Consequences of More Frequent Reporting: The U.K. Experience

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Comments welcome

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Abstract

The Securities and Exchange Commission (SEC) is considering the pros and cons of (i) moving to semi-annual reporting from quarterly reporting; and/or (ii) making quarterly reporting less-burdensome by allowing more qualitative disclosures. We exploit the start of less-burdensome and more frequent reporting by the Financial Conduct Authority (FCA) in 2007 and the end of the requirement in 2014 in the United Kingdom to examine corporate and capital market behavior. After imposition of more frequent reporting in 2007, we find (i) a dramatic decline in the number of companies that issue reports with quantitative information (defined as including both sales and earnings numbers for the quarter); (ii) a substantial increase in companies announcing managerial guidance for the upcoming year's earnings or sales; and (iii) an increase in analyst following for all sample companies. Companies that voluntarily moved back from more frequent to semi-annual reporting after 2014 have experienced a reduction in analyst coverage. However, we find that the imposition of more frequent reporting or stoppage of such requirement has virtually no impact on firms' investment decisions.

Consequences of More Frequent Reporting: The U.K. Experience

1. Introduction

The consequences of mandatory reporting frequency on managerial actions and capital markets are the subject of much discussion in academe (e.g., Stein 1989, Kanodia and Lee 1998, Butler et al. 2007, Fu et al. 2012, Verdi 2012, Gigler et al. 2014, Kraft et al. 2017), practice, and policy circles (Aspen Institute 2009, Pozen 2014, Gallagher 2015, Clinton 2016). The SEC is considering the pros and cons of (i) moving to less frequent semi-annual reporting from the current regime of quarterly reporting; and/or (ii) making the quarterly reporting less-burdensome for at least certain types of public companies.[1] Yet, it has been difficult to provide causal evidence on the consequences of more frequent reporting. The SEC's move to require quarterly reporting in the 1970s is a potentially exploitable exogenous shock to address this question. However, the capital market, the managerial labor market and the composition of investors have changed considerably since the 1970s.[2]

Remarkably, a more recent natural experiment mandating a reporting frequency change has occurred in the United Kingdom. In 2007, U.K. firms were required to start issuing quarterly "Interim Management Statements" (IMS) (labeled "quarterly reporting," although the reports need not be strictly issued at the end of a fiscal quarter). However, the Kay Report (2012) recommended and amendments to the EU's Transparency Directive in 2013 (European Commission, 2013)

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[1] https://www.sec.gov/news/speech/international-developments-higgins.html

[2] Five factors that can potentially affect the capital market and investment consequences of mandatory quarterly reporting have changed since the 1970s. First, CEO tenure is shrinking and is now only 6.7 years on average, and around one-third of CEOs were ousted against their will (Kaplan and Minton 2006). Second, the nature of shareholder behavior has fundamentally changed with the advent of activist hedge funds and more shareholder engagement (Coffee and Palia 2016). Third, the average holding period for stocks is less than one year (Bogle 2006), and lower holding periods cause mismatches in the investment horizons of fund managers and their ultimate beneficiaries. Fourth, companies continue to face pressure to issue guidance of results (McKinsey 2006). Finally, companies admit to giving up long-term investments to report short-term profits (Graham, Harvey and Rajgopal 2005).

directed the removal of mandatory obligations to provide more frequent reporting. The objective was to reduce pressures that induce short-term decision making by corporate executives. Responding to these two initiatives, the Financial Conduct Authority (FCA 2014) stopped mandatory more frequent reporting in 2014.

It is usually difficult to find such exogenous shocks that both start and stop more frequent reporting within a short window (2007-2014). The period between 2007 and 2014 enables us to provide a panoramic view of both the firms that are voluntary more frequent reporters ("voluntary reporters") and those forced to switch to more frequent reporting ("switching firms"). In particular, we can evaluate how the actions of U.K. firms and the capital market evolved between these two exogenous shocks to reporting frequency.

Several commentators testifying before the SEC suggest that the U.S. should retain quarterly reports but make them less-burdensome by permitting disclosures with reduced information or with more qualitative information (Securities and Exchange Commission, 2015). Interestingly, this alternative quarterly reporting regime is similar to what the U.K. adopted in 2007. Unlike the detailed prescriptions governing U.S. 10-Qs, the FCA in the U.K. wanted market-led disclosure practices to evolve around quarterly reporting. Hence, the FCA merely requires U.K. firms to provide an explanation of material events and transactions that took place during the period and to give a general description of their financial position and performance.

Our sample combines accounting data, security price data, analyst data, and earnings and sales guidance data for U.K. firms spanning the years 2005-2015. For the main analysis that evaluates the consequences of initiating less-burdensome more frequent reporting, we restrict our

sample period to 2005-2010.[3] To identify voluntary quarterly reporters before the start of

mandating quarterly reporting regime, we manually check every company's website, as well as the

Capital IQ database. Using this data, we classify firms as "quarterly quantitative reporting firms"

if they disclose sales and earnings information in their quarterly reports, and we classify the

remaining quarterly reporting firms as "quarterly qualitative reporting firms."[4] Firms that reported

quarterly, regardless of quantitative or qualitative content, prior to 2008, are labeled as "voluntary

reporters." The remaining firms that mandatorily switched to quarterly reporting (issuing either

quantitative or qualitative disclosures) starting in 2008 are labeled "switching firms."

After the start of more frequent reporting in the U.K., the number of firms that issued

quantitative quarterly reports, defined as those with sales and earnings numbers, declined both in

the full sample and in the sample of voluntary quarterly reporters. Specifically, 16% of the full

sample of firms reported quantitative quarterly estimates in 2005, relative to only 8% in 2010. The

evidence is even more striking for the voluntary quarterly reporters. In particular, 52% of the

voluntary reporters issued quantitative reports in year 2005 as compared to only 19% in 2010.

Instead, the number of firms that announce quarterly reports without sales and earnings increased

substantially. A pre-post design, after the introduction of controls and year and firm fixed effects,

confirms these inferences.[5] The preponderance of qualitative quarterly reports, after the

introduction of mandatory quarterly reporting, is likely attributable to (i) the FCA's minimal

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[3] We start from 2005 because U.K. companies adopted IFRS in this year. The sample period before (after) 2008 is classified as the pre- (post-) regulation period. To balance the time periods before and after the rule change, we restrict our main analysis to sample years 2005-2010.

[4] Our definition of "quarterly quantitative reporting firms" is conservative. Specifically, firms that disclose quantitative figures about either earnings or sales but not both, or firms that disclose quantitative performance metrics other than earnings or sales are classified as "quarterly qualitative firms."

[5] A difference-in-differences design cannot be employed to investigate the change in the content of quarterly reports as switching firms, by definition, did not issue quarterly reports before the passage of the rule mandating quarterly reporting.

prescriptive guidance on what constitutes legitimate quarterly reports and the endorsement of qualitative reporting with the intention of letting the market evolve to its own equilibrium, and (ii) the possibility that voluntary quantitative reporters before the policy viewed the regulator's acceptance of qualitative reporting as a signal that they could move to the less restrictive qualitative regime.

After the initiation of more frequent reporting, the number of firms that issued annual earnings or sales guidance increased significantly. In general, 28% of all firms issued guidance in 2005, relative to 50% of all firms in 2010. Both voluntary quarterly reporters and switching firms increased issuance of guidance after the rule change. Specifically, 30% (28%) of the voluntary reporters (switchers) issued guidance in year 2005, as compared to 53% (49%) in 2010. A pre-post design, with added control variables and fixed effects, confirms these trends. Further investigation reveals that this increase in guidance after the reporting policy change was partly attributable to a relatively new practice in the U.K. market whereby firms started issuing guidance on annual sales or earnings at the beginning of the fiscal year, after which they revise or reconfirm the guidance as part of their quarterly reports.

Next, we investigate the consequences of more frequent reporting on analyst coverage of the firm and on the properties of analyst forecasts. Analyst coverage for all firms in the sample increases after the introduction of more frequent mandatory reporting. Using a D-i-D design, after adding year and firm fixed effects, we find that the analyst forecast error, defined as the difference between the actually reported earnings per share and forecasted earnings per share, falls for switching firms after the introduction of mandatory reporting. However, we find no reliable change in analyst coverage and in the dispersion of analyst forecasts for the switching firms relative to (i) the pre-adoption period; and to (ii) voluntary reporters.

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On November 7th, 2014, the FCA enacted a new policy stating that firms were no longer required to publish quarterly management statements. Subsequently, 9% of the sample firms (45 firms) stopped more frequent reporting as of October 2016. Firms that did not provide guidance when the mandatory rule was in force and firms in the energy industry are more likely to stop more frequent reporting after the rule change. Using a D-i-D analysis, we find that firms that stop more frequent reporting are more likely to lose analyst coverage.

Prior literature documents that mandatory quarterly reporting, as implemented in the U.S. during 1950-1970, induces managerial short-termism (Kraft et al. 2017). Strikingly, the U.K.'s regime of less burdensome quarterly reporting (market-led as opposed to prescriptive minimum disclosures) is not associated with lower company investments. In particular, we employ several investment measures, including capital expenditures; net plant, property, and equipment; R&D; and intangible assets. If more frequent reporting affects investment decisions, we would expect switching firms to be associated with lower capital investments relative to the pre-adoption period and relative to voluntary quarterly reporters. Using a difference-in-difference (D-i-D) analysis, we do not find evidence that switching firms experience differential investment patterns. These findings are robust to alternative sensitivity checks based on sample partitions (e.g., firms where under-investment is more relevant, firms that disclose quantitative reports, and firms that provide guidance).

Because the U.K. introduced mandatory reporting in 2007, just as the financial crisis was getting underway, we repeat our analyses of the impact of reporting frequency on company analyst following and investment after (i) dropping the sample years 2008-2010, and (ii) introducing the sample years spanning 2011-2013. All our inferences remain unchanged.

Our paper contributes to the relatively sparse literature on the consequences of mandatory reporting frequency, which is the subject of interest to many in academe, practice, and policy (e.g., the SEC and the FCA). We are perhaps the first in the literature to document consequences of more or less frequent reporting on the actual content of disclosures, earnings guidance, analyst following, and on the properties of analysts' earnings forecasts. Our U.K. evidence spanning 2008-15 complements U.S. evidence from earlier time periods (e.g., Leftwich et al. 1981, Butler et al. 2007, Fu et al. 2012, Verdi 2012, Kraft et al. 2017). In particular, the absence of a clear exogenous shock to reporting frequency in the U.S. in recent times makes the U.K. evidence we present potentially relevant to the SEC's thinking on whether to cut quarterly reporting requirements. We believe that accumulating evidence across different institutional environments will further our collective understanding of the association between reporting frequency and (i) corporate disclosure, (ii) changes in the behavior of information intermediaries such as analysts, and (iii) investment decisions.

The rest of the paper is organized as follows. Section 2 provides institutional details and summarizes related research. Section 3 describes the data and research design. Section 4 presents the empirical results on the consequences of initiating more frequent reporting. Section 5 presents our analysis on the consequences of stopping more frequent reporting. Section 6 documents the consequences of reporting frequency on managerial investment decisions. Section 7 offers concluding remarks and interprets the findings.

2. Institutional Background and Related Literature

2.1 The U.K. Setting

The Transparency Directive, issued by the European Commission (2004/109/EC), used to require issuers of shares admitted to trading on a regulated market to publish Interim Management Statements (IMS) *during* the first six months of the financial year and again *during* the second six-month period. The requirement to publish IMS was implemented in the U.K. by the Disclosure and Transparency Rules. Under these rules, IMS were required to (i) provide an explanation of material events and transactions that have taken place during the period and their impact on the issuer's group; and to (ii) give a general description of the financial position and performance of the issuer's group (DTR 4.3.4–5). These disclosures are treated as regulated information because of contemporaneous legal developments. Hence, issuers may be subject to liability if the quarterly reports contain materially false or misleading information, subject to certain conditions.[6]

However, FCA rules do not provide precise directions on the actual content of interim management statements (e.g., quantitative or qualitative statements). Instead, the FCA was willing to let market-led disclosure practices evolve around quarterly reporting. These rules were implemented effective for financial years commencing on or after 20 January 2007and provide the first "shock" relevant to our analysis.[7]

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[6] In particular, section 90A of the European Securities and Markets Authority Act (ESMA) adopted in 2006 provides carefully crafted liabilities for public companies on disclosures required by the Disclosure Transparency Rules (DTR). However, in 2010, ESMA was amended to cover all public disclosure documents issued by companies. Hence, section 90A now applies to all quarterly reports.

[7] Interviews with law firms reveal that there was no requirement, prior to 2007, from the London Stock Exchange for the issuance of quarterly or interim management statements. However, there prevailed a voluntary practice of issuing trading statements as events occurred within the six month reporting periods. These trading statements are akin to 8Ks in the U.S. and were meant to fulfil continuing obligations of disclosing material events (such as M&A transactions or problems with products) and to prevent selective disclosure of key events to market participants.

In November 2013, the European Commission adopted the Transparency Directive Amending Directive (2013/50/EC). One of the key changes made by the Amending Directive was to remove the requirement to publish quarterly statements. In the U.K., the Kay report (2012) recommended and amendments to the EU's Transparency Directive in 2013 (European Commission, 2013) directed the elimination of mandatory obligations to provide quarterly reporting. The stated objective was to reduce pressures that induce short-term decision making by corporate executives. Responding to the Kay report (2012), in July 2014, the FCA issued a consultation paper (CP 14/12 Removing the Transparency Directive's requirement to publish interim management statements), which set out its proposals for achieving this goal.[8] On November 7th, 2014, the FCA published a policy statement (PS 14/15 Removing the Transparency Directive's requirement to publish interim management statements), which explained how and when it intended to implement the proposals in CP 14/12.[9] This policy statement provides the second shock related to the relaxation of the mandatory requirement to report quarterly data.

2.2 Related Literature

Prior work has claimed that there are both benefits and costs to more frequent mandatory reporting. Among the benefits, scholars have argued and/or demonstrated that more frequent reporting is associated with reduced cost of capital, improved liquidity and increased timeliness of

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[8] Interviews with a lawyer of a prominent U.K. law firm suggest that, in 2014, the EU moved against quarterly reports because they were seen as an "easy and a symbolic" target and the 2012 Kay report in the U.K. had already included a clear recommendation advocating stoppage of quarterly reporting. The lawyer pointed out the Kay report (2012) discussed a broad range of other drivers of short termism such as the behavior of directors, executives and asset managers. However, legislating changes in such behavior or incentives that lead to such behavior was considered difficult.

[9] We asked practitioners about the possibility of reviewing comment letters associated with these regulations. We were told that regulators respond to comment letters but unlike certain U.S. based bodies such as the FASB and the SEC, they do not compile a summary of the comments. Apparently, no accessible file of all comment letters is readily available.

earnings news (Butler et al., 2007, Fu et al., 2012, Verdi 2012). Three papers by related co-authors have relied on U.S. firms that voluntarily reported on a quarterly basis in 1953 and the laggards who were switched mandatorily to quarterly reporting in 1970 by the SEC. In the first of such papers, Butler et al. (2007) find that although earnings timeliness improves for firms voluntarily changing their reporting frequency, earnings timeliness is unaffected for firms that are forced to shift the reporting frequency via a mandate. Fu et al. (2012) find that firms that voluntarily or mandatorily increase their reporting frequency experience a reduction in information asymmetry and a decrease in their cost of capital by more than 60 basis points. Turning to the costs of frequent reporting, Kraft et al. (2017) claim that increased reporting frequency in the 1970s is associated with a large decline in investments.

We found several relevant papers that investigate the U.K. context. Rahman, Schleicher, and Walker (2013) examine the information content of IMS reports and document significant abnormal absolute price and trading activity on IMS announcement days. The authors also find that stock market returns on IMS announcement days predict annual earnings changes. Cuijpers and Meek (2010) investigate the characteristics of firms that voluntarily report on a quarterly basis before the 2007 rule change that required mandatory quarterly reporting. They find that voluntary reporters have lower bid-ask spreads and higher share turnover. However, these authors do not examine the capital market consequences of firms that were required to switch to quarterly reporting. Arif and De George (2015) document that stock prices of firms located in countries with lack of mandatory quarterly reporting overreact to U.S. firms' earnings. Balakrishnan and Ertan (2017) find that more frequent reporting is associated with improvements in banks' loan portfolios.

A recently accepted paper by Ernstberger et al. (2016) argues that mandatory quarterly reporting in the E.U. increased real earnings management, proxied by abnormal production and lower discretionary expenses. Our paper differs from theirs along several important dimensions. First, Ernstberger et al. (2016) eliminate voluntary quarterly reporters and firms that announce quarterly reports without earnings from their sample whereas these firms are central to our analysis. Moreover, questions have been raised about the effectiveness of these real earnings management measures (see Cohen et al. 2015). For instance, the magnitude of real earnings manipulation is 1.567 times the magnitude of the earnings in panel A of Table 4 of their paper. Second, Ernstberger et al. (2016) gather the quarterly reporting data from Datastream/Worldscope. However, this database mechanically interpolates the quarterly data from semi-annual and annual data whenever the database administrators believe that quarterly frequency data is unavailable, regardless of what the firm actually reports. That is, if semi-annual data is 10 million pounds, the database mechanically assumes that the quarterly earnings number to 5 million pounds. To overcome this limitation, we hand collect the quarterly frequency data. We elaborate on data collection in section 3.1. Using the hand collected data, we redo the Ernstberger et al. (2016) E.U. based analysis only for the U.K. As shown in Appendix A1, we find no evidence in the U.K. setting that more frequent reporting is associated with more real activity manipulations, as measured by Ernstberger et al. (2016). Third, the treatment sample and control samples in Ernstberger et al. (2016) come from different countries. Therefore, country-level differences could potentially drive their results. By restricting our analysis to the U.K. setting, we hold institutional factors across treatment and control sample constant. Finally, Ernstberger et al. (2016) investigate the impact of more frequent reporting on real activity manipulation whereas our focus is the introduction and the removal of mandatory quarterly reporting in the U.K. on (i) the content of quarterly reports, (ii) earnings

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guidance, (iii) analyst following, (iv) properties of analysts' earnings forecasts, and (v) corporate investments.

3. Sample Selection and Research Design

3.1 Data

We obtain accounting and security price data from Compustat Global from 2005 to 2015. Data on managerial guidance are drawn from Standard and Poor's Capital IQ database, and analyst data come from I/B/E/S. We exclude financial services firms (SIC 6000-6999) because of their peculiarities. Compustat Global reports the accounting data on a quarterly frequency. However, such data can be potentially misleading because the database imputes quarterly data from semi-annual and annual reports in case the firm (i) does not report every quarter; and/or (ii) is a qualitative quarterly reporting firms (i.e., does not disclose a sales or an earnings number in the quarter). Therefore, it is important to recognize that the Compustat Global database, in its current form, cannot be reliably used to determine a firm's reporting frequency.[10] To overcome this limitation, we manually check the reporting frequency of each firm. Specifically, we manually code a firm's reporting frequency by checking company websites and the Capital IQ database.

Using this hand collected data, we classify firms as (i) "quarterly quantitative reporting firms" if they disclose sales and earnings information at the quarterly frequency; and (ii) as "quarterly qualitative reporting firms" if they disclose qualitative quarterly information with or without sales or earnings numbers. Firms that reported quarterly, either quantitative or qualitative information, prior to 2008 are labeled as "voluntary quarterly reporters." The remaining firms

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[10] Worldscope is an alternative source of global accounting data. However, the coverage of Compustat Global is marginally larger than that of Worldscope (Dai, 2012). Hence, we use Compustat Global as our main source of data. We use Worldscope to double-check accounting numbers and reporting frequency. Similar to Compustat Global, Worldscope also imputes quarterly accounting numbers for the firms without quarterly reporting.

mandatorily switched to quarterly reporting (either quantitative or qualitative disclosures) after 2007.

We restrict our sample to firms with at least 10 million GBP in assets at the beginning of the year. To reduce the influence of outliers, we winsorize, on a yearly basis, the top and bottom 1% of continuous independent variables. Finally, the sample period before (after) 2008 is classified as the pre- (post-) mandatory quarterly reporting period. To balance the time periods before and after the start of the quarterly reporting rule, we restrict our main analysis to the sample years 2005–2010. Table 1 provides sample statistics. The final sample used to investigate the consequences of starting quarterly reporting covers the period from 2005–2010 and contains 4,079 firm-year observations. Of these, 1,167 firm-years are from the "voluntary quarterly reporters" sample, and 2,912 firm-year observations are from the "switchers" sample. Missing observations, on account of the absence of data for one or more control variables or dependent variables (forecast dispersion, research and development expenses, etc.), lead to fewer usable observations in some of the tests. In section 5, we discuss the sample used to investigate the consequences of stopping quarterly reporting.

3.2 Overall design

We employ a pre-post design to investigate the consequences of starting and stopping more frequent reporting for *all* sample firms. We explore the impact of the reporting frequency change on the capital market responses (such as change in analyst following) and managerial responses (such as change in investments) using a difference-in-differences design. In particular, we regress analyst responses on an indicator variable for the type of reporting (mandatory versus voluntary quarterly reporting), an indicator variable for the time period (pre- versus post-mandatory reporting

period), the interaction between these two indicators, and control variables along with firm and time fixed effects.

This research design allows us to investigate the impact of reporting frequency on analyst responses for firms switching to mandatory quarterly reporting relative to those that were voluntarily reporting on a quarterly basis before the mandatory rule came into force. Employing firms with voluntary quarterly reporting as a control group helps us isolate the effect of mandatory quarterly reporting by differencing out the common omitted factors that change around the adoption. We repeat the analysis for the voluntary stoppers post 2015 in section 5. We use the same design to investigate the impact of quarterly reporting on managerial actions. The figure below presents the timeline and key variables in our difference-in-differences design.

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                    ┌─────────────────────────────────────┐
                    │  Mandatory More Frequent Reporting   │
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| Mandatory Reporting Start Date: 2008 | Mandatory Reporting Stop Date: 2015 |

| *Treatment group*: firms that mandatorily switched to quarterly reporting starting in 2008
 Control group: firms that reported quarterly in the pre- and post- periods
 Treatment Indicator: treatment group=1; control group=0
 Pre- and Post- Indicator: post start date=1; Pre=0 | *Treatment group*: firms that switched to semi-annual reporting starting in 2015
 Control group: firms that reported quarterly in the pre- and post- periods
 Treatment Indicator: treatment group=1; control group=0
 Pre- and Post- Indicator: post stop date=1; Pre=0 |

4. Empirical Results

4.1 Disclosure Patterns: Before and After More Frequent Reporting

In this section, we investigate the changes to disclosure patterns for both mandatory and voluntary disclosures during the sample period.

Univariate analysis

Table 1 presents the univariate patterns in disclosures for voluntary reporters and switching firms. Among the voluntary quarterly reporters, the proportion of companies that announce quantitative quarterly reports declined significantly after the start of the mandatory quarterly reporting regime. Specifically, among the voluntary reporters, 44% of the firms issued quarterly quantitative reports before the rule mandating quarterly reporting, and this proportion declined to 20% after the rule change. The evidence from the correlation matrix, tabulated in Table 2, confirms the findings in Table 1. In particular, the Pearson correlation coefficient between the *Post* indicator (equal to 1 for the mandatory quarterly reporting period) and the *Quant* indicator (equal to 1 if the firm reports quarterly sales and earnings figures) is -0.07 and statistically significant at conventional levels. In Table 1, only 4% of the firms switching to mandatory quarterly reporting issued quarterly quantitative reports.

Disclosure patterns for the full sample are presented in panel A of Table 3. The number of firms that issues quarterly quantitative disclosures decreased during the sample period, especially after the advent of mandatory quarterly reporting. At the same time, the number of firms that report quarterly qualitative disclosures increased significantly. Specifically, 16% (82/(155+349)) of the sample firms reported quantitative quarterly estimates in 2005, and that proportion decreased to 8% (55/(173+496)) by 2010. On the other hand, 14% of firms (73/(155+349)) issued qualitative

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quarterly reports in 2005, while 92% (614/(173+496)) issued them in 2010. In other words, after the initiation of mandatory quarterly reporting, more firms issued qualitative quarterly reports, and firms that issue quantitative reports earlier moved to qualitative quarterly reports. In contrast, the number of firms that give guidance increased over time. Specifically, 28% (142/(155+349)) issued guidance in 2005, and more than 50% (335/(173+496)) did so in 2010.

The findings are also very similar for the voluntary reporters. Panel B of Table 3 presents the evidence. 52% (48%) of the voluntary reporters issued quantitative (qualitative) reports in 2005, and this proportion decreased to 19% (81%) in 2010. In contrast, 30% of voluntary reporters issued earnings guidance in 2005, while 53% did so in 2010. Panel C of Table 3 presents the disclosure patterns for the switching firms. By construction, these firms disclosed neither qualitative nor quantitative reports in years 2005-2007. In 2008, when the rule became mandatory, most firms issued quarterly qualitative reports. Specifically, 94% of the firms issued qualitative quarterly reports. Similar to the full sample and the voluntary reporters sample, the number of switching firms that issued earnings guidance increased significantly. In particular, 33% of the switching firms gave guidance in 2005, and 54% gave guidance in 2010.[11]

To further investigate the nature of information disclosure in finer detail, we randomly select 100 firms whose fiscal year ends in 2010. For these firms, we hand code the exact content of the disclosures. In un-tabulated work, we find that 10% of these sample firms provide both an income statement and a balance sheet in the quarterly reports. 2% of the sample firms disclose either an income statement or a balance sheet but not both. 2% of the sample firms do not provide

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[11] We also investigate the nature of guidance. Specifically, using the I/B/E/S guidance data that is available from 2007, we find that if firms provide guidance, annual guidance is most common (95%) and quarterly guidance is rare (5%). No firm provides semi-annual guidance in our sample. Of firms that issue annual guidance, 30% on average provide range estimates, and the rest provide point estimates with qualifiers (e.g., *about, more than, at least, may exceed, slightly, more than, slightly less than,* and *not to exceed*).

financial statements but publish earnings and sales information. 47% of the sample firms do not report earnings or sales but provide other quantitative information (e.g., key industry metrics). The remaining 36% of the sample firms provide qualitative disclosures (e.g., confirming annual guidance). The average length of the quarterly reports is five pages. However, the length of the reports varies significantly from one page to 40 pages. More specifically, the 10th percentile of the length of quarterly disclosures is two pages, and the 90th percentile is 12 pages.

In summary, the univariate evidence from Tables 1–3 suggests that the number of firms that issued quantitative reports declined after the mandatory quarterly rule went into effect both for the full sample and for the voluntary reporters. In contrast, the number of firms that issued earnings guidance increased significantly for the full sample, the voluntary quarterly reporter sample, and for the mandatory switcher sample.

Multivariate analysis

Next, we estimate a logistic multivariate model that controls for factors that could influence managerial disclosure choices. To do so, we estimate the following logistic model:

$$Quant \ or \ Guide_{i,t} = \alpha + \beta_1 Post_t + \beta_2 Mktcap_{i,t} + \beta_3 Book\_market_{i,t} + \beta_4 ADR_{i,t} + \beta_5 Ret\_Vol_{i,t} + \beta_6 Leverage_{i,t} + \beta_7 ROA_{i,t} + \beta_8 \ D\_Firm + \beta_9 \ D\_Time + \varepsilon_{i,t}, \quad (1)$$

where *Quant* equals 1 if the firm reports quarterly sales and earnings figures, and 0 otherwise; *Guide* equals 1 if the firm provides earnings or sales guidance and 0 otherwise; *Post* equals 1 for the all years from 2008 onward and 0 otherwise; *Mktcap* is the log of the market capitalization on the last trading day of the fiscal year; *Book_market* is book value of equity divided by market capitalization; *ADR* is equal to 1 if the firm traded in the United States and 0 otherwise; *Ret_Vol* is the standard deviation of daily stock returns in the fiscal year; *Leverage* is book value of long-term debt divided by total assets; *ROA* is net income divided by total assets; *D_Firm* is the firm

fixed effect; and *D_Time* is the time fixed effect. We estimate the above specification with and without fixed effects. Standard errors are clustered by firm.

Panel A of Table 4 reports the multivariate results for the full sample. The analysis without firm and time fixed effects is presented in column (1) for particular types of quarterly reporting (quantitative/qualitative). Similar to the univariate analysis, the multivariate analysis also consistently suggests that the number of firms that disclose quantitative reports declined after mandatory quarterly reporting began. The coefficient estimate on the *Post* dummy is -0.50 and significant at 1%. In terms of economic significance, after the initiation of mandatory quarterly reporting, the odds of a company's issuing qualitative quarterly reports increased to 1.65. The analysis, without firm and time fixed effects, is presented in column (4). The number of firms that give guidance went up significantly after the advent of mandatory quarterly reporting. The coefficient estimate on the *Post* dummy is 0.51 and significant at 1%. After the start of mandatory quarterly reporting, the odds of a company's issuing guidance increased to 1.66.[12]

The evidence from the voluntary reporting sample, tabulated in panel B of Table 4, is even more striking. Specifically, in column (1), after the mandatory quarterly reporting took effect, the odds of a company issuing qualitative quarterly reports increased to 3.67, compared to the odds of 1.65 for the full sample. These data suggest that, after the start of mandatory quarterly reporting, even firms that had issued quantitative quarterly reports moved toward quarterly qualitative reports.

Table 4 also presents models with firm and year fixed effects. The model with firm fixed effects can include only observations where a firm experiences a change in disclosure behavior. This restriction results in a reduction of the number of usable observations from 4,079 in column

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[12] Odds are defined as the ratio of the probability of a firm issuing guidance and the probability of not issuing guidance.

(1) to 1,016 in columns (2) and (3). The analysis using fixed effects is reported in columns (2), (3), (5), and (6). Overall, the conclusions are qualitatively similar to the analysis with and without the use of fixed effects.

Taken together, the evidence in Tables 1–4 suggests that, after the beginning of mandatory quarterly reporting, the number of firms that issue quantitative quarterly reports declined significantly, and this decrease is even more significant for the voluntary reporters. Further, the number of firms that issue guidance increased significantly after mandatory quarterly reporting began.

We believe that the marked shift from quantitative to qualitative quarterly reports by voluntary adopters occurred because the U.K. authorities, like their EU counterparts, did not require financial statements in quarterly reports. Instead, the U.K. authorities provided flexible guidelines, with an emphasis on qualitative information. For the same reason, almost all of the quarterly reports of U.K. mandatory switchers from 2007 onwards were qualitative.

4.2 Analyst Following and Forecast Properties: Before and After More Frequent Reporting

In this section, we investigate the effect of more frequent reporting on analyst coverage and on analyst forecast error characteristics. Specifically, we investigate changes in the number of analysts following the firm, the dispersion in earnings forecasts of analysts, the forecast error, and the accuracy of the forecast among the mandatory rule adopters relative to voluntary rule adopters, before and after the rule change. If the mandatory quarterly rule provides more frequent information to the markets, then analyst following and analyst forecast properties might improve after the rule change. However, analysts may be attracted to settings where they can add value, such as with infrequent mandatory reporting (Barth et al. 2001). Hence, ex ante, it is not clear

whether more frequent reporting should have any effect on analyst coverage or analyst forecast characteristics.

Univariate analysis

Table 1 presents the univariate patterns in analyst properties for voluntary reporters and switching firms. Analyst following has increased for firms that are required to switch to quarterly reporting (i.e., switching firms) after the rule change. Specifically, the number of analysts following a firm increased on average by 0.60 after the reporting frequency rule change. At the same time, analyst following increased even for the voluntary reporters after the reporting frequency rule change. The Pearson correlation coefficient, in Table 2, between the *Post* indicator (equal to 1 for the mandatory quarterly reporting period) and analyst following is 0.08 and statistically significant at conventional levels. The system-wide increase in the number of analysts following U.K. firms contemporaneous with the introduction of mandatory reporting is a noteworthy result.[13] However, this finding gets obscured in a difference-in-differences design, as the gain in analyst following for the switching firms post regulation is not statistically different from such an analogous gain for voluntary quarterly reporters.

Further, analyst forecast dispersion, forecast error, and forecast accuracy are not statistically different between the pre- and post-frequency rule change periods for either voluntary reporters or switching firms. Overall, the univariate results suggest that more frequent reporting has little effect on the properties of analyst forecasts.

Multivariate analysis

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[13] A sell-side analyst of a prominent equity research firm confirmed that he and the other analysts he had spoken to "all want more information" and would hence prefer full quarterly reports.

Next, we estimate a multivariate model that controls for factors that could influence analyst following and other forecast characteristics. To do so, we estimate the following model:

$$Analyst\_Prop_{i,t} = \mu_1\,Treat_{i,t} + \mu_2\,Post*Treat_{i,t} + \mu_3\,Mktcap_{i,t} + \mu_4\,Book\_market_{i,t} + \mu_5\,ADR_{i,t}$$
$$+ \mu_6\;Ret\_Vol_{i,t} + \mu_7\,Leverage_{i,t} + \mu_8\,ROA_{i,t} + \mu_9\;Investment_{i,t-1} + \mu_{10}\;D\_Firm$$
$$+ \mu_{11}\;D\_Time + \upsilon_{i,t}, \tag{2}$$

where *Analyst_Prop* is one of the four analyst-based measures: (1) *Cov. Gain:* an indicator variable that equals 1 if the number of analysts following the stock increases and 0 otherwise; (2) *Disp*: dispersion in analyst forecast errors, defined as the standard deviation of the forecast errors; (3) *FE:* the analyst forecast error, defined as actual annual earnings minus the median analyst estimate made 90 days prior to the earnings announcement date; and (4) *AFE:* absolute forecast error. *Treat* equals 1 if the firm mandatorily switched to quarterly reporting and 0 otherwise. *Post* equals 1 for the sample years starting 2008 and 0 otherwise. The interaction between *Post* and *Treat* is our variable of interest. All other variables are defined as above.

The results of estimating equation (2) are reported in Table 5. Analyst coverage increases in some specifications for the switching firms and after the reporting frequency rule change. Specifically, columns (1), (2), and (3) tabulate the analysis for analyst coverage. The interaction between *Post* and *Treat* is statistically significant for the specifications (i) with no fixed effects; and (ii) the one with firm fixed effects. However, as column (3) shows, the interaction term becomes insignificant after we add time fixed effects to the specification. This pattern is seen because both the voluntary reporters and the switchers experienced an increase in analyst coverage after the introduction of more frequent mandatory reporting. We conjecture that the introduction of quarterly reporting for mandatory switchers provided more company specific information about mandatory switchers for analysts to examine and perhaps drew more analyst attention to the quarterly reports of voluntary adopters as well.

Turning to the other columns, we observe another interesting result: a significant fall in the forecast error for switching firms after the introduction of mandatory reporting in column (9), which controls for both firm fixed effects and year fixed effects. In particular, the coefficient on *Post*Treat* in column (9), when the dependent variable is FE, is -0.46 ($p < 0.1$). Hence, after we account for idiosyncratic differences in firm characteristics and overall time trends, forecast error for the switchers falls more after frequent mandatory reporting. The fall in the forecast error would help explain why more analysts began covering mandatory switchers once they were required to issue quarterly reports.

For other analyst forecast characteristics, similar to the univariate results, the evidence from the multivariate regressions suggests that frequent financial reporting has little effect on the analyst forecast characteristics. Specifically, columns (4) - (6) and (10) - (12) of Table 5 document results for alternative specifications for different analyst forecast characteristics. For these models, the coefficient estimates on the interaction between *Post* and *Treat* are statistically insignificant.

If the switching firms and voluntary reporters follow parallel trends in analyst properties absent the reporting frequency change, coefficient estimate on *Post * Treat* in the above speciation captures the effect of reporting frequency (Angrist and Pischke, 2009). To test this condition, we investigate the parallel trends in analyst properties before the reporting frequency rule change. To do so, we define a new indicator variable that is equal to one for the year 2006 and add the interaction of this indicator variable with *Treat* to specification (2). In un-tabulated results, we find that the coefficient estimate of this interaction term is insignificant, suggesting that the analyst properties of the mandatory and voluntary rule adopters follow parallel trends before the rule change.

The time period covered in Table 5 includes the Great Recession that occurred in Q4:2007-Q1:2009. To check the robustness of our inferences to excluding the Great Recessionary period, we repeat our analysis after replacing data from 2008-2010 with data from 2011-2013 to maintain balance in pre- and post- reporting frequency rule change years. In this analysis, *Post* equals 1 during the sample years 2011-2013 and 0 in the period 2005-2007. In un-tabulated results, all of our main inferences remain unchanged when we employ this sample. Therefore, the evidence suggests that the findings presented in Table 5 are not attributable to the Great Recession.

In summary, in the U.K. setting, more frequent financial reporting is associated with (i) an increase in analyst coverage as a whole; and (ii) lower analyst forecast error for switching firms relative to voluntary reporters, after adding controls and fixed effects.

5. Consequences of Stopping More Frequent Reporting

In this section, we investigate the characteristics of firms that stopped quarterly reporting and the consequences of doing so. Specifically, on Nov 7th, 2014 the FCA published a new policy discontinuing the requirement to publish an Interim Management Statement. The revised policy states that Interim Management Statements published on a voluntary basis will no longer be treated as regulated information. We investigate (i) the characteristics of the firms that stopped quarterly reporting in the fiscal year 2015; and (ii) the corporate and capital market behavior of such stoppers.

5.1 Determinants of the Decision to Stop Quarterly Reporting

The theoretical literature linking the decision to issue voluntary reports and past performance is mixed. On the one hand, studies suggest that firms disclose good news above a certain threshold and withhold bad news below that threshold (Verrecchia 1983; Dye 1985; Jung and Kwon 1988). On the other hand, the literature also suggests that firms disclose both good and

bad news when such news is material (Trueman 1997). Other factors that are likely related to the decision to continue with quarterly reporting include industry characteristics, uncertainty surrounding the firm's prospects, and firm size (Ali et al., 2014; Chen et al., 2011; Houston et al., 2010). Finally, firms that were less likely to issue guidance when the mandatory frequent reporting regime was in place are more likely to stop quarterly reporting, assuming that their reluctance to provide guidance is associated with their proclivity to disclose less information to the capital market in general.

Beginning fiscal year 2015, which was the first fiscal year after the end of mandatory quarterly reporting, we manually check company websites followed by the Capital IQ database for disclosures to assess whether firms stopped quarterly reporting.[14] Table 6, Panel A presents the descriptive statistics of the variables used in the analyses. Univariate differences suggest that small firms and non-guiders are more likely to stop quarterly reporting. Characteristics such as book-to-market, ADR, return volatility, leverage, and return on assets are not statistically different between the quarterly reporters and stoppers.

Next, we estimate a logistic multivariate model to ascertain the characteristics of firms that stopped quarterly reporting:

$$Stop_{i,t} = \alpha + \beta_1 Mktcap_{i,t-1} + \beta_2 Book\_market_{i,t-1} + \beta_3 ADR_{i,t-1} + \beta_4 Ret\_Vol_{i,t-1} + \beta_5 Leverage_{i,t-1} + \beta_6 ROA_{i,t-1} + \beta_7 Guide_{i,t-1} + \beta_8 Switching\ firms + Industry\ Fixed\ Effects + \varepsilon_{i,t}, \quad (3)$$

where *Stop* equals 1 if a firm stops quarterly reporting in 2015 and 0 otherwise; *Mktcap* is the log of the market capitalization on the last trading day of the fiscal year; *Book_market* is the book value of equity divided by market capitalization; *ADR* is equal to 1 if the firm traded in the United

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[14]Firms can stop quarterly reporting either by publicly announcing their decision or by doing so quietly. Therefore, we rely on company disclosures and regulatory filings rather than on press releases to identify the firms that stopped quarterly reporting.

States and 0 otherwise; *Ret_Vol* is the standard deviation of daily stock returns in the fiscal year; *Leverage* is book value of long-term debt divided by total assets; *ROA* is net income divided by total assets; *Guide* equals 1 if the firm provides managerial guidance and 0 otherwise; and *Switching firms* equals 1 if the firm mandatorily switched to quarterly reporting in 2008 and 0 otherwise.[15] Firms are classified into one of 12 industries, according to the classification in Professor Kenneth French's website. We estimate the above specification with and without industry fixed effects. Standard errors are clustered by firm.

Panel B of Table 6 presents the multivariate results. Consistent with the evidence from univariate results, small firms and non-guiders are more likely to stop quarterly reporting. However, the coefficient estimate on firm size becomes marginally significant after we add the *Guide* dummy to the model. Specifically, the coefficient estimate on *Guide* is -0.90 and significant at the level of 1%, whereas the coefficient estimate on market capitalization is -0.14 with a p-value of 0.16. Firms' decision to guide and their firm size are highly positively correlated (0.33). Hence, firm size (market capitalization) loads significantly when the guidance variable is excluded. Column (4) of Table 6 presents the results after we add industry fixed effects.[16] The findings suggest that firms in the energy industry are more likely to stop quarterly reporting. This is perhaps

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[15] We asked practitioners why only 9% of the sample stopped quarterly reporting. They cited four reasons. First, firms already had internal processes designed to produce quarterly reports and hence quarterly reporting did not impose any incremental cost from a compliance standpoint. Second, many investors are accustomed to looking at quarterly reports and might interpret stoppage as a sign of weak prospects of the firm (consistent with evidence in the U.S. reported by Chen et al. 2011). Third, some firms want to actively manage the flow of corporate information to the stock market and they believe quarterly reporting is part of that active disclosure management process. For instance, if firms only report on a semi-annual basis, they miss a potential chance to put public relations gloss on their companies' performance or analysts will look to U.S. peers who report 10Qs to make inferences on the U.K. company (consistent with Arif and DeGeorge 2016). We also heard opposing views. A prominent sell side analyst stated that owner-managed companies prefer to do away with quarterly reporting. Unfortunately, we do not have access to ownership data for U.K. firms to test this conjecture.

[16] We exclude financial services firms and chemical industry firms (financial services firms because of their peculiarities and chemical industry firms because none of these sample firms stopped quarterly reporting in 2015). The intercept on specification (4) of Table 7 is for the firms in the consumer nondurables industry.

unsurprising given that the energy industry experienced lower performance and higher operating uncertainty in 2015 due to falling oil prices.

Overall, firms that do not provide guidance when the mandatory reporting rule was in effect and firms in the energy industry are more likely to stop quarterly reporting after the FCA removed the quarterly reporting requirement.

5.2 Analyst Coverage and Forecast Properties: Before and After More Frequent Reporting

Small firms and non-guiders are likely to stop quarterly reporting. Hence, we expect analyst coverage to decline for the stoppers. However, analyst coverage may remain unchanged for stoppers if their marginal value to their clients increases after stoppers cease disclosure of reported information. To test the effect of halting quarterly reporting on analyst coverage and forecast properties, we adopt a difference-in-differences design and estimate the following multivariate model:

$$
\begin{aligned}
Analyst\_Prop_{i,t} = \; & \mu_1 \, Stop_{i,t} + \mu_2 \, Post*Stop_{i,t} + \mu_3 \, Mktcap_{i,t} + \mu_4 \, Book\_market_{i,t} + \mu_5 \, ADR_{i,t} \\
& + \mu_6 \, Ret\_Vol_{i,t} + \mu_7 \, Leverage_{i,t} + \mu_8 \, ROA_{i,t} + \mu_9 \, Investment_{i,t-1} + \mu_{10} \, D\_Firm \\
& + \mu_{11} \, D\_Time + \upsilon_{i,t}, \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad (5)
\end{aligned}
$$

all variables defined as above. The results of estimating Equation (5) are reported in Table 7. The evidence using the difference-in-differences design suggests that the stoppers of quarterly reporting experience a loss of analyst coverage. Specifically, as tabulated in columns (1) through (3) of Table 7, the coefficient estimate on the interaction between *Post* and *Stop* is statistically significant at a level of 5%. However, the discontinuation of quarterly reporting has little effect on other properties of analyst forecasts. Specifically, as reported in columns (4) through (12) of Table 7, coefficient estimates on the interaction between *Post* and *Treat* are statistically insignificant for forecast dispersion, forecast error, and absolute forecast error.

In the difference-in-differences tests, we control for the characteristics of the stoppers such as size, whether or not they provide guidance, and industry membership. As a robustness check, we repeat these tests using a propensity score matched control sample. In particular, we construct a propensity score matching model for each year on size, the guidance indicator, and industry membership to determine the control sample. Using this matched sample, we re-estimate specification (5). Un-tabulated findings suggest that all of our main takeaways are qualitatively similar using the matched sample.

Overall, the evidence suggests that in the U.K. setting, the halting of mandatory quarterly reporting is associated with a loss of analyst coverage but little else on the properties of analyst forecasts. This finding implies that analysts who kept following the stoppers found alternative outlets other than quarterly reporting to acquire the information about the future prospects of the firm.

6. Reporting Frequency and Managerial Real Actions

6.1 Managerial Real Actions Before and After More Frequent Reporting

In this section, we investigate the changes in investments among the mandatory rule adopters relative to voluntary rule adopters, before and after the rule change. Theoretical research on the impact of more frequent reporting on investments is mixed. On the one hand, Kanodia and Lee (1998) show that the anticipation of periodic performance reports has a disciplining effect on managers' ex ante investment decisions and makes them less likely to engage in overinvestment. On the other hand, Gigler et al. (2014) extend Stein's (1989) work to show that a higher reporting frequency increases the probability of short-term investment behavior by managers. Higher reporting frequency generates short-term performance measures that fail to reflect managerial actions that generate value only over the long run. This, in turn, encourages premature evaluation

of managers that makes it unviable for them to engage in long-term investments. Therefore, a more frequent reporting regime can exacerbate incentives for short-term investment behavior.

To investigate the managerial investment consequences of reporting frequency, we employ alternative investment measures, including capital expenditures; net plant, property, and equipment; R&D; and intangible assets. If more frequent reporting induces a short-term mindset among managers, then switching firms should be associated with lower investments relative to the pre-adoption period.

Univariate analysis

Table 1 presents the univariate patterns in investments for voluntary reporters and switching firms. Investments declined after the rule change for the switching firms to quarterly reporting. Specifically, capital expenditures declined by 1% of lagged total assets, and net plant, property, and equipment declined by 4% of lagged total assets. At the same time, capital expenditures and net plant, property, and equipment declined for the voluntary reporters as well after the reporting frequency rule change. The evidence from the correlation matrix, tabulated in Table 2, also confirms the findings in Table 1. Specifically, after the reporting frequency rule change, firms experienced lower investments. However, as the last column of Table 1 shows, the difference-in-difference impact is statistically insignificant for all of the investment measures. Overall, the univariate results do not suggest that more frequent reporting affects investment decisions.

Multivariate analysis

Next, we estimate a multivariate model that controls for factors that could influence managerial investment decisions. To do so, we estimate the following specification:

$$Investment_{i,t} = \gamma_1 Treat_{i,t} + \gamma_2 Post*Treat_{i,t} + \gamma_3 Mktcap_{i,t} + \gamma_4 Book\_market_{i,t} + \gamma_5 ADR_{i,t} + \gamma_6 Ret\_Vol_{i,t}$$
$$+ \gamma_7 Leverage_{i,t} + \gamma_8 ROA_{i,t} + \gamma_9 Cash_{i,t} + \gamma_{10} Investment_{i,t-1} + \gamma_{11} D\_Firm$$
$$+ \gamma_{12} D\_Time + \upsilon_{i,t}, \quad (6)$$

where *Investment* is one of the four investment measures: (1) *Capex:* capital expenditures scaled by beginning of the year total assets; (2) *NetPPE*: net plant, property, and equipment scaled by beginning of the year total assets; (3) *R&D:* research and development expenses scaled by beginning of the year total assets; and (4) *InTan:* intangible assets scaled by beginning of the year total assets. *Treat* equals 1 if the firm mandatorily switched to quarterly reporting and 0 otherwise. *Post* equals 1 for the sample years starting 2008 and 0 otherwise. *Cash* is cash, cash equivalents and short-term investments scaled by beginning of the year total assets. The interaction between *Post* and *Treat* is our variable of interest. A negative interaction term suggests more frequent reporting is associated with lower investments. All other variables are defined as above. The results of estimating Equation (6) are reported in Table 8. Similar to the univariate results, the coefficient estimates on the interaction between *Post* and *Treat* are not statistically significant in columns (3), (6), (9), and (12) of Table 8.[17]

As in the analyst following and forecast properties discussion, we repeat our analysis after dropping the sample from 2008-2010. Instead, we add the sample years from 2011-2013 to maintain the balance in pre- and post- reporting frequency rule change years. Un-tabulated results suggest that all our main inferences are qualitatively similar for this sample. Specifically, in the U.K. setting, more frequent financial reporting is not associated with decrease in investments.

Our inferences are robust to four sensitivity checks. First, we impose a restriction that all sample firms should be part of the full sample period (2005-2010). We repeat our main analysis

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[17]In un-tabulated tests, we repeat our analysis after replacing contemporaneous year investments with one year ahead investments.

on this sample. In un-tabulated results, we find that all our inferences are qualitatively similar. Second, we repeat the analysis for different cross-sectional partitions where under-investment is more relevant. In particular, performance measures prepared under the more frequent reporting regime for firms with longer investment cycles will fail to reflect managerial actions that generate value only in the long-run. We employ the following sub-samples to test this conjecture: (1) firms in biotech and oil industry as they are known to have long lags between investment and output, and (2) firms with "above median" operating cycles. We do not find that more frequent reporting affects investment decisions for these sub-groups of firms.

Third, we restrict our sample to (i) switching firms with quantitative quarterly reports and; to (ii) voluntary reporters that disclose quantitative reports before and after the reporting frequency rule change. The coefficient estimate on the interaction between *Post* and *Treat* in the specification (2) is not statistically significant for this sub-sample suggesting that the investment based results are no different if we were to restrict our sample to firms that provide quantitative quarterly reports. Fourth, the investment based results are also similar if we restrict our sample to firms that provide guidance on either earnings or sales. Taken together, the evidence suggests that, in the U.K. setting, more frequent financial reporting is not associated with a decrease in investments.

6.2 Managerial Real Actions Before and After the Discontinuation of More Frequent Reporting

If more frequent reporting effects investment decisions, then the firms that stopped quarterly reporting should invest more relative to the pre-adoption period and relative to voluntary quarterly reporters. To test this hypothesis, we estimate the following model:

$$Investment_{i,t} = \gamma_1 Stop_{i,t} + \gamma_2 Post*Stop_{i,t} + \gamma_3 Mktcap_{i,t} + \gamma_4 Book\_market_{i,t} + \gamma_5 ADR_{i,t} + \gamma_6 Ret\_Vol_{i,t}$$
$$+ \gamma_7 Leverage_{i,t} + \gamma_8 ROA_{i,t} + \gamma_9 Cash_{i,t} + \gamma_{10} Investment_{i,t-1} + \gamma_{11} D\_Firm$$
$$+ \gamma_{12} D\_Time + \upsilon_{i,t}, \qquad\qquad (7)$$

where *Stop* equals 1 if firm stops quarterly reporting in 2015 and 0 otherwise, and *Post* equals 1 for the sample year 2015 and 0 for the year 2014. A positive interaction term suggests suggests more frequent reporting is associated with higher investments. All other variables are defined as above. The results of estimating Equation (7) are reported in Table A2. In none of the specifications and alternative investment definitions considered, as documented in columns (1) through (12) of Table A2, are the coefficient estimates on the interaction between *Post* and *Stop* statistically significant. Next, as in the analyst following and forecast error analysis, we repeat our tests using the propensity score matching sample. Un-tabulated results suggest that all our inferences are qualitatively similar when we use this sample. Overall, the evidence suggests that in the U.K. setting, the discontinuation of quarterly reporting is not associated with higher investments.

7. Conclusions and Interpretation of the Findings

We investigate the consequences of changes to mandatory reporting frequency on managerial actions and capital markets in the U.K. Our first major finding is that the number of companies that announce quarterly reports with quantitative information declined after the adoption of less-burdensome quarterly reporting. In contrast, the number of firms that announce quarterly reports with qualitative information increased after the introduction of mandatory reporting. These findings are likely attributable to the FCA's regulatory philosophy that involves the issuance of minimal prescriptive guidance so as to allow the market to evolve to its own disclosure equilibrium. Moreover, voluntary quantitative reporters likely switched to the less restrictive qualitative regime after the regulator implicitly endorsed qualitative reporting as an adequate response to comply with the new mandatory quarterly reporting rules.

Second, managerial guidance increased substantially after mandatory more frequent reporting was adopted. Third, the initiation of mandatory more frequent reporting in 2008, increased analyst coverage for U.K. firms as a whole and is associated with lower analyst forecast error for switching firms. That is, equity analysts' ability to forecast future earnings appears to have improved after mandatory more frequent reporting. The discontinuation of mandatory more frequent reporting by certain firms effective 2015 is associated with a decline in analyst coverage, although forecast errors by analysts for such firms did not change.

Finally, the initiation of mandatory more frequent reporting in 2008 had virtually no effect on investment decisions by UK public companies – as proxied by capital expenditure; levels of plant, property, and equipment; research and development; and intangible assets, in the U.K. setting. Similarly, we found no significant change in the level of investment by U.K. firms shifting from quarterly to semiannual reporting effective 2015. Findings in the paper are likely informative to U.S. regulators and practitioners about the consequences of less burdensome quarterly reports (Securities and Exchange Commission 2015; Friedman 2017; Herz 2016).

We recognize that the U.K. context for quarterly reporting is different from that in the U.S. But there are enough similarities to make the findings potentially interesting to the U.S audience. Further, given the absence of a clear exogenous shock to reporting frequency in the U.S. in recent times, we hope that evidence from the U.K. experience is useful to the SEC's deliberations on whether to scale back quarterly reporting requirements.

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Table 1: Descriptive statistics

	Treatment Firms: Switching Firms			Control Firms: Voluntary Reporters			$Diff_{Treatment}$ $-Diff_{Control}$
	After	**Before**	*Diff*	**After**	**Before**	*Diff*	
# Obs	1525	1387		569	598		
Quant	0.04	0.00	**0.04**	0.20	0.44	**-0.24**	**0.28**
Guide	0.37	0.29	**0.09**	0.41	0.31	**0.10**	-0.01
CAPEX/Assets	0.05	0.06	**-0.01**	0.05	0.07	**-0.02**	0.01
PPE_Net/Assets	0.26	0.30	**-0.04**	0.26	0.31	**-0.05**	0.01
Intan/Assets	0.29	0.32	-0.03	0.35	0.34	0.01	-0.04
R&D/Assets	0.06	0.06	0.00	0.08	0.08	-0.01	0.01
ADR	0.03	0.04	-0.01	0.10	0.11	-0.01	0.00
MarketCap	18.25	18.78	-0.53	18.71	18.92	-0.22	**-0.31**
B/M	1.45	0.63	**0.81**	1.43	0.63	**0.80**	0.02
Leverage	0.22	0.22	0.00	0.22	0.21	0.01	-0.01
Ret_Vol	0.15	0.13	0.01	0.16	0.19	-0.03	0.04
ROA	0.02	0.04	-0.02	0.03	0.04	-0.01	**-0.01**
Cash/Assets	0.11	0.11	0.00	0.13	0.13	0.00	-0.01
Analyst Sample							
Analyst Following	3.39	2.79	**0.60**	4.78	3.77	**1.00**	-0.40
Forecast Dispersion	1.90	2.24	-0.35	2.15	1.94	0.21	-0.55
Forecast Error	0.02	0.14	-0.12	-0.12	0.74	-0.86	0.74
Forecast Accuracy	1.10	0.90	0.20	1.04	1.86	-0.81	**1.01**

This table presents descriptive statistics of key variables separately for the periods *after* the start of more frequent reporting (2008-2010) and *before* the start of more frequent reporting (2005-2007) and for switching firms and voluntary reporters. Firms that are mandatorily switched to quarterly reporting (issuing either quantitative or qualitative disclosures) starting in 2008 are classified as treatment firms. Firms that are quarterly reporters (issuing either quantitative or qualitative disclosures) prior to 2008 are voluntarily reporting at the quarterly frequency and are classified as the control sample. This table also reports univariate difference-in-differences. The *Diff* column compares average variables *after* and *before* the start of more frequent reporting. The $Diff_{Treatment}$ -$Diff_{Control}$ column reports the average difference-in-differences between switching firms and voluntary reporters. Differences significant at the 10% level or better are highlighted in bold.

Quant equals 1 if the firm reports quarterly sales and earnings figures, and 0 otherwise; *Guide* equals 1 if the firm provides managerial guidance on sales or earnings and 0 otherwise; *Capex* is capital expenditures scaled by beginning of the year total assets; *PPE_net* is net plant, property, and equipment scaled by beginning of the year total assets; *R&D* is research and development expenses scaled by beginning of the year total assets; *InTan* is intangible assets scaled by beginning of the year total assets.

ADR is equal to 1 if the firm traded in the United States and 0 otherwise; *Mktcap* is the log of the market capitalization on the last trading day of the fiscal year; *Book_market* is book value of equity divided by market capitalization; *Leverage* is book value of long-term debt divided by total assets; *Ret_Vol* is the standard deviation of daily stock returns in the fiscal year; *ROA* is net income divided by total assets; *Cash* is cash, cash equivalents and short-term investments scaled by beginning of the year total assets.

Analyst Following is the number of analysts following the stock; *Forecast Dispersion* is dispersion in analyst forecast errors, defined as the standard deviation of the forecast errors; *Forecast Error* is the analyst forecast error, defined as actual annual earnings minus the median analyst estimate made 90 days prior to the earnings announcement date; *Forecast Accuracy* is absolute forecast error.

Table 2: Correlation Matrix

	Post	Quant	Guide	Capx	Net_PPE	InTan	R&D	#Ana	Disp	FE	AFE	ADR
Post	1	**-0.07**	**0.10**	**-0.06**	**-0.06**	-0.01	-0.03	**0.08**	-0.01	-0.03	-0.01	-0.02
Quant	**-0.07**	1	0.00	**0.08**	**0.06**	0.02	**0.07**	**0.09**	0.01	0.03	**0.09**	**0.22**
Guide	**0.10**	0.00	1	**-0.07**	-0.08	0.02	-0.01	**0.26**	**-0.02**	**0.01**	**-0.05**	**0.11**
Capx	**-0.10**	**0.05**	-0.02	1	**0.59**	**0.07**	-0.06	0.03	**0.11**	0.16	0.22	**0.00**
Net_PPE	**-0.05**	**0.04**	**-0.05**	0.70	1	**0.22**	**-0.24**	**0.13**	0.05	**-0.02**	**-0.03**	0.05
InTan	**0.04**	-0.02	**0.09**	**-0.20**	**-0.37**	1	0.02	-0.01	-0.03	0.00	0.02	0.01
R&D	**-0.06**	**0.06**	0.02	**-0.16**	**-0.32**	0.02	1	**-0.14**	-0.03	**0.09**	**0.27**	-0.02
#Ana	**0.03**	**0.06**	**0.26**	**0.14**	**0.16**	0.03	**-0.22**	1	**0.07**	0.00	**-0.10**	**0.42**
Disp	-0.03	-0.01	**0.05**	-0.01	**0.07**	**-0.05**	-0.03	**0.23**	1	-0.02	**0.14**	0.02
FE	-0.02	-0.03	0.02	-0.01	0.01	**-0.08**	0.05	-0.03	0.03	1	**0.62**	-0.01
AFE	**-0.05**	-0.01	**-0.11**	0.00	**-0.09**	**-0.04**	**0.31**	**-0.30**	**0.31**	**0.23**	1	**-0.05**
ADR	-0.02	**0.22**	**0.11**	**0.06**	**0.08**	0.03	**-0.09**	**0.32**	**0.09**	-0.03	**-0.16**	1

This table presents Pearson (above the diagonal) and Spearman (below the diagonal) correlations among the key variables of interest. The sample and variable definitions are described in Table 1. Correlations significant at the 10% level or better are highlighted in bold.

Table 3: Disclosure Patterns – Univariates: Before and After More Frequent Reporting

Panel A: Full Sample

Year	Control Firms	Treatment Firms	Interim Qualitative	Interim Quantitative	No Guidance	Guide
Before						
2005	155	349	73	82	362	142
2006	219	525	121	98	534	210
2007	224	513	143	81	505	232
After						
2008	203	515	643	75	506	212
2009	193	514	657	50	447	260
2010	173	496	614	55	334	335

Panel B: Control Sample (Voluntary Reporters)

Year	Control Firms	Interim Qualitative	Interim Quantitative	No Guidance	Guide
Before					
2005	155	73	82	109	46
2006	219	121	98	152	67
2007	224	143	81	151	73
After					
2008	203	153	50	135	68
2009	193	162	31	117	76
2010	173	140	33	81	92

Panel C: Treatment Sample (Switching Firms)

Year	Treatment Firms	Interim Qualitative	Interim Quantitative	No Guidance	Guide
Before					
2005	349	.	.	253	96
2006	525	.	.	382	143
2007	513	.	.	354	159
After					
2008	515	490	25	371	144
2009	514	495	19	330	184
2010	496	474	22	253	243

This table presents disclosure patterns for the full sample, the control sample, and the treatment sample for the periods *before* the start of more frequent reporting (2005-2007) and *after* the start of more frequent

reporting (2008-2010). Panel A (B, C) presents the results for the full sample (control sample, treatment sample). Firms are classified as "quarterly quantitative reporting firms" if they disclose both sales and earnings information at the quarterly frequency and the rest of the firms are classified as "quarterly qualitative reporting firms." Firms that are mandatorily switched to quarterly reporting (issuing either quantitative or qualitative disclosures) starting in 2008 are classified as treatment firms. Firms that are quarterly reporters (issuing either quantitative or qualitative disclosures) prior to 2008 are voluntarily reporting at the quarterly frequency and are classified as the control sample. *Guide* equals 1 if the firm provides managerial guidance on sales or earnings and 0 otherwise.

Table 4: Disclosure Patterns – Difference between Post- and Pre- More Frequent Reporting

Panel A: Full Sample

	(1) Quant	(2) Quant	(3) Quant	(4) Guide	(5) Guide	(6) Guide
Post	**-0.50***	**-1.08***	**-1.74***	**0.51***	**0.83***	**1.92***
	(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
Mktcap	0.04	-0.20	-0.11	0.30***	0.21**	0.03
	(0.46)	(0.28)	(0.58)	(0.00)	(0.02)	(0.79)
Book_market	0.04	-0.11	-0.13	0.08***	0.04	0.07
	(0.25)	(0.19)	(0.13)	(0.00)	(0.43)	(0.14)
ADR	1.89***	-12.54***	-13.11***	-0.16	1.05	1.29
	(0.00)	(0.00)	(0.00)	(0.48)	(0.51)	(0.45)
Ret_vol	-0.03	-0.10	-0.20	-0.01	0.42**	0.37**
	(0.86)	(0.77)	(0.58)	(0.90)	(0.01)	(0.03)
Leverage	-0.69	-0.13	-0.01	0.31	0.41	0.69
	(0.22)	(0.89)	(0.99)	(0.25)	(0.56)	(0.36)
ROA	-1.51***	-4.89***	-5.45***	-0.11	0.13	0.58
	(0.00)	(0.00)	(0.00)	(0.77)	(0.87)	(0.48)
Constant	-2.59***	4.20	3.13	-6.78***	-22.13***	-16.96***
	(0.00)	(0.22)	(0.38)	(0.00)	(0.00)	(0.00)
#Obs	4,079	1,016	1,016	4,079	2,580	2,580
Firm FE	NO	YES	YES	NO	YES	YES
Year FE	NO	NO	YES	NO	NO	YES

Panel B: Control Sample (Voluntary Reporters)

	(1) Quant	(2) Quant	(3) Quant	(4) Guide	(5) Guide	(6) Guide
Post	**-1.30***	**-2.34***	**-3.36***	**0.55***	**0.73***	**1.59***
	(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
Mktcap	0.02	-0.04	0.10	0.35***	0.08	-0.10
	(0.76)	(0.85)	(0.72)	(0.00)	(0.64)	(0.63)
Book_market	0.07	0.03	0.02	0.04	-0.07	-0.06
	(0.12)	(0.75)	(0.85)	(0.29)	(0.54)	(0.64)
ADR	2.09***	10.30***	10.24***	0.03	14.21***	12.89***
	(0.00)	(0.00)	(0.00)	(0.93)	(0.00)	(0.00)
Ret_vol	-0.01	-0.16	-0.24	0.04	0.45	0.43
	(0.95)	(0.65)	(0.58)	(0.81)	(0.11)	(0.13)
Leverage	-0.34	-1.00	-1.10	0.08	0.32	0.64
	(0.58)	(0.45)	(0.46)	(0.86)	(0.81)	(0.65)
ROA	-2.20***	-2.14	-2.51	-0.40	0.57	0.66
	(0.00)	(0.18)	(0.14)	(0.55)	(0.69)	(0.66)
Constant	-0.70	4.14	2.09	-7.53***	-30.11***	-23.66***
	(0.51)	(0.44)	(0.73)	(0.00)	(0.00)	(0.00)
#Obs	1,167	699	699	1,167	720	720
Firm FE	NO	YES	YES	NO	YES	YES
Year FE	NO	NO	YES	NO	NO	YES

This table presents multivariate regression results of disclosure patterns for the periods *before* the start of more frequent reporting (2005-2007) and *after* the start of more frequent reporting (2008-2010). Panel A (B) presents the results for the full sample (control sample). *Post* equals 1 for the sample years 2008-2010 and 0 for the years 2005-2007. *Quant* equals 1 if the firm reports quarterly sales and earnings figures, and 0 otherwise; *Guide* equals 1 if the firm provides managerial guidance on sales or earnings and 0 otherwise. All other variables are defined in Table 1. Standard errors are clustered by firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table 5: Analyst Properties – Multivariate Tests: Difference in Differences between Treatment and Control Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Cov. Gain	Cov. Gain	Cov. Gain	Disp	Disp	Disp	FE	FE	FE	AFE	AFE	AFE
Treat	-0.08***	0.36*	0.30	0.76	4.58*	3.71	0.21	0.56	0.56	-0.02	1.35	1.25
	(0.00)	(0.06)	(0.12)	(0.36)	(0.10)	(0.12)	(0.17)	(0.50)	(0.51)	(0.91)	(0.34)	(0.34)
Post*Treat	**0.07***	**0.07***	**0.04**	**-0.87**	**-0.31**	**-1.22**	**0.03**	**-0.14**	**-0.46***	**0.01**	**-0.14**	**-0.00**
	(0.01)	**(0.05)**	**(0.50)**	**(0.24)**	**(0.60)**	**(0.39)**	**(0.81)**	**(0.42)**	**(0.10)**	**(0.95)**	**(0.41)**	**(0.99)**
Mktcap	0.02***	-0.01	-0.00	0.10***	-0.35	-0.30	-0.02	-0.01	0.00	0.09***	-0.10	-0.10
	(0.00)	(0.72)	(0.96)	(0.01)	(0.25)	(0.34)	(0.23)	(0.90)	(0.96)	(0.00)	(0.15)	(0.16)
Book_market	0.01	0.02*	0.01	-0.01	-0.14	-0.20	0.04	0.11	0.11	-0.02	-0.09	-0.10
	(0.21)	(0.07)	(0.12)	(0.85)	(0.36)	(0.20)	(0.30)	(0.22)	(0.25)	(0.66)	(0.30)	(0.26)
ADR	-0.01	-0.02	-0.06	0.19	0.95	1.27	0.13	-0.26	-0.32	-0.48***	0.96	0.81
	(0.88)	(0.95)	(0.89)	(0.72)	(0.73)	(0.70)	(0.22)	(0.78)	(0.72)	(0.00)	(0.44)	(0.46)
Ret_vol	0.00	0.06	0.07	-0.14	-0.30	-0.12	-0.12*	0.06	0.07	-0.09	-0.10	-0.11
	(0.78)	(0.17)	(0.16)	(0.56)	(0.46)	(0.80)	(0.10)	(0.56)	(0.54)	(0.18)	(0.33)	(0.32)
Leverage	0.20***	0.38**	0.31	0.14	3.79	3.15	0.03	-0.54	-0.75	-1.77***	0.72	0.75
	(0.00)	(0.04)	(0.10)	(0.90)	(0.49)	(0.55)	(0.95)	(0.57)	(0.42)	(0.00)	(0.35)	(0.33)
ROA	0.47***	0.55***	0.58***	-1.24	17.75	18.08	4.01**	3.74	4.01	-5.35***	-3.19	-3.38
	(0.00)	(0.01)	(0.00)	(0.86)	(0.53)	(0.54)	(0.02)	(0.34)	(0.32)	(0.00)	(0.22)	(0.21)
#Obs	2,050	2,050	2,050	1,156	1,156	1,156	1,547	1,547	1,547	1,547	1,547	1,547
Adj R^2	0.42	0.34	0.34	0.07	0.09	0.09	0.02	0.28	0.28	0.15	0.55	0.55
Firm FE	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year FE	NO	NO	YES	NO	NO	YES	NO	NO	YES	NO	NO	YES

This table presents multivariate results of the analyst coverage and forecast properties for the periods *before* and *after* the start of more frequent reporting. *Treat* equals 1 if the firm mandatorily switched to quarterly reporting and 0 otherwise. *Post* equals 1 for the sample years 2008-2010 and

0 for the years 2005-2007. *Cov. Gain* equals 1 if the number of analysts following the stock increases and 0 otherwise; *Disp* is dispersion in analyst forecast errors, defined as the standard deviation of the forecast errors; *FE* is the analyst forecast error, defined as actual annual earnings minus the median analyst estimate made 90 days prior to the earnings announcement date; *AFE* is absolute forecast error. All other variables are defined in Table 1. Standard errors are clustered by firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6: Discontinuation of More Frequent Reporting: Descriptive Statistics and Determinants

Panel A: Descriptive Statistics

	Stoppers	Quarterly Reporters	*Diff*
# Obs	45	471	
MarketCap $_{t-1}$	18.97	19.71	**-0.74**
B/M $_{t-1}$	0.86	0.70	0.16
ADR $_{t-1}$	0.07	0.07	0.00
Ret_Vol $_{t-1}$	0.38	0.34	0.04
Leverage $_{t-1}$	0.24	0.22	0.02
ROA $_{t-1}$	0.01	0.03	-0.02
Switching firms	0.80	0.78	0.02
Guide $_{t-1}$	0.51	0.72	**-0.21**

Panel B: Determinants of Stoppers (Stop=1 if a firm stops quarterly reporting)

| | Stop | | | |
	(1)	(2)	(3)	(4)
Mktcap$_{t-1}$	-0.21**	-0.21**	-0.14	-0.15
	(0.03)	(0.03)	(0.16)	(0.15)
Book_market$_{t-1}$	0.02	0.03	0.02	-0.04
	(0.88)	(0.87)	(0.91)	(0.82)
ADR$_{t-1}$	0.43	0.44	0.41	0.58
	(0.55)	(0.54)	(0.57)	(0.47)
Ret_vol$_{t-1}$	0.08	0.08	0.05	0.08
	(0.54)	(0.54)	(0.67)	(0.56)
Leverage$_{t-1}$	1.07	1.05	1.29	1.05
	(0.23)	(0.24)	(0.15)	(0.28)
ROA$_{t-1}$	-0.30	-0.30	-0.18	0.39
	(0.82)	(0.83)	(0.89)	(0.79)
Switching firms		0.08	0.08	0.15
		(0.84)	(0.84)	(0.73)
Guide$_{t-1}$			-0.90***	-0.89**
			(0.01)	(0.01)
Durable				0.70
				(0.58)
Manufacturing				0.70
				(0.34)
Energy				1.54*
				(0.07)
Business Equipment				0.56
				(0.44)
Telecom				-0.01
				(0.99)
Utilities				1.10
				(0.43)
Shops				-0.11
				(0.89)
Healthcare				-0.59
				(0.62)
Other				0.49
				(0.47)
Constant	1.40	1.31	0.60	0.41
	(0.43)	(0.48)	(0.75)	(0.85)
Obs	479	479	479	463

This table presents descriptive statistics of key variables and determinants of the decision to stop quarterly reporting. The sample covers the fiscal year 2015, which is the first fiscal year after the end of mandatory quarterly reporting. Firms that stop quarterly reporting are classified as *Stoppers*, and firms that continue

to report at the quarterly frequency are classified as *Quarterly reporters*. *Diff* is the univariate differences in key characteristics. Differences significant at the 10% level or better are highlighted in bold.

Panel A presents the descriptive statistics of key variables of interest. *Mktcap* is the log of the market capitalization on the last trading day of the fiscal year; *Book_market* is book value of equity divided by market capitalization; *ADR* is equal to 1 if the firm traded in the United States and 0 otherwise; *Ret_Vol* is the standard deviation of daily stock returns in the fiscal year; *Leverage* is book value of long-term debt divided by total assets; *ROA* is net income divided by total assets; *Guide* equals 1 if the firm provides managerial guidance and 0 otherwise; *Switching firms* equals 1 if the firm mandatorily switched to quarterly reporting in 2008.

Panel B presents the determinants of the decision to stop quarterly reporting. *Stop* equals 1 if a firm stops quarterly reporting in 2015 and 0 otherwise. The coefficient estimates on the determinants are estimated using the logistic regression. Firms are classified into one of 12 industries according to the classification in Professor Kenneth French's website. Standard errors are clustered by firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table 7: Analyst Properties: Difference in Differences between Treatment (Stoppers) and Control Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Cov. Loss	Cov. Loss	Cov. Loss	Disp	Disp	Disp	FE	FE	FE	AFE	AFE	AFE
Stop	-0.12	-1.17***	1.34	-0.40	5.45	0.28	0.15	1.99	-2.82	-0.21	0.05	-4.47
	(0.22)	(0.00)	(0.76)	(0.38)	(0.55)	(0.99)	(0.56)	(0.16)	(0.79)	(0.43)	(0.97)	(0.59)
Post*Stop	**0.35****	**0.55****	**0.53****	**-0.63**	**-0.71**	**-0.94**	**0.03**	**0.66**	**0.56**	**-0.14**	**-0.44**	**-0.25**
	(0.02)	**(0.02)**	**(0.03)**	**(0.12)**	**(0.46)**	**(0.43)**	**(0.93)**	**(0.41)**	**(0.42)**	**(0.69)**	**(0.57)**	**(0.70)**
Mktcap	0.03***	-0.01	-0.02	0.07***	-0.28	-0.34	-0.09	-0.12	-0.17	0.15**	0.45	0.53
	(0.00)	(0.98)	(0.93)	(0.00)	(0.57)	(0.49)	(0.15)	(0.85)	(0.81)	(0.02)	(0.43)	(0.40)
Book_market	0.04**	-0.01	-0.03	-0.63***	0.02	-0.17	0.94*	1.18	1.10	-0.96*	-1.01	-0.86
	(0.05)	(0.97)	(0.90)	(0.00)	(0.98)	(0.72)	(0.08)	(0.31)	(0.29)	(0.06)	(0.36)	(0.37)
ADR	-0.12**	1.49	1.84	1.19	26.64	28.79*	-0.16	1.68	3.13	-0.19	-9.42	-12.05
	(0.04)	(0.77)	(0.72)	(0.15)	(0.13)	(0.08)	(0.59)	(0.91)	(0.85)	(0.52)	(0.44)	(0.40)
Ret_vol	-0.01	-0.07	-0.08	0.15	1.14	1.04	-0.18	0.11	0.06	0.13	0.19	0.28
	(0.69)	(0.50)	(0.47)	(0.42)	(0.45)	(0.47)	(0.14)	(0.68)	(0.85)	(0.29)	(0.48)	(0.41)
Leverage	-0.21**	-0.81	-0.84	-0.18	4.81	4.35	2.55	-3.39	-3.65	-3.69**	-0.03	0.46
	(0.04)	(0.40)	(0.38)	(0.86)	(0.66)	(0.68)	(0.18)	(0.29)	(0.28)	(0.04)	(0.99)	(0.88)
ROA	-0.62***	-1.52	-1.48	0.34	5.33	5.49	14.96*	14.71	14.68	-16.13**	-13.53	-13.46
	(0.00)	(0.13)	(0.14)	(0.85)	(0.51)	(0.51)	(0.08)	(0.44)	(0.43)	(0.05)	(0.49)	(0.49)
#Obs	666	666	666	422	422	422	563	563	563	563	563	563
Adj R^2	0.49	0.33	0.33	0.17	0.32	0.32	0.15	0.77	0.77	0.21	0.78	0.78
Firm FE	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year FE	NO	NO	YES	NO	NO	YES	NO	NO	YES	NO	NO	YES

This table presents multivariate results of the analyst coverage loss and forecast properties for the periods *before* and *after* the end of mandatory quarterly reporting. *Stop* equals 1 if a firm stops quarterly reporting in 2015 and 0 otherwise. *Post* equals 1 for the sample year 2015 and 0 for the year 2014. *Cov. Loss* equals 1 if the number of analysts following the stock decreases and 0 otherwise; *Disp* is dispersion in analyst forecast errors, defined as the standard deviation of the forecast errors; *FE* is the analyst forecast error, defined as actual annual earnings minus the median analyst estimate made 90 days prior to the earnings announcement date; *AFE* is absolute forecast error. All other variables are defined in Table 1. Standard errors are clustered by firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table 8: Investment Patterns – Multivariate Tests: Difference in Differences between Treatment and Control Sample

	(1) Capex	(2) Capex	(3) Capex	(4) NetPPE	(5) NetPPE	(6) NetPPE	(7) R&D	(8) R&D	(9) R&D	(10) InTan	(11) InTan	(12) InTan
Treat	-0.00	-0.01	-0.02*	0.00	-0.03	-0.05*	0.00	0.00	-0.00	-0.02	-0.13	-0.14
	(0.72)	(0.23)	(0.06)	(0.73)	(0.26)	(0.10)	(0.72)	(0.89)	(0.80)	(0.40)	(0.31)	(0.26)
Post*Treat	**-0.00**	**-0.01*****	**0.01**	**-0.01**	**-0.03*****	**0.02**	**-0.00**	**0.00**	**0.01**	**-0.01**	**-0.01**	**-0.01**
	(0.73)	**(0.00)**	**(0.15)**	**(0.50)**	**(0.00)**	**(0.47)**	**(0.39)**	**(0.45)**	**(0.43)**	**(0.39)**	**(0.54)**	**(0.83)**
Mktcap	0.00***	0.00	0.00*	0.00***	0.00	0.00	0.00	0.00	0.00	0.01***	0.02	0.03*
	(0.00)	(0.12)	(0.08)	(0.00)	(0.18)	(0.18)	(0.11)	(0.37)	(0.28)	(0.00)	(0.10)	(0.08)
Book_market	0.00	0.00	0.00	0.00	0.00*	0.00	-0.00	0.00	0.00	0.01	0.01	0.01
	(0.99)	(0.14)	(0.59)	(0.21)	(0.10)	(0.30)	(0.34)	(0.56)	(0.61)	(0.20)	(0.37)	(0.47)
ADR	-0.00	-0.03*	-0.04***	-0.00	-0.02	-0.04	0.00	-0.02	-0.03	0.04	0.12	0.08
	(0.43)	(0.05)	(0.01)	(0.96)	(0.57)	(0.29)	(0.35)	(0.45)	(0.39)	(0.61)	(0.63)	(0.75)
Ret_vol	0.00	-0.00	-0.00	0.02*	-0.01	-0.01	-0.00	0.00	-0.00	-0.03**	-0.00	-0.01
	(0.11)	(0.30)	(0.59)	(0.08)	(0.27)	(0.44)	(0.43)	(0.91)	(0.81)	(0.02)	(0.78)	(0.65)
Leverage	0.01	0.03	0.03	0.20***	0.20**	0.21**	-0.01	-0.03	-0.03	0.03	0.21**	0.22**
	(0.19)	(0.19)	(0.12)	(0.00)	(0.02)	(0.02)	(0.56)	(0.40)	(0.39)	(0.65)	(0.02)	(0.01)
ROA	0.03**	0.06***	0.05**	0.13***	0.28***	0.25***	-0.06***	-0.00	-0.01	-0.03	0.27	0.24
	(0.02)	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)	(0.00)	(0.97)	(0.93)	(0.84)	(0.24)	(0.31)
Cash	0.04***	0.04	0.04	-0.02	0.02	0.03	0.05***	0.04	0.04	0.11	0.34	0.32
	(0.01)	(0.20)	(0.18)	(0.62)	(0.68)	(0.55)	(0.00)	(0.22)	(0.23)	(0.53)	(0.33)	(0.33)
Capex_Lag	0.45***	0.03	0.02									
	(0.00)	(0.65)	(0.78)									
NetPPE_Lag				0.52***	-0.09	-0.09						
				(0.00)	(0.18)	(0.16)						
R&D_Lag							0.87***	0.11	0.11			
							(0.00)	(0.24)	(0.24)			
InTan_Lag										0.13*	-0.02	-0.02
										(0.07)	(0.17)	(0.15)
#Obs	3,215	3,215	3,215	3,237	3,237	3,237	1,075	1,075	1,075	3,218	3,218	3,218
Adj R²	0.53	0.66	0.67	0.69	0.85	0.85	0.87	0.92	0.92	0.35	0.58	0.58
Firm FE	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year FE	NO	NO	YES	NO	NO	YES	NO	NO	YES	NO	NO	YES

This table presents multivariate regression results of investment patterns for the periods *before* and *after* the start of more frequent reporting. *Treat* equals 1 if the firm mandatorily switched to quarterly reporting and 0 otherwise. *Post* equals 1 for the sample years 2008-2010 and 0 for the years 2005-2007. *Capex* is capital expenditures scaled by beginning of the year total assets; *PPE_net* is net plant, property, and equipment scaled by beginning of the year total assets; *R&D* is research and development expenses scaled by beginning of the year total assets; *InTan* is intangible assets scaled by beginning of the year total assets. All other variables are defined in Table 1. Standard errors are clustered by firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table A1: Real Accrual Management: Difference in Differences between Treatment and Control Sample

	Treatment Firms: Switching Firms			Control Firms: Voluntary Reporters			$Diff_{Treatment}$ $-Diff_{Control}$
	After	Before	*Diff*	After	Before	*Diff*	
# Obs	1510	1366		563	579		
Disc_Prod	0.09	-0.16	0.25	0.46	1.28	-0.82	1.07
Disc_Exp	0.19	0.28	-0.09	-0.56	-0.84	0.27	-0.37

This table presents results of real accrual management patterns separately for the periods *after* the start of mandatory quarterly reporting (2008-2010) and *before* the start of mandatory quarterly reporting (2005-2007) and for switching firms and voluntary reporters. Firms that are mandatorily switched to quarterly reporting starting in 2008 are classified as treatment firms. Firms that are quarterly reporters (issuing either quantitative or qualitative disclosures) prior to 2008 are voluntarily reporting at the quarterly frequency and are classified as the control sample. *Disc_Prod* (*Disc_Exp*) is the abnormal production costs (abnormal discretionary expense), estimated following the methodologies outlined in Ernstberger et al. (2016). This table also reports univariate difference-in-differences. The *Diff* column compares average variables *after* and *before* the start of mandatory quarterly reporting. The $Diff_{Treatment}$-$Diff_{Control}$ column reports the average difference-in-differences between switching firms and voluntary reporters. Differences significant at the 10% level or better are highlighted in bold (none of the differences are statistically significant).

Table A2: Investment Patterns: Difference in Differences between Treatment (Stoppers) and Control Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Capex	Capex	Capex	NetPPE	NetPPE	NetPPE	R&D	R&D	R&D	InTan	InTan	InTan
Stop	0.00	0.21	-0.11	0.01	0.33	-0.73	0.00	-0.09	0.52	-0.03	0.21	-5.08*
	(0.91)	(0.17)	(0.44)	(0.57)	(0.51)	(0.13)	(0.83)	(0.65)	(0.19)	(0.20)	(0.10)	(0.05)
Post*Stop	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**	**0.00**	**0.01**	**0.01**	**0.16**	**0.11**	**0.11**
	(0.58)	**(0.74)**	**(0.56)**	**(0.79)**	**(0.66)**	**(0.51)**	**(0.77)**	**(0.38)**	**(0.48)**	**(0.17)**	**(0.40)**	**(0.45)**
Mktcap	0.00*	0.00	0.00	0.00	0.04*	0.04*	0.00**	-0.02	-0.02	0.00	0.30***	0.30**
	(0.05)	(0.66)	(0.51)	(0.65)	(0.09)	(0.08)	(0.04)	(0.23)	(0.22)	(0.21)	(0.01)	(0.01)
Book_market	-0.00	0.01	0.01	0.00	0.02	0.02	-0.01**	-0.01	-0.01	-0.02*	0.23**	0.23**
	(0.93)	(0.39)	(0.29)	(0.50)	(0.39)	(0.32)	(0.05)	(0.68)	(0.65)	(0.06)	(0.03)	(0.04)
ADR	-0.00	-0.07	-0.11	-0.00	-0.78	-0.88	0.03	0.67	0.70	-0.00	-7.28**	-7.23**
	(0.12)	(0.68)	(0.51)	(0.71)	(0.15)	(0.12)	(0.13)	(0.25)	(0.24)	(0.86)	(0.02)	(0.02)
Ret_vol	0.00	-0.00	-0.00	-0.00	-0.01	-0.01	0.00	-0.03	-0.03	-0.01	-0.03	-0.03
	(0.24)	(0.78)	(0.89)	(0.86)	(0.53)	(0.62)	(0.84)	(0.43)	(0.42)	(0.21)	(0.37)	(0.34)
Leverage	0.00	0.00	0.00	0.04*	0.11	0.12	-0.06**	0.02	0.02	0.08	1.54*	1.54*
	(0.58)	(0.98)	(0.90)	(0.10)	(0.16)	(0.14)	(0.04)	(0.84)	(0.87)	(0.18)	(0.09)	(0.10)
ROA	-0.01	0.06	0.05	0.04	0.03	0.02	-0.18**	-0.12*	-0.12*	0.02	0.04	0.05
	(0.50)	(0.25)	(0.26)	(0.26)	(0.83)	(0.86)	(0.02)	(0.08)	(0.09)	(0.92)	(0.90)	(0.89)
Cash	0.02	0.10	0.10	-0.00	-0.11	-0.10	0.11	0.23	0.23	0.17*	-0.04	-0.04
	(0.38)	(0.39)	(0.38)	(0.94)	(0.19)	(0.21)	(0.11)	(0.12)	(0.12)	(0.05)	(0.89)	(0.89)
Capex_Lag	0.73***	-0.11	-0.11									
	(0.00)	(0.36)	(0.36)									
NetPPE_Lag				0.93***	-0.57***	-0.57***						
				(0.00)	(0.00)	(0.00)						

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	1	2	3	4	5	6	7	8	9	10	11	12
R&D_Lag							0.65***	-0.55	-0.56			
							(0.00)	(0.23)	(0.23)			
InTan_Lag										0.79***	-0.60***	-0.60***
										(0.00)	(0.00)	(0.00)
#Obs	966	966	966	968	968	968	440	440	440	965	965	965
Adj R^2	0.74	0.90	0.90	0.92	0.98	0.98	0.71	0.89	0.89	0.64	0.80	0.80
Firm FE	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year FE	NO	NO	YES	NO	NO	YES	NO	NO	YES	NO	NO	YES

This table presents multivariate regression results of investment patterns for the periods *before* and *after* the end of mandatory quarterly reporting. *Stop* equals 1 if a firm stops quarterly reporting in 2015 and 0 otherwise. *Post* equals 1 for the sample year 2015 and 0 for the year 2014. *Capex* is capital expenditures scaled by beginning of the year total assets; *PPE_net* is net plant, property, and equipment scaled by beginning of the year total assets; *R&D* is research and development expenses scaled by beginning of the year total assets; *InTan* is intangible assets scaled by beginning of the year total assets. All other variables are defined in Table 1. Standard errors are clustered by firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.