related 8Ks and contemporaneous earnings innovations declined after the 2004 regulation.

The evidence in [Table 5](#) suggests that, after the regulation, earnings-related 8Ks became a more informative channel for general types of news, rather than primarily negative news. These results dovetail nicely with our earlier findings that the 2004 regulation primarily increased the extent to which 8Ks substitute for good news guidance, and suggest the regulation increased the overall substitutability between 8Ks and guidance in terms of content. More broadly, these findings are consistent with the argument in [Kothari et al. \(2010\)](#) that regulators have moved toward more balanced reporting requirements for good and bad news events.

## 5.2. The speed of price discovery

To shed further light on firms' incentives to provide guidance, we examine whether there is market-based evidence of 8Ks becoming a more timely and informative channel for value-relevant information. Specifically, we test whether the increased

use of 8Ks is associated with a change in the speed with which market prices assimilate information about firms' performance. Our hypothesis is that the increased use of 8Ks after the 2004 regulation increased the speed of price discovery, which helps reinforce the idea that 8Ks reduced the incentive for firms to disclose performance information through guidance.

In Table 6, we examine the intra-period timeliness (IPT) measure from Butler et al. (2007) and Bushman et al. (2010) which attempts to measure the speed with which prices assimilate the total information released about a firm within a given fiscal-quarter, while holding constant the magnitude of total information. IPT is measured as the area under the cumulative-price-change curve over 63 trading days starting from 60 trading days prior to the earnings announcement date to 2 trading days after. Formally, following Butler et al. (2007), we measure IPT as follows:

$$IPT = \frac{1}{2} \sum_{d=-60}^2 (BH_{-60,d-1} + BH_{-60,d}) / BH_{-60,2} = \sum_{d=-60}^1 (BH_{-60,d} / BH_{-60,2}) + \frac{1}{2}, \quad (3)$$

where  $BH_{-60,d}$  is the firm's size-adjusted buy-and-hold return from 60 days prior to the next earnings announcement up to and including a given day  $d$  relative to the earnings announcement. The economic construct of interest is the extent to which total quarterly returns are realized sooner in the quarter, where higher values signal faster price discovery. As in earlier regressions, we run a first-difference regression where all variables reflect fiscal-quarter matched changes.

Prior studies using IPT note that noise and outliers are inherent in return-based IPT, as IPT can become distorted with random news arrivals in the return path (e.g., Bushman et al. (2010); Drake et al. (2017); Blankespoor et al. (2018)). These studies deal with this issue by either truncating their sample and/or using a portfolio approach that groups economically related firms. To address the same issue while maintaining the cross-sectional nature of our analyses, we use a binary variable to capture  $\Delta IPT$ . We define a binary variable *High  $\Delta IPT$* , which equals 1 for firm-quarters whose fiscal-quarter matched change in IPT ( $\Delta IPT$ ) is greater than or equal to zero, and 0 otherwise.

**Table 6**

**Effects of Increases in 8K on the Timeliness of Earnings News.** Columns (1)–(2) report estimates from the following regression for the pre- and post-regulation periods, respectively:

$High\Delta IPT_{i,t} = \alpha_1 \cdot \Delta \ln(1 + 8Ks)_{i,t} + \alpha_2 \cdot \Delta \ln(1 + Guidance)_{i,t} + \alpha_3 \cdot \ln(1 + Guidance)_{i,t} + \sum \beta \cdot \Delta Controls_{i,t-1} + \sum \beta \cdot Controls_{i,t-1} + e_{i,t}$ . *High  $\Delta IPT$*  is equal to 1 for firm-quarters whose fiscal-quarter matched change in IPT is greater than or equal to zero, and 0 otherwise. Following Butler et al. (2007), IPT is measured as  $IPT = \frac{1}{2} \sum_{d=-60}^2 (BH_{-60,d-1} + BH_{-60,d}) / BH_{-60,2} = \sum_{d=-60}^1 (BH_{-60,d} / BH_{-60,2}) + \frac{1}{2}$ , where  $BH_{-60,d}$  is the firm's size-adjusted buy-and-hold return from 60 days prior to the next earnings announcement up to and including a given day  $d$ . Refer to Appendix B for other variable definitions. In Columns (3)–(4), we partition 8K filings based on whether they are more versus less likely to be related to firms' earnings. We classify items 1.01, 1.02, 2.01 (old item 2), 2.02 (old item 12), 2.04, 2.05, 2.06, 7.01 (old item 9), and 8.01 (old item 5) as being more informative about earnings, and all the other items are classified as less informative about earnings. The comparison of coefficients is conducted by running an F-test on  $\alpha_2$  in the following regression:

$High\Delta IPT_{i,t} = \alpha_1 \cdot \Delta \ln(1 + 8Ks)_{i,t} + \alpha_2 \cdot Post_t \times \Delta \ln(1 + 8Ks)_{i,t} + \alpha_3 \cdot Post + \sum \beta \cdot \Delta Controls_{i,t-1} + \alpha_4 \cdot \Delta \ln(1 + Guidance)_{i,t} + \sum \beta \cdot Post \times \Delta Controls_{i,t-1} + \alpha_5 \cdot Post \times \Delta \ln(1 + Guidance)_{i,t} + \sum \beta \cdot Controls_{i,t-1} + \alpha_6 \cdot \ln(1 + Guidance)_{i,t} + e_{i,t}$ . All continuous variables are win-

sorized at the 1% and 99% levels to limit the influence of outliers. To facilitate interpretation, we standardize all variables by year-quarter to have a mean of zero and standard deviation one. When a variable is interacted with *Post*, we standardize the variable and then interact it with *Post*. \*, \*\*, \*\*\* indicate statistical significance at less than 10%, 5%, and 1%, respectively. We estimate and report t-statistics in parentheses based on two-way cluster robust standard errors, clustered by industry and year-quarter.

Dep. Variable:	Pre	Post	Difference	Pre	Post	Difference
	High $\Delta IPT$	High $\Delta IPT$		High $\Delta IPT$	High $\Delta IPT$	
	(1)	(2)		(3)	(4)	
$\Delta \ln(1 + 8Ks)$	0.003 (1.55)	0.010*** (4.11)	0.006*** F-stat = 7.86			
$\Delta \ln(1 + \text{Earnings } 8Ks)$				0.004* (1.78)	0.009*** (12.51)	0.005* F-stat = 3.04
$\Delta \ln(1 + \text{Non-Earnings } 8Ks)$				−0.002 (−1.27)	−0.001 (−0.30)	0.002 F-stat = 0.93
$\Delta \ln(1 + \text{Guidance})$	−0.008 (−1.07)	0.000 (0.04)		−0.008 (−1.06)	0.001 (0.04)	
$\Delta \ln(MVE)$	0.032*** (2.82)	0.010 (1.26)		0.032*** (2.81)	0.010 (1.26)	
$\Delta 1 \text{ if Loss}$	−0.388*** (−21.89)	−0.466*** (−27.16)		−0.388*** (−21.94)	−0.466*** (−27.16)	
$\Delta \text{Volatility}$	0.046*** (3.40)	0.036** (2.31)		0.046*** (3.40)	0.036** (2.31)	
$\Delta \text{Size-adjusted BHR}$	−0.034*** (−6.71)	−0.024*** (−3.09)		−0.034*** (−6.72)	−0.024*** (−3.09)	
$\Delta \text{CEO/CFO Trade}$	−0.003 (−0.67)	−0.009** (−2.44)		−0.003 (−0.67)	−0.009** (−2.44)	
$\Delta ROA$	−0.070*** (−5.07)	−0.104*** (−5.52)		−0.070*** (−5.07)	−0.104*** (−5.53)	
$\Delta BTM$	−0.006 (−0.80)	0.003 (0.45)		−0.006 (−0.80)	0.003 (0.45)	
$\Delta \text{Leverage}$	−0.013 (−1.15)	−0.005 (−0.62)		−0.013 (−1.15)	−0.005 (−0.62)	
$\Delta \text{Institutional Ownership}$	−0.003 (−0.98)	−0.005 (−0.93)		−0.003 (−0.97)	−0.005 (−0.95)	
$\Delta \text{Illiquidity}$	−0.001 (−0.16)	−0.007* (−1.77)		−0.001 (−0.16)	−0.007* (−1.74)	
$\Delta \ln(1 + \text{Analyst Coverage})$	0.017** (2.43)	0.003 (0.30)		0.017** (2.43)	0.003 (0.30)	
N	41,607	40,082		41,607	40,082	
Adj. R <sup>2</sup> (%)	26.5	23.2		26.5	23.1	
Level-based Controls?	Y	Y		Y	Y	
S.E. Clustering Level	industry and year-quarter levels (two-way)					

In Table 6, the coefficients on  $\Delta \ln(1 + 8Ks)$  in Columns (1) and (2) suggest that the extent to which 8Ks increase the timeliness of earnings news is greater after the 2004 regulation, consistent with the evidence in McMullin et al. (2018). Also, the positive coefficients for  $\Delta \ln(1 + \text{Earnings } 8Ks)$  in Columns (3) and (4) indicate that greater use of earnings-related 8Ks is positively associated with IPT. This finding is consistent with Lerman and Livnat (2010), which shows that 8Ks convey novel value-relevant information to investors.<sup>15</sup> The increase in the magnitude of the coefficient on  $\Delta \ln(1 + \text{Earnings } 8Ks)$  from Column (3) to Column (4) suggests that the increase in the strength of the relation between changes in 8Ks and IPT is mainly driven by earnings-related 8Ks and absent from non-earnings 8Ks, which dovetail nicely with our main findings on the substitution between 8Ks and guidance. These findings suggest the 2004 regulation reduced the net benefits of guidance by pulling forward value-relevant news into 8Ks, particularly earnings-related 8Ks.

Taken together, the results in Tables 5 and 6 suggest the 2004 regulation lowered the net benefits of guidance by spurring firms to disclose a wider array of earnings news through 8Ks, rather than primarily negative news, and by pulling forward information about firms' performance into market prices via a mandatory channel.

## 6. Conclusion

In this study, we present evidence of a robust negative relation between firms' guidance and their 8K filings, consistent with firms using the two mediums of disclosure as substitutes. By contrast, several prior studies provide evidence of firms using aspects of their voluntary and mandatory disclosures as complements (e.g., Ball et al. (2012) and Li and Yang (2016)). These contrasting results suggest the nature of the link between voluntary and mandatory disclosures likely depends on the specific context and disclosure attributes being considered. Specifically, our findings are consistent with firms' choices over voluntary and mandatory disclosures depending on their similarities in terms of both content and timeliness.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jacceco.2019.101243>.

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<sup>15</sup> In untabulated analysis, we also find that 8Ks are negatively related to absolute analyst-based earnings surprises, particularly after the 2004 regulation, which provides further evidence of 8Ks reducing uncertainty over firms' earnings. Like our IPT tests, this result is concentrated in earnings-related 8Ks.

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