11-2021

Do firms respond to peer disclosures? Evidence from clinical trial disclosures

Vedran CAPKUN
HEC Paris

Yun LOU
Singapore Management University, yunlou@smu.edu.sg

Clemens A. OTTO
Singapore Management University, clemensotto@smu.edu.sg

Yin WANG
Singapore Management University, ywang@smu.edu.sg

Do Firms Respond to Peer Disclosures? Evidence from Disclosures of Clinical Trial Results*

Vedran Capkun
HEC Paris
capkun@hec.fr

Yun Lou
Singapore Management University
yunlou@smu.edu.sg

Clemens A. Otto
Singapore Management University
clemensotto@smu.edu.sg

Yin Wang
Singapore Management University
ywang@smu.edu.sg

First draft: June 2016
Current draft: November 2021

ABSTRACT

Using data on the registration of clinical trials and the disclosures of the trials' results on ClinicalTrials.gov, we examine how firms respond to peer disclosures. We find that firms are less likely to disclose the results of their own trials if the results of a larger number of closely related trials are disclosed by the firms' peers. This relation is stronger if the firms face higher competition (as measured by the number of competing trials), and it is weaker if the firms are further along in their research than the peers (as measured by the phase of the trials) and if the peers' disclosures convey more negative news for the firms (as measured by the firms' stock price reaction). In an ancillary test, we also find that firms are more likely to abandon their own, ongoing trials if a larger number of peers disclose the results of closely related trials.

* We thank Jeremy Bertomeu, François Brochet, Shuping Chen, Qiang Cheng, Davide Cianciaruso, Richard Crowley (discussant), Joachim Gassen, Robert Holthausen, Ilan Guttman, Bjorn Jorgensen, April Klein, Pepa Kraft, Meziane Lasfer, Reuven Lehavy, Edward Li, Xiumin Martin, Richard Mergenthaler, Gregory Miller, Peter Pope, William Rees, Cathy Shakespeare, Lakshmanan (Shiva) Shivakumar, Shiva Sivaramakrishnan, Hervé Stolowy, Steve Stubben, Joanna Wu, Gwen Yu, Xiaolu Zhou (discussant), and workshop participants at the 2016 AAA/Deloitte Foundation/J. Michael Cook Doctoral Consortium, 2017 AAA Annual Meeting, 2017 EAA Annual Congress and Doctoral Colloquium, HEC Paris, INSEAD, 2017 LBS Trans-Atlantic Doctoral Conference, 2019 SMU SOAR Accounting Research Summer Camp, University of Melbourne, University of Michigan, and University of Michigan PhD Accounting research seminar for helpful comments and suggestions. We gratefully acknowledge the financial support of HEC Paris, HEC Paris Foundation, Singapore Management University, and Investissements d'Avenir (ANR-11-IDEX-0003/Labex Ecodec/ANR-11-LABX-0047). Vedran Capkun is a member of GREGHEC, CNRS Unit, UMR 2959.

1. Introduction

Notwithstanding both moral obligations and legal requirements, the results of many clinical trials are not disclosed to the public in a timely manner (Zarin et al. 2011, 2015; Anderson et al. 2015). For example, in a sample of industry-sponsored clinical trials that ended between 2008 and 2012, Anderson et al. (2015) find that the trials' results were reported within one year (five years) of the trials' end dates in only 17% (42%) of the cases. In this paper, we seek to contribute to the understanding of this low disclosure rate by studying the role that peer disclosures play for the trial sponsors' decision to reveal or withhold their own trials' results.

Studying whether trial-sponsoring firms (which we refer to as "focal" firms) reveal their own trials' results in response to other sponsors' reporting choices also offers an opportunity to gain valuable insights into the question how one firm's disclosure decision is shaped by the disclosure decisions of its peers more generally. The setting of clinical trial results reporting is particularly useful for this endeavor for several reasons.

First, the results of clinical trials – and, hence, their disclosure – are likely to be very important to the trial-sponsoring firms themselves, to investors, and to competitors (e.g., Guo et al. 2004; Reuters 2015). The reason is that clinical trials constitute an essential part of the drug development process, which is characterized by fast paced innovation (which creates large information asymmetries) as well as fierce competition (which entails high proprietary costs). Hence, both the benefits and the costs of disclosing clinical trial results are likely to be high, making the disclosure decision all the more relevant. We thus expect firms' decision whether or not to disclose the results of their own clinical trials to be made strategically and in full consideration of their peers' disclosure choices.

Second, we can obtain high quality data. Specifically, ClinicalTrials.gov, a public registry of clinical trials information that is maintained by the National Library of Medicine at the National Institutes of Health (NIH), provides us with a host of details on the types, timings,

and outcomes of clinical trials and their sponsors' results disclosure decisions. This allows us to conduct a very finely-grained analysis, down to the level of individual medical conditions.

Finally, despite the legal obligation to disclose that arises from the FDA Modernization Act of 1997 (FDAMA) and the FDA Amendments Act of 2007 (FDAAA), trial-sponsoring firms exercise considerable discretion when it comes to the disclosure of clinical trial results, as evidenced by the low reporting rates documented in several studies (e.g., Zarin et al. 2011, 2015; Anderson et al. 2015). That is, the firms truly make a *decision* whether or not to disclose.

Using a sample of 4,561 clinical trials that were conducted by 119 publicly listed firms and ended between January 2008 and March 2014, we find strong evidence that the firms are significantly less likely to disclose the results of their own trials if the results of a larger number of closely related trials (i.e., trials pertaining to the same medical condition) are disclosed by the firms' peers.[1] This result is consistent with theoretical frameworks in which firms make disclosure decisions by trading off the benefit of reducing information asymmetry against the cost of revealing proprietary information (e.g., Verrecchia 1990): If the amount of asymmetric information has already been reduced by peer firms' results disclosures, then a focal firm has less to gain from the costly disclosure of its own trial results and is thus less likely to disclose.[2]

In line with this interpretation is the following non-finding that we obtain in a placebo test: In a setting where the trial sponsors' disclosure decisions are unlikely to be driven by a trade-off between the costs of disclosure and the benefits of reducing asymmetric information, we do not find any relation between peers' and focal sponsors' disclosure decisions. Specifically,

[1] Our analysis focuses primarily on whether firms disclose the results before or on the FDAAA mandated deadline one year after the trials' end. We find very similar results, however, when asking whether firms disclose at any time (i.e., before, on, or after the deadline), and we find that peer disclosures are associated with a lower likelihood that firms disclose before or on the deadline if they disclose at any time. We present both results in Appendix B.

[2] The premise that peer disclosures contain relevant information about the focal firms and reduce information asymmetry is supported by the finding that the absolute value of the focal firms' cumulative abnormal return (CAR) in the three days around the peer disclosures is statistically significant and that the peer disclosures are associated with a lower return volatility for the focal firms. We show both results in Table B.1 in Appendix B.

there is no evidence of a relation between peer disclosures and the disclosure decisions of non-industry trial sponsors (e.g., universities), which are presumably less concerned about revealing proprietary information or reducing securities underpricing due to asymmetric information.[3]

An important concern regarding our empirical findings is that the focal firms' disclosure decisions may be influenced by peer disclosures not only directly, through a reduction in asymmetric information, but also indirectly, through a real effects channel. In particular, peer disclosures could affect the focal firms' investment decisions, which could then in turn affect their disclosure choices. This concern cannot be ruled out completely. Yet, its severity is mitigated by our study's particular setting as well as by a number of empirical findings.

First, in our setting, the potential indirect effect of peer disclosures through focal firms' investments is likely to be limited. The reason is that we study whether focal firms disclose the results of clinical trials that have already ended, and we measure peer disclosures that occur *after* the focal firms' trials have ended. Hence, whereas these peer disclosures may affect follow-on investments, they cannot affect the already-ended trials themselves or their results (e.g., the focal firms cannot add participants or extend the trials in response to the peer disclosures). Indeed, the fact that the information to be disclosed (i.e., the trial results) and the activity that generated this information (i.e., the trials) predate the peer disclosures is a distinct advantage of our setting relative to other situations where peer disclosures are more likely to affect both real activities that are still ongoing (e.g., production) and, through the real activities, the information to be disclosed (e.g., earnings expectations).

Second, controlling for various proxies of the focal firms' investment does not affect our results. In particular, our findings are not affected by controlling for the focal firms' capital expenditures and R&D expenses. Furthermore, our results are robust to controlling for the

[3] Instead, non-industry sponsors such as universities are likely to decide for other reasons whether to disclose their trial results, e.g., to enhance their research reputation. For example, they may decide to disclose their results if and only if the quality of the data and analysis exceeds a certain threshold.

number of new trials that are started by the focal firms. While none of these controls are perfect, the robustness of our findings to their inclusion is nonetheless comforting as it suggests that a potential indirect effect, whereby the peer disclosures affect the focal firms' disclosure decisions through an investment channel, is unlikely to be overwhelmingly large.

Another concern is that peer disclosures are not randomly assigned. In particular, unobserved factors such as industry shocks may exert a common influence on the disclosure decisions of both peers and focal firms. Note, however, that the ensuing reflection problem (Manski 1993) should induce a positive correlation between the peers' and focal firms' disclosure decisions and thus bias against finding the negative relation that we predict and document. The fact that our findings are robust to controlling for year and firm fixed effects as well as a large number of firm and trial characteristics mitigates endogeneity concerns further.

Finally, to provide additional evidence in support of a causal link between peers' and focal firms' disclosure decisions, we corroborate our findings using a difference-in-differences analysis around plausibly exogenous peer disclosures. To do so, we make use of the fact that some peers publicly commit to disclose the results of all trials within one year of the trials' end date. The peers' disclosure decisions in these cases are thus less likely to be driven by unobserved characteristics of the individual trials but instead more likely due to the peers' public commitment to full disclosure. Hence, these peer disclosures are more likely to be exogenous to the focal firms' disclosure decisions.

In addition to our main analysis, we also provide a number of cross-sectional results. We begin by distinguishing between completed and terminated trials as well as between trials in different clinical phases. These tests reveal that the overall relation between peer and focal firms' disclosures stems from completed trials and trials in phase 3, which are also known as "pivotal studies." In contrast, we find no significant relation between peer and focal firms' disclosures for terminated trials and non-pivotal studies (i.e., non-phase 3 trials).

Next, we examine how the impact of peer disclosures varies with competition, with how far advanced the focal firms' trials are relative to the peers' trials, and with the focal firms' stock price reactions around the peer disclosures. These analyses reveal that the relation between peer disclosures and focal firms' disclosure choices is stronger if the focal firms face higher competition (as measured by the number of competing trials). In contrast, the relation is weaker if the focal firms are further along in their research than the peers (as measured by the phase of the trials) and if the peer disclosures convey more negative news for the focal firms (as measured by their stock price reaction).

Finally, in an ancillary analysis, we investigate a possible real effect of peer disclosures. Specifically, we examine the relation between peer disclosures that occur *before* the focal firms' trials end and the focal firms' decision to abandon the trials. This test reveals that focal firms are significantly more likely to abandon ongoing trials if a larger number of their peers disclose the results of closely related trials. Our findings are thus consistent with the study of Glaeser and Landsman (2021), who argue that firms may use disclosures to deter competition.

Our paper makes several contributions. Most importantly, we contribute to the growing empirical literature on disclosure peer effects. Specifically, by providing new evidence from a new setting, our paper adds to the ongoing inquiry into whether and under what circumstances peer disclosures entail an increase or decrease in focal firms' disclosures. This is relevant because, while a relation between peer and focal firms' disclosures has been documented by several studies and in various settings, a consensus on what role peer disclosures play for other firms' disclosure decisions has yet to emerge. In particular, the existing evidence on disclosure peer effects is not clear-cut in the sense that some studies find a negative relation whereas others find a positive relation. For example, the findings of Baginski and Hinson (2016) and Breuer et al. (2021) suggest a negative relation between peer and focal firms' disclosures. Seo's (2021) findings, instead, suggest a positive relation.

Our paper differs from the aforementioned studies in several important aspects. First, whereas the other studies examine the disclosure of financial information, we examine the disclosure of clinical trial results – i.e., non-financial information – which can have higher proprietary costs or a stronger deterrence effect on competitors. Second, whereas Baginski and Hinson (2016) and Seo (2021) examine the disclosure of forward-looking expectations in the form of management earnings forecasts, we examine the disclosure of realized outcomes in the form of the results of clinical trials that have already ended. Breuer et al. (2021) also examine realized outcomes, in the form of firms' financial statements, but in a notably different setting. Specifically, they examine how the mandatory disclosures of regulated firms affect the voluntary disclosures of unregulated firms for whom disclosure is not mandatory. We, in contrast, study the disclosures of peers and focal firms that are all subject to the same disclosure requirements. Third, whereas Baginski and Hinson (2016) and Breuer et al. (2021) predict a negative relation between peers' and focal firms' disclosures (as we do), Seo (2021) predicts a *positive* relation based on the argument that peer disclosures increase the precision of information that is privately known by a focal firm's management and shift investors' attention towards the peers. In our paper, we instead predict a *negative* relation between peer and focal firms' disclosures based on the argument that the information contained in peer disclosures reduces information asymmetries between the focal firms and outside investors, in response to which the focal firms become less likely to disclose their own information.[4]

Beyond the literature on disclosure peer effects, our paper also contributes to the literature on noncompliance with mandatory disclosure requirements. Prior studies have documented, for example, that some firms do not comply with the requirement to disclose legal liabilities (Desir et al. 2010), tax contingencies (e.g., Robinson and Schmidt 2013; Ayers et al. 2015),

[4] This intuition mirrors Verrecchia's (1990) result that the more is commonly known about a firm, the lower is the benefit of disclosing additional private information and, as disclosure is costly, the firm discloses less.

executive compensation (Robinson et al. 2011), or internal control weaknesses (Rice and Weber 2012). We add to this literature by documenting substantial noncompliance with the requirement to disclose clinical trial results and provide evidence that firms are significantly less likely to comply (i.e., disclose their results by the FDAAA mandated deadline) if the results of a larger number of closely related trials are disclosed by the firms' peers. An important regulatory implication is that the current enforcement of the disclosure requirements for clinical trial results is not sufficient to ensure actual compliance by the trials' sponsors.

Finally, our paper contributes to the literature on reporting externalities, information spill-overs, and the real effects of peer disclosures (e.g., Foster 1981; Bushee and Leuz 2005; Badertscher et al. 2013; Shroff et al. 2017; Zhang 2020). In particular, our finding that firms are more likely to abandon their own, ongoing trials if a larger number of peers disclose their results provides further evidence that peer disclosures can have real effects. Most closely related, in this regard, is the work of Zhang (2020), who studies the relation between firms' initiation of later-stage clinical trials and the number of early-stage trials that were registered in prior years by the firms' rivals. Despite the communality in the empirical setting, however, Zhang (2020) and our study are primarily concerned with two different phenomena. Specifically, Zhang (2020) focuses on a real effect of peers' trial registration but does not examine the disclosure of trial results. Our paper, in contrast, is primarily concerned with a disclosure effect and examines how firms' decision to disclose their own trial results is related to the disclosure of trial results by the firms' peers.[5]

2. Setting

2.1. Clinical trials

[5] Two further studies that examine clinical trials and the impact of the FDAAA – although with different research questions – are Bourveau et al. (2020), who examine how the FDAAA impacts information asymmetries between trial sponsors and outsiders (e.g., the capital market), and Hsu et al. (2021), who examine the effect of information disclosure on drug development and find significantly more suspensions of new drug projects after the FDAAA.

Clinical trials study how a drug (or medical device or intervention) interacts with the human body (FDA, 2018).[6] Such trials constitute an essential part of the drug development process and generally follow a series of different phases. Phase 1 clinical trials usually involve only a small number or participants (e.g., 20 to 100) and typically last for several months. These trials' main purpose is to investigate a drug's safety and appropriate dosage. About 70% of the drugs then move on to the next phase.

Phase 2 clinical trials typically involve up to several hundred participants and last from several months to two years. Such trials are aimed at studying the efficacy and side effects of a drug, but they are generally not large enough to determine if the drug is overall net-beneficial. About one third of the drugs that are examined in phase 2 trials move on to the next phase.

Phase 3 clinical trials, also known as "pivotal studies," are intended to demonstrate whether a drug offers a treatment benefit to a specific population. They typically last from one to four years and involve 300 to 3,000 participants. Phase 3 trials are therefore more likely than phase 1 or 2 trials to reveal any long-term or rare side effects. About 25% to 30% of the drugs subsequently move on to the next phase.

Following a phase 3 clinical trial, a developer can file an application to market a drug if the accumulated evidence indicates that the drug is safe and effective for its intended use. The FDA then reviews all submitted data and decides whether to approve the drug. In that case, a phase 4 clinical trial may be carried out during the FDA's post-market safety monitoring (i.e., after FDA approval has already been obtained). These trials commonly involve several thousand participants and are aimed at providing further data on a drug's safety and efficacy.

2.2. Registration and results reporting for clinical trials on ClinicalTrials.gov

[6] The description of clinical trials in this section follows the description provided by the U.S. Food and Drug Administration (https://www.fda.gov/patients/drug-development-process/step-3-clinical-research). Sertkaya et al. (2014) estimate an average cost of $4 million for phase 1 trials, $13 million for phase 2 trials, $20 million for phase 3 trials, and a total cost of bringing a new drug to market between $161 million and $2 billion.

ClinicalTrials.gov is a website that serves as a publicly accessible registry of clinical trials information.[7] It was established by the FDA and NIH following the FDA Modernization Act of 1997, which introduced the first U.S. federal law to require the registration of both federally and privately funded clinical trials conducted under investigational new drug applications to test the effectiveness of experimental drugs for serious or life-threatening diseases or conditions. The website is maintained by the National Library of Medicine at the NIH and was made available to the public in February 2000.

The legal requirements for trial sponsors to provide information to ClinicalTrials.gov were subsequently expanded by the FDA Amendments Act of 2007 (FDAAA). In particular, Section 801 of the FDAAA required more types of trials to be registered on ClinicalTrials.gov as well as the disclosure of certain trial results, including outcomes and adverse events, in the ClinicalTrials.gov results database no later than one year after a trial's end. In general, these requirements apply to all clinical trials of drugs, medical devices, or biologics beyond phase 1 that were initiated after 27 September 2007 (or earlier but were still ongoing as of 26 December 2007), have at least one research site in the U.S., or are conducted under an investigational new drug application or an investigational device exemption (Anderson et al. 2015).[8] Section 801 of the FDAAA also established penalties for failing to register applicable trials or submit their results (e.g., monetary penalties of up to $10,000 per day or withholding of NIH grant funding).

Despite the obligations codified in the FDAAA, however, many trial sponsors do not report their results to ClinicalTrials.gov in a timely manner (Zarin et al. 2011, 2015; Anderson et al. 2015). For example, in a sample of industry-sponsored trials that ended between 2008 and

[7] This section is based on information provided by the FDA (https://clinicaltrials.gov/ct2/home).

[8] The requirement to report the results within one year of a trial's end does not apply categorically to every single trial that must be registered on ClinicalTrials.gov, there can be legally acceptable reasons for a delay, and trial sponsors may request extensions of the results submission deadline for good cause. For example, if a trial sponsor submits a certification that the trial studied a product that was not approved, licensed, or cleared by the FDA for any use as of the end of the standard results submission deadline one year after the trial's end, then the deadline can be delayed until 30 days after the product is approved, licensed, or cleared by the FDA.

2012, Anderson et al. (2015) find that the results were reported within one year (five years) of the trials' end in only 17% (42%) of the cases. Multiple factors may help explain this finding. First, although the FDAAA specifies possible penalties for non-compliance, as of July 2014, the FDA has never actually penalized any sponsor for failing to report the results (FDA 2014; The Economist 2015) and instead appears to rely on the sponsors' voluntary compliance.[9] Consequently, the sponsors of clinical trials may perceive the expected penalty for non-compliance to be low and, as disclosing results may be costly (e.g., due to the costs of revealing proprietary information to competitors), they may decide not to comply with the FDAAA.

Second, the FDAAA of 2007 lacked implementation guidelines, and the exact conditions determining whether, how, and when the results of a trial must be reported are not always entirely straightforward. In the absence of clear guidelines, there may thus have been a substantial amount of perceived ambiguity whether results needed to be reported or not. Indeed, a notice of proposed rulemaking that described the requirements and procedures for registering trials and submitting results was not released by the U.S. Department of Health and Human Services (HHS) before November 2014, and a final rule for clinical trials registration and results information that further clarified the requirements was not issued until September 2016. Moreover, according to the allegations made in the lawsuit Seife v. HHS (and supported by the judge's ruling in favor of the plaintiff), the HHS misinterpreted the FDAAA regarding the requirements to disclose the results of certain clinical trials and thereby created substantial loopholes for the trial sponsors during the period from 2007 to 2017 (Ropes & Gray 2020).

3. Predictions

[9] According to the FDA's response letter to U.S. Congressman Lance (dated 10 July 2014), *"To date, there have been no civil monetary penalties assessed for noncompliance with the requirements of section 801 of FDAAA."* In this letter, the FDA also states that it *"has been able to achieve voluntary compliance in certain cases where we have identified apparent noncompliance and brought that to the attention of the responsible party."*

Our paper's main hypothesis is that the results of an industry-sponsored clinical trial are less likely to be disclosed on ClinicalTrials.gov by the trial's sponsor (which we refer to as the "focal firm") if other trial sponsors (which we refer to as "peers") have already disclosed the results of clinical trials that examine the same medical condition as the focal firm's trial. In this section, we discuss the economic rationale for this prediction. A theoretical model that formalizes our arguments is provided in Appendix A.

The key intuition is based on the following setup. Consider a focal firm whose clinical trial has ended and that must now decide whether to comply with the FDAAA and disclose the trial's results or to defy the regulation and withhold the results. In spirit, the firm's decision problem is thus akin to the setup that is commonly used to model voluntary disclosure decisions (e.g., Verrecchia 1990): The firm possesses relevant, private information and must decide whether or not to reveal this information to the public.

In this framework, the firm then decides whether to disclose its trial results – and hence whether to comply with the FDAAA – by comparing the cost and benefit of disclosure. This leads to the following trade-off: On the one hand, disclosure reduces asymmetric information between the firm and outside investors and thereby reduces underpricing of the firm's securities. On the other hand, disclosure comes at a cost (e.g., the cost of preparing and disseminating information or the cost of revealing proprietary information to competitors). The firm thus prefers disclosure to non-disclosure if the benefit of reducing asymmetric information outweighs the cost of disclosure.[10]

[10] Another reason why firms may prefer to comply and disclose their results is that, otherwise, shareholders could potentially sue the firms for withholding information. For example, in January 2019, shareholders of Menlo Therapeutics Inc. sued the firm, alleging that its IPO registration statement had provided misleading information about the prospects of phase 3 trials for the treatment of pruritus and the likelihood of FDA approval. Note, however, that to the extent that shareholder litigation risk is determined primarily by the nature of a given industry (e.g., Francis et al. 1994), our within-pharmaceutical-industry analysis should not be affected by variation in litigation risk. Nonetheless, we include explanatory variables such as stock return, return volatility, and book-to-market in our analysis to control for potential firm-level differences in litigation risk (e.g., Kim and Skinner 2012).

Peer disclosures affect the above trade-off – and thus the focal firm's disclosure decision – because they reduce the amount of asymmetric information between the focal firm and the outside investors. For example, if the peer trials and the focal firm's trial are independent studies of the same medical treatment, then one would expect that the results of the peer trials are informative also about the focal firm's trial. This, in turn, matters for the focal firm's disclosure decision because, if there is little asymmetric information to begin with, then there is little to gain for the focal firm from disclosing its own trial results. Consequently, if the amount of asymmetric information between the focal firm and the outside investors has already been reduced by peer disclosures, then the focal firm is less likely to disclose its own trial results. This intuition mirrors Verrecchia's (1990) result that the more information is already commonly known about a firm, the lower is the benefit of disclosing additional private information and, as disclosure is costly, the firm discloses less. Hence, we predict that peer disclosures reduce a focal firm's propensity to disclose its own trial results.

4. Analysis

4.1. Research design

To examine the relation between peer disclosures and focal firms' propensity to disclose their own trial results, we estimate regression models of the following form:

$$\textit{Disclosure by FDAAA Deadline} = \beta_0 + \beta_1 \cdot \textit{Peer Disclosures} + \sum \lambda_n \cdot \textit{Firm-Level Controls} + \sum \theta_n \cdot \textit{Trial-Level Controls} + \textit{Year Fixed Effects} + \textit{Firm Fixed Effects} + \varepsilon. \quad (1)$$

The dependent variable, *Disclosure by FDAAA Deadline*, is a 0/1-indicator that is equal to 1 if a focal firm discloses its own trial results on ClinicalTrials.gov by the FDAAA mandated deadline one year after the trial's end date. [11,12] Using an indicator that is equal to 1 if the results

[11] If the FDA has extended the standard, one-year deadline upon a firm's request, we use the extended deadline.
[12] In addition to disclosures on ClinicalTrials.gov, firms may disclose their trials' results also via other channels (e.g., 8-Ks, 10-Ks, or press releases). Given that the FDAAA mandates disclosures through ClinicalTrials.gov,

are disclosed at any time (i.e., before, on, or after the deadline) or an indicator that is equal to 1 if the results are disclosed by the deadline conditional on being disclosed at any time leads to very similar findings. We provide these results in Tables B.4 and B.5 in Appendix B.

The key explanatory variable is *Peer Disclosures*. It is defined as the natural logarithm of 1 plus the number of disclosures of results of closely related clinical trials by other trial sponsors (i.e., peers) during the 365 days preceding the focal firm's disclosure deadline.[13,14] We consider clinical trials to be closely related if they examine the same medical condition, as indicated by carrying the same Medical Subject Heading (MeSH).[15]

When counting the peer disclosures, we consider disclosures by all types of peers (i.e., by all types of trial sponsors, including non-industry sponsors), and we consider peer trials irrespective of whether they are subject to the FDAAA disclosure rules themselves. We do so because whether the results of closely related peer trials contain relevant information is arguably unlikely to depend on whether the trials were conducted by non-industry sponsors (e.g., universities) or not subject to the FDAAA disclosure rules (e.g., phase 1 trials). Untabulated tests, however, confirm that our findings are robust to excluding peer disclosures by non-industry sponsors or peer trials that are not subject to the FDAAA disclosure rules.

Firm-Level Controls are firm characteristics known to be related to disclosure decisions.[16] Specifically, we control for the focal firms' market capitalization and ROA to proxy for the potential costs of noncompliance with the FDAAA, based on the notion that larger and more

---

however, we expect these to be the most relevant. We indeed find strong market reactions to results disclosures on ClinicalTrials.gov, consistent with their importance to firms and investors (Table B.1 in Appendix B).

[13] Considering, alternatively, only peer disclosures between the focal firm's trial end date and the earlier of the FDAAA disclosure deadline and the focal firm's actual disclosure date (if any) makes our findings even stronger.

[14] Using an indicator equal to 1 if the number of peer disclosures exceeds the sample median yields similar results.

[15] MeSH are created by the U.S. National Library of Medicine to index journal articles and books in the health sciences and used by ClinicalTrials.gov to classify trials. If a trial is assigned multiple MeSH, in order to capture the most relevant one, we use the MeSH with the highest number of peer disclosures. Using the mean or median number of peer disclosures across MeSH does not change our findings. Using an alternative definition of medical conditions based on the MeSH tree structure does not change our findings either (Table B.2 in Appendix B).

[16] Appendix C provides definitions. All firm-level characteristics are measured as of the last completed fiscal year before the FDAAA disclosure deadline. Continuous variables are winsorized at the 1st and 99th percentile.

profitable firms may face higher scrutiny from regulators and investors. We include the firms' book-to-market ratio to capture the incentives to communicate private information to the public (Graham et al. 2005; Lennox and Park 2006; Waymire 1985), and we control for the firms' stock return and volatility as well as for a loss indicator to account for the influence of the firms' performance on their disclosure decisions (e.g., Chen et al. 2011; Lennox and Park 2006; Miller 2002). We control for institutional ownership (Ajinkya et al. 2005; Karamanou and Vafeas 2005) and analyst following (Baginski and Hassell 1997) to proxy for the information demand from institutional investors and analysts. Further, to capture the firms' general propensity to disclose their own trial results, we control for *Own Past Disclosures*, defined as the natural logarithm of 1 plus the number of results disclosures that the firms made during the year before the FDAAA deadline for trials that studied the same medical condition. Finally, to mitigate concerns about a real effects channel, whereby peer disclosures impact the focal firms' investments which in turn affect their disclosure decisions, we add two controls aimed at capturing the firms' investment policies. First, we control for the firms' overall level of investment, measured as the sum of capital expenditures and R&D expenses scaled by total assets (e.g., Baker et al. 2003). A caveat, here, is that the total dollar amount of investment may not capture all relevant dimensions, e.g., because firms could be adapting their project portfolios and shift investment to new trials without changing the overall amount of investment. As a second control, we thus also include the number of new trials pertaining to the same medical condition that are registered by the focal firms on ClinicalTrials.gov.

Trial-Level Controls are characteristics of the trials that may affect the disclosure decisions. Specifically, we distinguish between completed and terminated trials and include indicators for trials in phases 3 and 4 (leaving phase 2 as the baseline category).[17] We also control for whether trials are funded entirely by industry-sponsors and conducted under FDA oversight, and we

[17] The FDAAA disclosure rules do not apply to trials before phase 2, so earlier-phase trials are not in the sample.

include the number of sponsors and an indicator that is equal to one if the focal firm is the lead sponsor. Finally, we include a proxy for the level of competition among firms whose clinical trials study the same medical condition, *Normalized Trial HHI,*[18] as prior research suggests that competition can affect firms' disclosure choices (e.g., Cao et al. 2018; Huang et al. 2017).

In addition to the firm- and trial-level controls, we also include year fixed effects and firm fixed effects in the regressions to account for time-varying factors that affect all firms (e.g., macroeconomic conditions) as well as time-invariant heterogeneity at the firm-level. We cluster the standard errors at the trial-level.[19]

Figure 1, Panel A, provides a hypothetical example that illustrates the timing of focal firms' and peers' disclosures in our analysis. Trial A, in this example, is registered on ClinicalTrials.gov by focal firm F on 20 July 2009 and ends on 30 November 2010. Hence, the FDAAA mandated deadline by which focal firm F is required to disclose trial A's results via ClinicalTrials.gov is 30 November 2011. In our analysis, *Disclosure by FDAAA Deadline* would thus be equal to 1 (0) if the results of trial A are (are not) disclosed on ClinicalTrials.gov by focal firm F before or on 30 November 2011. *Peer Disclosures* would be equal to Ln(1+N), where N is the number of results disclosures that pertain to other trials that study the same medical condition as trial A (i.e., "closely related trials") and that are made by other trial sponsors (i.e., focal firm F's "peers") between 30 November 2010 and 30 November 2011.

4.2. Sample selection

[18] We construct *Normalized Trial HHI* as follows: For each medical condition and year, we compute the sum of the squared market shares of all firms with completed trials pertaining to the medical condition, where the market shares are based on the firms' total sales. We then normalize the sum by subtracting 1/N and then dividing by 1 – 1/N, where N is the number of firms. If *Normalized Trial HHI* is missing, we replace it with the sample mean.
[19] We cluster at the trial-level as trials can involve multiple sponsors and disclosures, making within-trial correlation possible. Clustering by firm-year or firm does not change the results (Table B.3 in Appendix B).

We obtain data on clinical trials and results disclosures from ClinicalTrials.gov as well as information from the Aggregate Analysis of ClinicalTrials.gov (AACT) database, which is available through the Clinical Trials Transformation Initiative (CTTI) website.[20]

To create a sample of focal firm trials that are subject to the FDAAA disclosure rules, we begin by applying the selection criteria of Anderson et al. (2015).[21] We thus retain only interventional studies of phase 2 or higher that were completed or terminated between January 2008 and March 2014 and exclude studies that were not conducted under FDA oversight and exclusively outside of the U.S. or did not involve a biological, device, drug, genetic, or radiation intervention.[22] Next, we retain only observations that pertain to trial sponsors that can be matched to financial information needed for our analysis from Compustat, CRSP, Thomson Reuters, and I/B/E/S.[23] We further exclude trials of focal firms that either always or never disclose their results, and we exclude four observations for which the indicated results disclosure date precedes the trial's end date (and thus suggests a data entry error). Finally, we exclude 74 observations of trials that were conducted by GlaxoSmithKline and Novartis after their commitments to full disclosure because we will use these trials as a source of exogenous variation in a difference-in-differences analysis in Section 5. The final sample consists of 4,794 observations at the focal firm-trial level, pertaining to 119 unique firms and 4,561 unique trials.[24] A detailed account of the overall selection procedure is provided in Table 1.

4.3. Descriptive statistics

[20] CTTI aggregates and restructures raw data downloaded from ClinicalTrials.gov to facilitate statistical analysis. The AACT data that we use is as of 27 March 2015.
[21] Anderson et al. (2015) use data as of 27 September 2013 and exclude trials that ended after August 2012. Our AACT data is as of 27 March 2015. We exclude from the sample of focal firm trials those that ended after March 2014 to leave one additional year of data during which we can observe the disclosure decisions.
[22] If the required data is missing (e.g., data on the study type is missing), then we exclude the affected observations.
[23] As trials can have multiple sponsors, some trials could have co-sponsors for which financial information is not available (e.g., universities). Excluding such trials does not change our findings (Table B.6 in Appendix B.)
[24] The unit of observation in our analysis is a combination of a focal firm and a trial that is sponsored by the firm. Hence, as trials can be sponsored by multiple firms, the number of observations at the focal firm-trial level (4,794) is larger than the number of unique trials (4,561).

Table 2 provides descriptive statistics. Consistent with prior literature, many trial results are not disclosed in a timely manner: The mean of *Disclosure by FDAAA Deadline* (*Disclosure at Any Time*) indicates that the results are disclosed within one year of the trials' end date (at any time) in only 32% (60%) of the cases.[25] Figure 2 presents a histogram of the number of days between the trials' end date and the results disclosure date for those trials whose results are eventually disclosed. The distribution shows a noticeable peak just before the disclosure deadline, 365 days after the trials' end date. That is, if firms disclose their trials' results, then they are disproportionately likely to do so just before the FDAAA deadline. Indeed, about 24% of all disclosures occur within the last 30 days before the deadline. The remaining 76% of the disclosures do not appear to follow a very clear pattern: Their lag-times are distributed fairly homogenously, with a slight increase in the disclosure frequencies leading up to the FDAAA deadline and a slight decrease thereafter, followed by an eventual tapering off.[26]

A possible explanation why some firms may not disclose their results early on but later is that the proprietary costs of disclosure may decline over time. For example, disclosure may become less costly once an initially non-disclosing firm has exploited its head-start and gained a sufficiently large advantage over its competitors. Indeed, one could even imagine that the cost of disclosure eventually becomes negative (i.e., turns into a net benefit), once a firm is sufficiently far ahead. In that case, the firm may even prefer to disclose its results in order to deter competition (e.g., Glaeser and Landsman 2021).

We further note that, in the model that motivates our analysis (Appendix A), firms disclose their results if the benefit of reducing asymmetric information outweighs the cost of disclosure, relative to the expected penalty for not disclosing and thereby defying the FDAAA. Hence, as

[25] Anderson et al. (2015) find that 17% (42%) of the results are reported within 1 year (5 years) in a sample that comprises both public and private firms. The higher reporting rates in our sample are likely due to our focus on publicly listed firms, which may have higher incentives to comply with the FDAAA than private firms.

[26] Unreported analyses reveal a significant, negative correlation (-0.05) between the number of days since a trial's end date and the focal firm's cumulative abnormal return (CAR) around the disclosure date. This result is consistent with the notion that firms tend to disclose more positive trial results sooner than more negative results.

avoiding such a penalty is only one side of the tradeoff, our model can rationalize why some firms disclose their results even if the FDAAA deadline already passed (so that the penalty is incurred either way) or if the expected penalty is zero (e.g., if the FDAAA is not enforced).

Regarding disclosures by the focal firms' peers, Table 2 shows that the mean value of *Peer Disclosures*, defined as the natural logarithm of one plus the number of peer disclosures, is 2.4. The 25th (75th) percentile is 1.4 (3.4), and the standard deviation is 1.3. In terms of raw numbers, this corresponds to a mean of 19.6 peer disclosures during the 365 days preceding a focal firm's disclosure deadline, with a 25th (75th) percentile of 3 (29) and a standard deviation of 21.9.

Evidence on the information content of the peer disclosures is presented in Table B.1 in Appendix B. Consistent with our premise that peer disclosures contain relevant information about the focal firms, we find that the absolute value of the focal firms' cumulative abnormal return (CAR) in the three days around the peer disclosures is statistically significant at the 1% level. Consistent with the premise that peer disclosures reduce asymmetric information between the focal firms and investors, we further find that the peer disclosures are associated with a lower return volatility for the focal firms: The correlation coefficient between *Peer Disclosures* and focal firms' return volatility is -0.20 and significant at the 1% level.[27] Additional support for the idea that peer disclosures reduce asymmetric information between investors and focal firms is provided by the finding that the absolute value of the focal firms' CAR around their own disclosures is smaller if their peers have already disclosed the results of closely related trials: If investors have already learned some relevant information from the peer disclosures, then they respond less to the focal firms' own disclosures.

The focal firms that sponsored the trials have an average market capitalization of $86 billion (untabulated) and an average book-to-market ratio of 0.5. The firms' average yearly

[27] Regressing the focal firms' return volatility on *Peer Disclosures* corroborates this result: The estimated coefficient on *Peer Disclosures* is negative and statistically significant at the 1% level (unreported).

stock return is 21%, and the average return volatility (estimated at the daily frequency) is 1.8%. The average ROA is 3.5%, and 12.6% of the observations pertain to cases where the focal firms reported a negative net income in the year preceding the FDAAA disclosure deadline. The firms' average institutional ownership is 43%, and the average number of analysts following the firms is 13. The average value of capital expenditures and R&D expenses, scaled by total assets, is 0.15, and the average number of new trials registered by the sponsoring focal firm during the 365 days preceding the FDAAA disclosure deadline is 2.1.

Regarding the different trial characteristics, Table 2 reveals that 82% (18%) of the trials were completed (terminated). The average number of trial sponsors is 1.7, and the focal firm is the lead sponsor in 71% of the cases. 75% of the trials are sponsored exclusively by industry-sponsors (i.e., do not involve any non-industry sponsors such as universities), and 84% are conducted under FDA oversight. 47% are phase 2, 36% phase 3, and 17% are phase 4 trials. The average, normalized trial HHI is 0.21, and the average number of disclosures of other trials' results by the firm during this period is 1.6.

4.4. Results

Table 3 shows the results pertaining to the relation between peer disclosures and the likelihood that a focal firm discloses its own trial results before or on the FDAAA deadline, one year after the trial's end.[28] Columns (1) and (2) are based on OLS. Column (3) is based on a probit model. All columns include year fixed effects and column (2) also firm fixed effects.[29]

The estimated coefficient on *Peer Disclosures* is negative and statistically significant at the 1% level in all three columns.[30] This finding supports our prediction that a focal firm is less

[28] The indicated number of observations refers to the observations that are effectively used in the estimation procedure, after iteratively dropping cases with only a single observation for a given fixed effect (so-called "singletons"). This note applies to all regression tables.
[29] We do not use firm fixed effects in the probit model to avoid an incidental parameters problem (Greene 2004).
[30] Note that *Peer Disclosures* captures disclosures *after* a focal firm's trial ends. Unreported robustness tests confirm that controlling for peer disclosures in the year *before* a focal firm's trial ends does not change the results.

likely to disclose its own trial results before the FDAAA deadline if more of the firm's peers disclose the results of trials that are related to the same medical condition as the focal firm's trial. In terms of economic magnitude, our estimates suggest that an increase in *Peer Disclosures* by one standard deviation is associated with a reduction in the probability that a focal firm discloses its own trial results before the FDAAA deadline by 4% to 5%.[31]

The signs of the estimated coefficients on the different control variables are generally in line with the existing literature. For instance, we find some evidence that firms with a larger market capitalization and higher ROA are more likely to disclose their trial results before the FDAAA deadline, consistent with the idea that the cost of non-compliance with the FDAAA may be higher for larger and more profitable firms. Similarly, we find some evidence that firms with higher analyst following are more likely to disclose their trial results. This finding is consistent with the notion that firms with higher analyst following have higher capital market pressure, which incentivizes them to remain transparent to investors.

Interestingly, the estimated coefficients on the two proxies for the focal firms' investment policies, *Investment (CAPX+R&D)* and *Own Registrations of New Trials*, are small in magnitude and not statistically significant in any specification. This result is comforting, as it helps to mitigate the concern that the relation between peer disclosures and focal firms' disclosure decisions might be driven by a real effects channel, whereby peer disclosures affect a focal firm's investment which then in turn affects the firm's disclosure decision. Both controls are imperfect, and we cannot completely rule out the above-mentioned concern of a real effects channel. However, the finding that our results are robust to the inclusion of the two investment proxies suggests that a potentially confounding effect that may operate through firms' investment decisions is unlikely to be overwhelmingly large.

[31] The standard deviation of *Peer Disclosures* is 1.294 (Table 2). A coefficient of -0.0309 in column (2) of Table 3, for example, thus implies that an increase in *Peer Disclosures* by one standard deviation is associated with a change in a focal firm's disclosure likelihood by 1.294 * -0.0309 = -0.04 = -4%.

Regarding the various trial-level characteristics, we find that the results of completed trials are more likely to be disclosed before the FDAAA deadline than the results of terminated trials. Further, the likelihood of disclosure is higher for phase 3 and phase 4 trials than for phase 2 trials (the baseline category in the regressions), consistent with Enache et al. (2021), who find increasing product disclosure in biotechnology firms' 10-K filings at later stages of the products' development. We also find that being a trial's lead sponsor is associated with a higher likelihood of disclosing the results before the FDAAA deadline and that *Industry Funding Source* is positively related to the disclosure of trial results, consistent with Anderson et al. (2015). In line with our expectation that clinical trials under FDA oversight are subject to higher regulatory scrutiny, we also find a positive and significant coefficient estimate on *FDA Oversight*. Finally, the estimated coefficient on *Own Past Disclosures* is positive and significant, indicating that firms are more likely to disclose their trial results before the FDAAA deadline if they have made similar disclosures for other trials. Overall, the finding that the coefficient estimates on the various trial-level characteristics are statistically significant (even after controlling for firm fixed effects) suggests that the disclosure decisions are not only driven by firm-level factors but also by the characteristics of the individual trials themselves.

5. Placebo test and difference-in-differences analysis

5.1. Placebo test

Table 3 shows that a higher amount of peer disclosures is associated with a lower likelihood that a focal firm discloses its own trial results before the FDAAA deadline. This finding is consistent with our theoretical framework, in which a focal firm's disclosure decision is determined by the trade-off between the firm's desire to maximize its market price by reducing asymmetric information on the one hand and the cost of disclosing private information (e.g., proprietary costs) on the other. The reason why peer disclosures affect the focal firm's

disclosure decision in this framework is that they reduce asymmetric information and thereby lower the benefit of additional disclosure.

To further support this interpretation of our findings, we now conduct a placebo test: We examine the role of peer disclosures in a setting where a focal trial sponsor's disclosure decision is unlikely to be driven by a trade-off between the (proprietary) cost of disclosure and the benefit of reducing asymmetric information for the trial sponsor's market valuation. Specifically, we examine how peer disclosures affect the likelihood that non-industry sponsors (e.g., universities) disclose their trial results before the FDAAA deadline.

Like the industry sponsors (i.e., publicly listed firms) that we study in our main analysis, non-industry trial sponsors such as universities or research institutes are subject to the FDAAA disclosure requirements. In contrast to the firms, however, non-industry sponsors may be less concerned about the proprietary costs of revealing information and also do not have a market price to maximize. Consequently, non-industry sponsors' disclosure decision is unlikely to be driven by a trade-off between the (proprietary) cost of disclosure and the benefit of reducing asymmetric information. Instead, non-industry sponsors such as universities or research institutes are likely to decide for other reasons whether to disclose their trial results, e.g., to enhance their research reputation. For example, they may disclose their results if and only if the quality of the data and analysis meets a certain standard. We therefore expect that the disclosure decisions of non-industry trial sponsors are less affected (or not affected at all) by peer disclosures than the disclosure decisions of the focal firms in our main analysis.

To examine this hypothesis, we construct a sample of trials that are conducted exclusively by non-industry sponsors (e.g., universities, research institutes, or the NIH).[32] In analogy to our main test (Table 3), we then regress a 0/1-indicator whether the trial results are disclosed before

[32] As in our main analysis, we include only trials that are subject to the FDAAA disclosure requirements. Table B.7, Panel C, provides descriptive statistics for the sample of trials conducted by non-industry sponsors.

the FDAAA deadline (*Disclosure by FDAAA Deadline*) on the variable *Peer Disclosures*. We control for the different trial-level characteristics, as before, and also include year and non-industry sponsor fixed effects. Unlike in our main test (Table 3), however, we cannot control for the different financial variables (e.g., market capitalization or ROA), analyst following, or institutional ownership as these are not available for the non-industry sponsors.

Table 4 presents the results. In line with our prediction, the estimated coefficients on *Peer Disclosures* are close to zero and not statistically significant in any column. This finding is consistent with the notion that non-industry trial sponsors are less concerned about the trade-off between the cost of disclosure and the benefit of reducing asymmetric information and that their disclosure decisions are thus less affected by peer disclosures. Indirectly, the placebo test also supports the idea that peer disclosures are related to focal *firms'* disclosure decisions – as we predict in our theoretical framework and find in our empirical analysis – because they reduce asymmetric information and thereby shift the trade-off between the cost of disclosure and the benefit of reducing asymmetric information towards a preference for non-disclosure.

5.2. Difference-in-differences analysis

In our analyses so far, we have relied on panel regressions and documented a negative relation between peer disclosures and focal firms' propensity to disclose their own trial results (Table 3). In this section, to provide evidence that is more suggestive of a causal link, we follow a different identification approach. Specifically, we estimate a difference-in-differences model around plausibly exogenous peer disclosures.

The key idea here is to exploit the fact that some peers publicly commit to disclose the results of all of their clinical trials within one year of the trials' end date and that such disclosures sometimes occur in batches, where the results of several trials are disclosed on the same day. The advantage of exploiting such "peer batch disclosures" is then that the peers' disclosure decision in these cases is less likely to be driven by unobserved characteristics of

the individual trials themselves but instead more likely due to the peers' public commitment to full compliance with the FDAAA. The peer batch disclosures are thus more likely to be plausibly exogenous to the focal firms' disclosure decisions.

For our analysis, we thus proceed as follows. First, we identify peers that commit publicly to disclosing all of their trial results by the FDAAA deadline. We find two: GlaxoSmithKline (GSK) and Novartis.[33] Next, we identify batch disclosures by GSK or Novartis that occur after their public disclosure commitments as instances where, on a single day, either firm discloses the results of at least five trials covered by the FDAAA disclosure rules. We find six cases in our data: three by GSK (on 6 and 12 June and on 19 December 2013) and three by Novartis (on 14 and 20 December 2010 and on 22 July 2011). Around each of these six batch disclosure events, we then create a panel of focal firm trials whose disclosure deadline falls into the two-year period from 365 days before to 365 days after the batch disclosure.[34] Finally, we pool all observations from the six panels and estimate the following difference-in-differences model:[35]

$$\begin{aligned} \textit{Disclosure by FDAAA Deadline}_{ijtk} = {} & \beta_0 + \beta_1 \cdot \textit{Treat}_{ik} + \beta_2 \cdot \textit{Post}_{tk} + \beta_3 \cdot \textit{Treat}_{ik}\ X\ \textit{Post}_{tk} \\ & + \sum \lambda_n \cdot \textit{Firm-Level Controls}_{njt} + \sum \theta_n \cdot \textit{Trial-Level Controls}_{nit} \\ & + \textit{Peer Batch Disclosure Event}_k\ X\ \textit{Year}_t\ \textit{Fixed Effects} \\ & + \textit{Peer Batch Disclosure Event}_k\ X\ \textit{Firm}_j\ \textit{Fixed Effects} + \varepsilon_{ijtk}. \end{aligned} \quad (2)$$

Trials are indexed by i, firms by j, years by t, and peer batch disclosure events by k. $\textit{Disclosure by FDAAA Deadline}_{ijtk}$ indicates whether the results of trial i are disclosed by focal firm j before the FDAAA deadline, where trial i's disclosure deadline in year t falls within the two-year window around peer batch disclosure event k. $\textit{Treat}_{ik}$ is a 0/1-indicator that is equal

[33] Novartis committed to full disclosure in 2009 (https://www.novartis.com/sites/www.novartis.com/files/leaders-in-clinical-trial-data-transparency.pdf) and GSK in May 2013 (GSK 2013).
[34] We do not include trials that are conducted by GSK or Novartis themselves after their disclosure commitments.
[35] Pooling the observations from all six panels and estimating a single difference-in-differences model follows the approach of Gormley and Matsa (2011) and has the benefit of increasing our test's statistical power. Intuitively, the estimated effect from the pooled model corresponds to a weighted average of the individual estimates that one would obtain from using six separate difference-in-differences models (i.e., one for each panel).

to one if the number of peer disclosures in batch disclosure event k that pertain to the same medical condition as trial i is larger than the median. $Post_{tk}$ is a 0/1-indicator that is equal to one in the 365 days after batch disclosure event k (and equal to zero before the event). *Firm-Level Controls*$_{njt}$ and *Trial-Level Controls*$_{nit}$ are the same firm- and trial-level controls that we included before (Table 3). *Peer Batch Disclosure Event*$_k$ *X Year*$_t$ and *Peer Batch Disclosure Event*$_k$ *X Firm*$_j$ are peer batch disclosure event specific year and firm fixed effects.[36]

Intuitively, the difference-in-differences specification estimates the impact of peer disclosures on a focal firm's propensity to disclose its own results before the FDAAA deadline by asking how much the change in the disclosure likelihood from before to after the batch disclosure events (i.e., the "effect" of *Post*) differs between treated trials and control trials. The parameter of interest is thus the coefficient β_3 on the interaction between the indicators for treated trials ($Treat_{ik}$) and the period after treatment ($Post_{tk}$).

Columns (1) and (2) of Table 5 show the results. The estimated coefficient on the interaction term $Treat_{ik}$ *X* $Post_{tk}$ is negative and statistically significant at the 5% level, irrespective of whether or not we include the firm- and trial-level controls.[37] This result corroborates our earlier findings and further supports the interpretation that peer disclosures reduce the likelihood that a focal firm discloses its own trial results by the FDAAA deadline.

The above difference-in-differences model distinguishes between treated and control trials by using a 0/1-indicator ($Treat_{ik}$). While standard, this approach abstracts away from potential variation in the intensity of treatment. Specifically, some focal trials may receive more "treatment" than others because the number of related peer trials whose results are disclosed may vary between the different batch disclosure events and medical conditions. To account for

[36] Note that including peer batch disclosure event specific year and firm fixed effects is more general than including simple year and firm fixed effects as it allows the year and firm fixed effects to vary between the six events. Nonetheless, we have confirmed that using simple fixed effects does not change our findings.

[37] We report models with and without controls to address the potential concern that the controls themselves could be affected by the peer disclosures, which would render them "bad controls" (e.g., Angrist and Pischke 2009).

such heterogeneity in the intensity of treatment, we also estimate a difference-in-differences model with variable treatment intensity. To do so, we replace the 0/1-indicator $Treat_{ik}$ with the variable *GSK/Novartis Batch Disclosures*$_{ik}$. In analogy to the variable *Peer Disclosures* used in our main analysis (Table 3), *GSK/Novartis Batch Disclosures*$_{ik}$ is defined as the natural logarithm of one plus the number of GSK/Novartis trials whose results are disclosed in batch disclosure *k* and that examine the same medical condition as focal firm *i*'s trial. Consequently, *GSK/Novartis Batch Disclosures*$_{ik}$ not only distinguishes between treated and control trials but also captures variation in the intensity of treatment (i.e., the number of peer disclosures).

Columns (3) and (4) of Table 5 show the results. Consistent with our earlier findings, the estimated coefficient on the interaction term *GSK/Novartis Batch Disclosures*$_{ik}$ *X* $Post_{tk}$ is negative and statistically significant at the 10% level in column (3) and the 5% level in column (4). The difference-in-differences model with variable treatment intensity thus provides further evidence that peer disclosures reduce a focal firms' propensity to disclose its own trial results.

The validity of the above inference depends, of course, on the exogeneity of GSK's and Novartis' batch disclosures. One concern, for example, could be that GSK's and Novartis' trials are somehow "special." In an untabulated analysis, however, we do not find any evidence that the trials conducted by GSK and Novartis are systematically different from the sample average. Another concern may be that, even though GSK and Novartis have committed to disclosure, they may be strategic about when to disclose. In this regard, we note that if their timing decisions are driven by factors that are specific to GSK and Novartis, then their strategic timing should not affect our results because we exclude from our sample of focal firm trials all trials conducted by either GSK or Novartis after their disclosure commitment. If, however, the disclosure timing of GSK or Novartis is driven by common factors that also affect the other (i.e., focal) firms in our sample, then this could undermine the batch disclosures' exogeneity with respect to the focal firms' disclosure decisions. However, to the extent that such common

factors are controlled for by the batch disclosure event specific year and firm fixed effects and time-varying firm- and trial-characteristics that we include, the batch disclosures would remain considerably exogenous to the focal firms' disclosure decisions at the trial level.

6. Cross-sectional analyses

6.1. Completed versus terminated trials and trials in different clinical phases

Our main analysis (Table 3) uses a sample comprising both completed and terminated trials as well as trials in different phases. In this section, we examine how the relation between peer disclosures and the likelihood that a focal firm discloses its own trial results before the FDAAA deadline varies between the different types of trials. This analysis is motivated as follows.

In our theoretical framework, a focal firm decides whether to disclose its trial results by trading off the cost of disclosure with the benefit of reducing asymmetric information. Peer disclosures affect this trade-off because they contain information (and thus reduce information asymmetry), which in turn reduces the focal firm's net-benefit from removing the remaining asymmetric information via costly disclosure. To the extent that one expects variation between different trial types in terms of disclosure costs, asymmetric information, and the information content of peer disclosures, one would thus expect variation in the impact of peer disclosures.

Deriving clear-cut predictions regarding the direction of such variation, however, is difficult. The reason is that the theoretical relation between the magnitude of the disclosure costs, asymmetric information, or information content of peer disclosures and the impact of peer disclosures on a focal firm's disclosure decision need not be monotone. Both very high and very low disclosure costs (asymmetric information), for example, can make it less likely that the information content of peer disclosures affects a focal firm's disclosure decision. Intuitively, if the cost of disclosure (asymmetric information) is sufficiently high, then the focal firm never (always) discloses its own trial results, irrespective of any peer disclosures. An analogous argument applies if the cost of disclosure (asymmetric information) is sufficiently

low. Consequently, it depends on the range of disclosure costs, asymmetric information, and information content of peer disclosures in the data whether the empirical relation between peer disclosures and a focal firm's propensity to disclose is increasing, decreasing, or even non-monotone in the magnitude of the disclosure costs and asymmetric information. It thus remains ultimately an empirical question whether and how the impact of peer disclosures varies between the different types of trials (e.g., completed vs. terminated or trials in different phases).

Table 6 presents our findings.[38] Columns (1) and (2) show the results for completed and terminated trials. Columns (3), (4), and (5) show the results for phase 2, 3, and 4 trials.[39] The estimated coefficient on *Peer Disclosures* is negative (-0.0424) and statistically significant at the 1% level for completed trials. For terminated trials, in contrast, the coefficient estimate is smaller in magnitude (0.0164) and not statistically significant. The difference between the two estimates is significant at the 1% level (untabulated). Our results thus indicate that the relation between peer disclosures and a focal firm's propensity to disclose its own trial results before the FDAAA deadline is stronger (i.e., more negative) for completed than for terminated trials.

Regarding trials in different phases, the coefficient estimate on *Peer Disclosures* is negative and statistically significant for phase 3 but not for phase 2 or phase 4 trials. Specifically, the estimated coefficient for phase 3 trials is -0.0663 and significant at the 1% level. For phase 2 and phase 4 trials, the estimated coefficients are -0.0148 and 0.0062 and not statistically significant. Compared to the estimates for phase 2 and phase 3 trials, however, the estimate for phase 4 trials is based on much fewer observations and thus less precise.

Comparing the estimates, we find that the difference between the estimated coefficients for phase 3 and 2 trials as well as the difference between the estimated coefficients for phase 3 and

[38] We only report the results of OLS models with year and firm fixed effects. OLS and probit models with year fixed effects yield similar results. Table B.7 in Appendix B presents descriptive statistics for the different trials.
[39] The total number of observations across columns (1) and (2) and the total number of observations across columns (3) to (5) are smaller than the number of observations indicated in Table 3 because splitting the data into several subsamples increases the number of "singletons" that are dropped during the estimation procedure.

4 trials are both statistically significant at the 1% level (untabulated). The difference between the estimated coefficients for phase 2 and 4 trials, in contrast, is not significant (*p*-value 0.35, untabulated). That is, whereas we cannot reject the hypothesis that the impact of peer disclosures is the same for phase 2 and 4 trials, our results do indicate that the relation between peer disclosures and a focal firm's propensity to disclose its own trial results before or on the FDAAA deadline is stronger (i.e., more negative) for phase 3 than for phase 2 and 4 trials.

6.2. Competition, stage of development, and stock price reaction around peer disclosures

In this section, rather than distinguishing between different types of trials, we examine how the impact of peer disclosures varies with competition, with how far advanced a focal firm's trial is relative to the trials disclosed by the peers, and with the focal firm's stock price reaction around the peer disclosures. The reason why we explore the role of competition is that disclosure is likely to have a higher proprietary cost when there is more competition from existing rivals (e.g., Clinch and Verrecchia 1997) and that the cost of disclosure is a key determinant of a focal firm's disclosure decision and how this decision is affected by peer disclosures. Given that the relation between the cost of disclosure and the impact of peer disclosures is theoretically ambiguous (as discussed above), however, it remains ultimately an empirical question whether competition amplifies or mitigates the impact of peer disclosures.

For our analysis, we use as a proxy for competition the number of peer trials that were completed in the 365 days preceding the FDAAA disclosure deadline and that examined the same medical condition as the focal firm's trial. We then define a 0/1-indicator (*High Competition*) that is equal to one if the number of completed peer trials is larger than the median and include *High Competition* as well as its interaction with *Peer Disclosures* in the regression.

Column (1) of Table 7 shows the results.[40] The estimated coefficient on *Peer Disclosures X High Competition*, is negative (-0.0318) and statistically significant at the 5% level. This finding indicates that the empirical relation between peer disclosures and focal firms' propensity to disclose their own trial results before the FDAAA deadline is more pronounced (i.e., more negative) when competition is high than when competition is low.[41]

The next source of cross-sectional variation that we explore is how far advanced a focal firm's trial is relative to the trials whose results are disclosed by the firm's peers. This analysis is motivated by the notion that the proprietary costs of disclosure may depend on whether a firm's research is ahead of, at par with, or behind its competitors' research. For example, the proprietary costs of disclosing the results of a trial may be particularly high when the focal firm is ahead of (and thus knows more than) its competitors. Alternatively, disclosing information may be less costly to a firm that is sufficiently far ahead of the competition (and thus likely to "win the race" even if its trial results are revealed).[42] A priori, it is thus unclear whether the cost of disclosure is higher or lower for a focal firm that is further along in its own research. Moreover, as discussed above, the effect of higher disclosure costs on the relation between peer disclosures and a focal firm's propensity to disclose is theoretically ambiguous. Therefore, as for the case of competition, it is ultimately an empirical question whether a focal firm that is further along in its own research shows a stronger or weaker response to peer disclosures.

[40] For brevity, we only report the results of OLS models with year and firm fixed effects. Using only year fixed effects yields similar results. We do not report probit models because, in nonlinear models (e.g., probit), the interaction effect we aim to estimate is not, in general, equal to the coefficient estimate or marginal effect of the interaction term (Ai and Norton 2003), which substantially complicates the interpretation of the estimation results.
[41] Generically, our results imply that the estimated effect of *Peer Disclosures* is -0.0084 + *High Competition* * -0.0318, where *High Competition* is equal to 0 or 1. That is, if *High Competition* = 0, the estimated effect of *Peer Disclosures* is -0.0084 (which is not statistically significant). If *High Competition* = 1, the estimated effect of *Peer Disclosures* is -0.0084 + 1 * -0.0318 = -0.0402 (which is statistically significant at the 1% level). Regarding the impact of competition itself, the results imply that the estimated effect of *High Competition* is 0.0477 + *Peer Disclosures* * -0.0318. For example, evaluated at the sample mean of *Peer Disclosures* (2.358), the estimated effect of *High Competition* is 0.0477 + 2.358 * -0.0318 = -0.0273 (which is not significant, *p*-value 0.16).
[42] In that case, a firm may even use disclosure to deter competition (e.g., Glaeser and Landsman 2021).

We start by defining a 0/1-indicator (*Relative Later Phase*) that is equal to one if the focal firm's trial is in a later phase than the median of the disclosed peer trials used to compute *Peer Disclosures*. We then add *Relative Later Phase* and its interaction with *Peer Disclosures* to the regression specification. Column (2) of Table 7 shows the results.[43] The estimated coefficient on *Peer Disclosures* is negative (-0.0470) and statistically significant at the 1% level. The estimated coefficient on the interaction term *Peer Disclosures X Relative Later Phase* is positive (0.0397) and statistically significant at the 5% level. Our findings thus indicate that the empirical relation between peer disclosures and a focal firm's propensity to disclose its own trial results is weaker (i.e., less negative) when the focal firm's trial is in a relative later phase. Specifically, the results indicate that the estimated effect of *Peer Disclosures* is -0.0470 and statistically significant at the 1% level if *Relative Later Phase* = 0. In contrast, the estimated effect is -0.0073 and not statistically significant (*p*-value 0.64) if *Relative Later Phase* = 1.[44]

The third source of cross-sectional variation that we study is the focal firm's stock price reaction around the peer disclosures. Here, the motivation is as follows. In our theoretical framework, peer disclosures reduce the amount of asymmetric information between a focal firm and outside investors and affect the investors' belief about the probability that the focal firm's trial was successful. As we show in the model, this effect makes it on average less likely that the focal firm discloses its own trial results, which motivates our main prediction: The average effect of peer disclosures on a focal firm's propensity to disclose is negative. However, notwithstanding the negative average effect, the model also shows that it is theoretically possible that some peer disclosures could actually increase the focal firm's propensity to disclose if the peer disclosures are sufficiently negative. The reason is that a reduction in the outside investors' belief that the focal firm's trial was successful increases the focal firm's

[43] The number of observations is smaller than in Table 3 because *Relative Later Phase* is not available for all observations (e.g., if there are no peer disclosures during the 365 days prior to a focal firm's disclosure deadline).
[44] The implied effect of *Relative Later Phase* itself is -0.0892 + *Peer Disclosures* * 0.0397. Evaluated at the mean of *Peer Disclosures* (2.358), this implies an estimated effect of 0.0044 (not statistically significant, *p*-value 0.86).

benefit from disclosing a success. Hence, if the peer disclosures have a sufficiently negative effect on the investors' belief that the focal firm's trial was successful, then the peer disclosures can actually lead to an increase in the focal firm's propensity to disclose its own trial results.

The above intuition is akin to the argument in Sletten (2012) that stock price declines can induce firms to disclose information that was formerly considered unfavorable (and thus withheld) but became relatively favorable at lower stock prices (and will thus be disclosed). An implication is that the negative relation between peer disclosures and a focal firm's propensity to disclose its own trial results should be weaker (or even absent) if the peer disclosures have a sufficiently negative impact on the focal firm's stock price.

To test this prediction, we construct a 0/1-indicator (*Bad News for Focal Firm*) that is equal to one if the focal firm's average cumulative abnormal return (CAR) in the three days around the peer disclosures is negative. We then add *Bad News for Focal Firm* as well as its interaction with *Peer Disclosures* to the regression. Column (3) of Table 7 shows the results.[45] The estimated coefficient on *Peer Disclosures* is negative (-0.0635), the estimated coefficient on *Peer Disclosures X Bad News for Focal Firm* is positive (0.0468), and both estimates are statistically significant at the 1% level. These results support our prediction: The estimated relation between peer disclosures and a focal firm's propensity to disclose its own trial results is indeed weaker (i.e., less negative) if the focal firm's CAR around the peer disclosures is negative. Specifically, our findings imply that the estimated effect of *Peer Disclosures* is -0.0635 (significant at the 1% level) if *Bad News for Focal Firm* = 0. In contrast, if *Bad News for Focal Firm* = 1, the estimated effect of *Peer Disclosures* is 0.0167 (not statistically significant, *p*-value 0.14).[46]

[45] The number of observations is smaller than in Table 3 because *Bad News for Focal Firm* is not available for all observations (e.g., if there are no peer disclosures during the 365 days prior to a focal firm's disclosure deadline).
[46] The implied effect of *Bad News for Focal Firm* itself is -0.1237 + *Peer Disclosures* * 0.0468. Evaluated at the mean of *Peer Disclosures* (2.358), this implies an effect of -0.0133 (not statistically significant, *p*-value 0.34).

7. Real effects: Peer disclosures and focal firms' decision to abandon clinical trials

In our main analysis, we have found that a focal firm is less likely to disclose the results of a clinical trial before the FDAAA disclosure deadline if a larger number of the firm's peers disclose the results of closely related trials during the year *after* the focal firm's trial has ended. In this section, we instead examine the relation between peer disclosures that occur during the year *before* a trial ends and the focal firm's decision to abandon (i.e., suspend, withdraw, or terminate) the still ongoing trial. That is, we now examine a real effect of peer disclosures.[47]

For the purpose of this analysis, we thus create a sample of focal firms' decision whether to abandon ongoing trials. The sample selection procedure, described in detail in Table 8, is similar to the procedure used to create the sample for our main analysis. However, because now we are not interested in whether the focal firms comply with the FDAAA but in whether the firms decide to abandon or complete the trials, we do not restrict the sample to trials that are subject to the FDAAA disclosure rules. In particular, we now also include trials that are conducted before phase 2 or entirely outside of the U.S., and we include not only completed and terminated trials but also trials that were suspended or withdrawn.[48] Finally, because we now need to measure peer disclosures during the 365 days *before* a trial ends, we retain only trials that ended between January 2009 and March 2015. The resulting sample consists of 10,138 observations at the focal firm-trial level, pertaining to 103 unique firms and 9,722 unique trials. Descriptive statistics are provided in Table B.8 in Appendix B.

Using the above sample, we then estimate regression models of the following form:

[47] This analysis can be motivated by the following variation of our theoretical framework (Appendix A). Instead of considering a focal firm whose trial has already ended, imagine that the firm's trial is still ongoing, that its result is as of yet unknown, and that knowing the result is valuable to the firm but that learning the result by completing the trial costs some amount $z > 0$. In that case, if peer disclosures are informative about the expected result of the firm's trial (e.g., because the firm's and the peers' trials are independent studies of the same medical treatment), then, following peer disclosures, the firm may prefer to abandon its trial (and thereby save z) rather than to complete it (and learn its result precisely). This variation of our theoretical framework would thus predict a positive relation between peer disclosures and focal firms' propensity to abandon their own, ongoing trials.

[48] Note that the FDAAA disclosure requirements apply to completed and terminated but not to suspended or withdrawn trials. Consequently, our main analysis (e.g., Table 3), includes only completed and terminated trials.

$$Abandon = \beta_0 + \beta_1 \cdot Peer\ Disclosures\ before\ Trial\ End\ Date + \sum \lambda_n \cdot Firm\text{-}Level\ Controls + \sum \theta_n \cdot Trial\text{-}Level\ Controls + Year\ Fixed\ Effects + Firm\ Fixed\ Effects + \varepsilon. \quad (3)$$

Abandon, is a 0/1-indicator that is equal to one if the status of the focal firm's trial at the trial's end date is either "suspended," "withdrawn," or "terminated" (i.e., if the focal firm does not complete the trial). *Peer Disclosures before Trial End Date* is the natural logarithm of one plus the number of disclosures of results of closely related trials by other trial sponsors (i.e., peers) during the 365 days *before* the focal firm's trial end date.[49] *Firm-Level Controls* and *Trial-Level Controls* are the same sets of controls as in our main analysis,[50] with two exceptions: First, because the focal firms' decision whether to complete or abandon an ongoing trial is now the outcome, we do not include an indicator for completed trials. Second, because our sample now also includes trials conducted before phase 2, we include indicators not only for phase 3 and 4 trials but also for trials in phases 1 and 2 (leaving exploratory trials, so called "phase 0" trials, as the baseline category). We cluster the standard errors at the trial-level, as before.

Figure 1, Panel B, provides a hypothetical example that illustrates the timing. Trial A, in this example, ends on 30 November 2010, and *Abandon* would be equal to 1 (0) if its status on this date is either "suspended," "withdrawn," or "terminated" (i.e., if the trial has not been "completed"). *Peer Disclosures before Trial End Date* would be equal to Ln(1+N), where N is the number of results disclosures that pertain to other trials that study the same medical condition as trial A (i.e., "closely related trials") and that are made by other trial sponsors (i.e., by the focal firm's "peers") between 30 November 2009 and 30 November 2010.

Table 9 shows the results. Columns (1) and (2) are based on OLS, Column (3) on a probit model. All columns include year fixed effects and column (2) also firm fixed effects. The

[49] As in our main analysis, we consider clinical trials to be closely related if they are classified under the same Medical Subject Heading (MeSH) and consider disclosures by all types of trial sponsors (including non-industry sponsors) and peer trials irrespective of whether they are subject to the FDAAA disclosure rules themselves.
[50] All firm-level characteristics are measured as of the last completed fiscal year before the trials' end date.

estimated coefficient on *Peer Disclosures before Trial End Date* is positive and statistically significant at the 1% level in all three columns, indicating that firms are more likely to abandon ongoing trials if a larger number of their peers disclose the results of closely related trials. In terms of economic magnitude, the estimates imply that an increase in *Peer Disclosures before Trial End Date* by one standard deviation is associated with an increase in the likelihood that a focal firm abandons an ongoing trial by 1.7% to 1.8%.[51] This finding is consistent with Glaeser and Landsman (2021), who argue that firms may use disclosures to deter competition.

8. Conclusion

We examine the role that peer disclosures play for firms' decision to disclose the results of their own clinical trials on ClinicalTrials.gov within one year of the trials' end date, as is mandated by the FDAAA. Consistent with theoretical frameworks in which firms make disclosure decisions by trading off the benefit of reducing information asymmetries against the cost of revealing proprietary information (e.g., Verrecchia 1990), we find that the probability that the firms disclose their own trial results is negatively related to the number of peer disclosures. Cross-sectional tests show that this relation is stronger if the firms face higher competition and that it is weaker if the firms are further along in their research than the peers and if the peer disclosures convey more negative news. In an ancillary test, we further find that the firms are more likely to abandon their ongoing trials if there are more peer disclosures, consistent with the idea that these disclosures may be used by the peers to deter competition. Overall, our study thus contributes to the understanding of how firms' disclosure decisions are related to disclosures by the firms' peers, and how peer disclosures can entail real effects.

[51] The standard deviation of *Peer Disclosures before Trial End Date* is 1.273 (Table B.8). A coefficient of 0.0140 in column (1) of Table 9, for example, thus implies that an increase in *Peer Disclosures before Trial End Date* by one standard deviation is associated with an increase in the likelihood that a focal firm abandons an ongoing trial by 1.273 * 0.0140 = 0.0178 = 1.78%.

References

Admati, A. R., Pfleiderer, P., 2000. Forcing firms to talk: Financial disclosure regulation and externalities. Review of Financial Studies 13(3), 479-519.

Ai, C., Norton, E. C., 2003. Interaction terms in logit and probit models. Economics Letters 80, 123-129.

Ajinkya, B., Bhojraj, S., Sengupta, P., 2005. The association between outside directors, institutional investors and the properties of management earnings forecasts. Journal of Accounting Research 43, 343-376.

Anderson, M., Chiswell, K., Peterson, E., Tasnee, A., Topping, J., Califf, R., 2015. Compliance with results reporting at ClinicalTrials.gov. The New England Journal of Medicine 372, 1031-1039.

Angrist, J., Pischke, J., 2009, Mostly harmless econometrics. Princeton University Press, Princeton, NJ.

Ayers, B., Schwab, C., Utke, S., 2015. Noncompliance with mandatory disclosure requirements: The magnitude and determinants of undisclosed permanently reinvested earnings. The Accounting Review 90, 59-93.

Badertscher, B., Shroff, N., White, H., 2013. Externalities of public firm presence: Evidence from private firms' investment decisions. Journal of Financial Economics 109, 682-706.

Baginski, S. P., Hassell, J. M., 1997. Determinants of management forecast precision. The Accounting Review 72, 303-312.

Baginski, S. P., Hinson, L. A., 2016. Cost of capital free-riders. The Accounting Review 91 (5), 1291-1313.

Baker, M., Stein, J. C., and Wurgler, J., 2003. When does the market matter? Stock prices and the investment of equity-dependent firms. Quarterly Journal of Economics 118, 969-1005.

Bourveau, T., Capkun, V., Wang, Y., 2020. Consequences of disclosing clinical trial results: Evidence from the Food and Drug Administration Amendments Act. Working paper, SSRN ID: 3533305.

Breuer, M., Hombach, K., Müller, M. A., 2021. When you talk, I remain silent: Spillover effects of peers' mandatory disclosures on firms' voluntary disclosures. The Accounting Review, forthcoming.

Bushee, B., Leuz, C., 2005. Economic consequences of SEC disclosure regulation: Evidence from the OTC Bulletin Board. Journal of Accounting and Economics 39, 233-264.

Cao, S., Ma, G., Tucker, J., Wan, C., 2018. Technological peer pressure and product disclosure. The Accounting Review 93(6), 95-126.

Chen, S., Matsumoto, D., Rajgopal, S., 2011. Is silence golden? An empirical analysis of firms that stop giving quarterly earnings guidance. Journal of Accounting and Economics 51, 134-150.

Clinch, G., Verrecchia, R. E., 1997. Competitive disadvantage and discretionary disclosure in industries. Australian Journal of Management 22, 125-137.

Desir, R., Fanning, K., Pfeiffer, R. J., 2010. Are revisions to SFAS No. 5 needed? Accounting Horizons 24, 525-545.

Dye, R. A., 1985. Disclosure of nonproprietary information. Journal of Accounting Research 23, 123-145.

The Economist, 25 July 2015. Spilling the beans. Failure to publish the results of all clinical trials is skewing medical science. https://www.economist.com/science-and-technology/2015/07/25/spilling-the-beans.

Enache, L., Li, L., Riedl, E. J., 2021. Regulatory approval and biotechnology product disclosures. Working Paper.

FDA (Federal Food and Drug Administration), Department of Health and Human Services, July 10, 2014. Response letter to the Honorable Leonard Lance.

FDA, 2018. The drug development process. https://www.fda.gov/patients/drug-development-process/step-3-clinical-research.

Foster, G., 1981. Intra-industry information transfers associated with earnings releases. Journal of Accounting and Economics 3, 201-232.

Francis, J., Phibrick, D., Schipper, K. 1994. Shareholder litigation and corporate disclosures. Journal of Accounting Research 32, 137-164.

Glaeser, S., Landsman, W. R., 2021. Deterrent disclosure. The Accounting Review 96 (5), 291-315.

Gormley, T. A., Matsa, D. A., 2011. Growing out of trouble? Corporate responses to liability risk. Review of Financial Studies 24(8), 2781-2821.

Graham, J. R., Harvey, C. R., Rajgopal, S., 2005. The economic implications of corporate financial reporting. Journal of Accounting and Economics 40, 3-73.

Greene, W., 2004. The behaviour of the maximum likelihood estimator of limited dependent variable models in the presence of fixed effects. Econometrics Journal 7(1), 98-119.

GSK, 2013. GSK announces support for ALLTrials campaign for clinical data transparency. Press Release, 05 February, 2013.

Guo, R., Lev, B., Zhou, N., 2004. Competitive costs of disclosure by biotech IPOs. Journal of Accounting Research 42, 319-355.

Hsu, P., Lee, K., Moon, S. K., Oh, S., 2021. Information disclosure and drug development: Evidence from mandatory reporting of clinical trials. Working paper, SSRN ID: 3459511.

Huang, Y., Jennings, R., Yu, Y., 2017. Product market competition and managerial disclosure of earnings forecasts: Evidence from import tariff rate reductions. The Accounting Review 92(3), 185-207.

Jorgensen, B. N., Kirschenheiter, M. T., 2012. Interactive discretionary disclosures. Contemporary Accounting Research 29(2), 382-397.

Karamanou, I., Vafeas, N., 2005. The association between corporate boards, audit committees, and management earnings forecasts: An empirical analysis. Journal of Accounting Research 43, 453-486.

Kim, I., Skinner, D. J., 2012. Measuring securities litigation risk. Journal of Accounting and Economics 53, 290-310.

Lennox, C. S., Park, C. W., 2006. The informativeness of earnings and management's issuance of earnings forecasts. Journal of Accounting and Economics 42, 439-458.

Manski, C. F., 1993, Identification of endogenous social effects: The reflection problem. Review of Economic Studies 60, 531-542.

Miller, G., 2002. Earnings performance and discretionary disclosure. Journal of Accounting Research 40, 173-204.

Reuters, April 22, 2015. Roche more confident in beating Alzhemier's after Biogen data. https://www.reuters.com/article/us-roche-results-alzheimers/roche-more-confident-in-beating-alzheimers-after-biogen-data-idUSKBN0ND0UR20150422.

Rice, S., Weber, D., 2012. How effective is internal control reporting under SOX 404? Determinants of the (non-)disclosure of existing material weaknesses. Journal of Accounting Research 50, 811-843.

Robinson, L., Schmidt, A., 2013. Firm and investor responses to uncertain tax benefit disclosure requirements. Journal of the American Taxation Association 35(2), 85-120.

Robinson, J., Xue, Y., Yu, Y., 2011. Determinants of disclosure noncompliance and the effect of the SEC review: Evidence from the 2006 mandated compensation disclosure regulations. The Accounting Review 86, 1415-1444.

Ropes & Gray, 2020. Federal district court holds clinical trial sponsors must submit more data to ClinicalTrials.gov. https://www.ropesgray.com/en/newsroom/alerts/2020/03/Federal-District-Court-Holds-Clinical-Trial-Sponsors-Must-Submit-More-Data-to-ClinicalTrials-Gov.

Seo, H., 2021. Peer effects in corporate disclosure decisions. Journal of Accounting and Economics 71 (1), 1-23.

Sertkaya, A., Birkenbach, A., Berlind, A., Eyraud, J, 2014. Examination of clinical trial costs and barriers for drug development. U.S. Department of Health & Human Services. https://aspe.hhs.gov/report/examination-clinical-trial-costs-and-barriers-drug-development.

Shroff, N., Verdi, R. S., Yost, B., 2017. When does the peer information environment matter? Journal of Accounting and Economics 64, 183-214.

Sletten, E., 2012, The effect of stock price on discretionary disclosure. Review of Accounting Studies 17, 96-133.

Verrecchia, R. E., 1983. Discretionary disclosure. Journal of Accounting and Economics 5, 179-194.

Verrecchia, R. E., 1990. Information quality and discretionary disclosure. Journal of Accounting and Economics 12, 365–380.

Waymire, G., 1985. Earnings volatility and voluntary management forecast disclosure. Journal of Accounting Research 23, 268-295.

Zarin, D., Tse, T., Sheehan, J., 2015. The proposed rule for U.S. clinical trial registration and results submission. The New England Journal of Medicine 372, 174-180.

Zarin, D. A., Tse, T., Williams, R. J., Califf, R. M., Ide, N. C., 2011. The ClinicalTrials.gov results database — update and key issues. New England Journal of Medicine 364, 852-60.

Zhang, Y., 2020. Corporate R&D investments following competitors' voluntary disclosures: Evidence from the drug development process. Working paper.

Appendix A: Theoretical Framework

To provide a framework for our empirical analysis, we now develop a simple model in the spirit of Verrecchia (1990). The key intuition is as follows: On the one hand, disclosure reduces asymmetric information between a firm and outside investors and thereby reduces underpricing of the firm's securities. On the other hand, disclosure comes at a cost (e.g., the cost of preparing and disseminating information or the cost of revealing proprietary information). The firm thus prefers disclosure to non-disclosure if the benefit of reducing asymmetric information outweighs the cost of disclosure. However, if there is little asymmetric information to begin with, then there is little to gain from disclosure. Consequently, if the amount of asymmetric information between the firm and investors has already been reduced through peer disclosures – which are likely to contain a common component that is informative about the firm – then the firm is less likely to disclose its own information. This intuition mirrors Verrecchia's (1990) result that the more information is commonly known about a firm, the lower is the benefit of disclosing additional private information and, as disclosure is costly, the firm discloses less.

We now formalize the above intuition in a simple framework. In particular, we consider a focal firm whose clinical trial has already ended. The trial result is denoted $t \in \{f,s\}$, where t=f stands for "failure" and t=s stands for "success." The prior probabilities are $Pr(t=s) \in (0,1)$ and $Pr(t=f) = 1 - Pr(t=s)$. Similar to Verrecchia (1990), we assume that the firm privately observes its trial result, that the firm can publicly disclose the result at an exogenous disclosure cost $c > 0$, and that this disclosure (if the firm indeed decides to disclose its trial result) must be truthful.

Assuming that disclosure must be truthful is standard in the theory literature on firms' disclosure decisions and can be supported by assuming that the disclosed information can be verified ex post and that anti-fraud laws are enforced (e.g., Verrecchia 1983; Dye 1985; Admati and Pfleiderer 2000). The cost c of disclosure may comprise both direct costs (e.g., the costs of preparing and disseminating information) and indirect costs (e.g., the costs of revealing

proprietary information to competitors). In our setting, one could also assume some cost $b > 0$ of non-disclosure, representing the expected penalty for defying the FDAAA disclosure requirements. However, as will become clear in what follows, ultimately relevant for the firm's disclosure decision is the net cost of disclosure relative to non-disclosure, i.e., the difference between the cost of disclosure and the cost of non-disclosure. Assuming $b = 0$ (as we do here) is thus without loss of generality as long as the cost c in our framework is interpreted as the net cost of disclosure relative to non-disclosure. Further, the empirical finding that many firms do not disclose within the mandated timeframe and that the FDA has never penalized any firm for failing to disclose suggests that the expected cost of non-disclosure may indeed be small.

We further assume that the firm's objective is to maximize its market price, which is determined by competitive, risk-neutral investors with rational expectations. Specifically, the market price is equal to the expected value of the firm's true (but unobserved) value v, net of any disclosure costs and conditional on the information available to the investors. Hence, if the firm discloses t=f, then its market price is $E[v|t=f] - c$. If the firm discloses t=s, then its market price is $E[v|t=s] - c$. If the firm does not disclose its trial result, then its market price depends on what the investors infer from the firm's decision not to disclose. For example, if the investors were to infer that non-disclosure provides no information about the firm's trial result, then the firm's market price following non-disclosure would be $E[v]$. Of course, what investors actually do infer from non-disclosure depends on the disclosure strategy that the firm follows in equilibrium. Finally, we assume that $E[v|t=f] < E[v] < E[v|t=s]$, i.e., that trial success (t=s) is "good news," and that the structure of the model and its parameters are common knowledge.

We now analyze the firm's choice whether to disclose its trial result. The solution concept that we apply throughout our analysis is that of a perfect Bayesian equilibrium and, for simplicity, we restrict attention to equilibria in pure strategies. For notational ease, let $d(t) \in \{0,1\}$ for $t \in \{f,s\}$ denote the firms disclosure choice, where $d(t) = 0$ indicates non-disclosure

and d(t) = 1 disclosure. For example, d(f) = 0 would indicate that the firm does not disclose if its trial failed, and d(s) = 1 would indicate that the firm discloses if its trial succeeded.

We begin by noting that the firm will never actively disclose that its trial failed (t=f). The reason is that, if t=f, then the lowest conceivable market price following non-disclosure, E[v|t=f], is higher than the market price following disclosure, E[v|t=f] – c. In other words, the firm can never benefit from disclosing t=f and thus prefers non-disclosure because disclosure is costly (i.e., c > 0). Hence, in any equilibrium, we must have d(f) = 0. In contrast, if the firm's trial succeeded, then the firm may or may not prefer to disclose, depending on the trade-off between the cost and benefit of disclosure. A priori, there are thus two potential equilibria: (1) a "non-disclosure equilibrium" with d(s) = 0 and (2) a "disclosure equilibrium" with d(s) = 1.

We next examine the conditions under which the above equilibria exist. First, for d(f) = d(s) = 0 to be an equilibrium, it must be the case that the firm prefers non-disclosure if t=s, i.e.,

$$E[v] = E[v|t=s] \cdot Pr(t=s) + E[v|t=f] \cdot Pr(t=f) > E[v|t=s] - c \qquad (A.1)$$

$$\Leftrightarrow$$

$$Pr(t=f) \cdot (E[v|t=s] - E[v|t=f]) < c. \qquad (A.2)$$

In this case, the reason why the firm prefers non-disclosure (even though its trial succeeded) is that the underpricing in the absence of disclosure – investors price the firm at E[v] < E[v|t=s] because they do not know if the trial succeeded – does not justify bearing the disclosure cost.[52]

Second, for d(f) = 0 and d(s) = 1 to be an equilibrium, it must be the case that the firm prefers disclosure to non-disclosure if t=s, i.e.,

$$E[v|t=s] - c > E[v|t=f] \qquad (A.3)$$

$$\Leftrightarrow$$

$$E[v|t=s] - E[v|t=f] > c. \qquad (A.4)$$

[52] Note that if d(f) = d(s) = 0 in equilibrium, then non-disclosure provides no information about the firm's trial result, i.e., Pr(t=s|non-disclosure) = Pr(t=s), so that the firm's market price following non-disclosure is E[v].

In this case, the reason why the firm prefers to disclose is that the underpricing that it would suffer if it did not disclose – investors would price the firm at E[v|t=f] because they would infer t=f from non-disclosure – is sufficiently large to justify bearing the disclosure cost.[53]

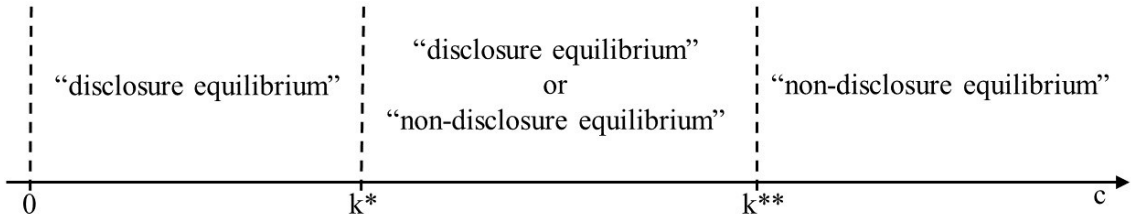
We summarize the findings below.

Result A.1: *Define $k^* = Pr(t=f) \cdot (E[v|t=s] - E[v|t=f])$ and $k^{**} = E[v|t=s] - E[v|t=f]$. If $k^* > c$, then the unique equilibrium is $d(f) = 0$ and $d(s) = 1$. If $k^{**} < c$, then the unique equilibrium is $d(f) = d(s) = 0$. If $k^* \leq c \leq k^{**}$, then there are two pure-strategy equilibria: (1) $d(f) = d(s) = 0$; (2) $d(f) = 0$ and $d(s) = 1$.*

The intuition is as follows. If the firm's trial failed (t=f), then its decision is trivial: The optimal policy is to never actively disclose that the trial failed because disclosure is costly (relative to non-disclosure) and the firm can never benefit from disclosing t=f. If, instead, its trial succeeded (t=s), then the firm faces a trade-off: On the one hand, disclosing t=s costs c. On the other hand, disclosing t=s increases the firm's market price (gross of the disclosure cost). Whether the firm prefers disclosure if t=s thus depends on whether the gross increase in its market price exceeds the cost of disclosure. Finally, by how much the disclosure of t=s increases the firm's market price (gross of the disclosure cost) depends on what investors believe in the absence of disclosure. If investors believe that non-disclosure provides no information about the trial's result, then the gross increase in the firm's market price following the disclosure of t=s is $E[v|t=s] - E[v] = Pr(t=f) \cdot (E[v|t=s] - E[v|t=f]) = k^*$, and the firm prefers disclosure if $k^* > c$. If, instead, investors believe that non-disclosure implies t=f, then the gross increase in the firm's market price following the disclosure of t=s is $E[v|t=s] - E[v|t=f] = k^{**}$, and the firms prefers non-disclosure if $k^{**} < c$. Figure A.1 provides a graphical representation.

[53] Note that if d(f) = 0 and d(s) = 1 in equilibrium, then non-disclosure reveals t=f, so that the firm's market price following non-disclosure would be E[v|t=f].

Figure A.1:



Note that the difference between E[v|t=s] and E[v|t=f] – i.e., the size of the interval (E[v|t=f],E[v|t=s]) – can be interpreted as a measure of the initial amount of asymmetric information between the firm and the outside investors: The investors do not initially know the firm's trial result and thus value the firm at $E[v] \in (E[v|t=f],E[v|t=s])$, whereas the firm knows its trial result and thus whether the appropriate valuation is E[v|t=f] or E[v|t=s]. Both thresholds $k^* = Pr(t=f) \cdot (E[v|t=s] - E[v|t=f])$ and $k^{**} = E[v|t=s] - E[v|t=f]$ are thus increasing in the initial amount of asymmetric information between the firm and the investors. If this initial amount of asymmetric information is sufficiently small relative to the disclosure cost ($k^* < k^{**} < c$), then the firm never discloses its trial result (i.e., the unique equilibrium is d(f) = d(s) = 0). If the initial amount of asymmetric information is sufficiently large ($k^{**} > k^* > c$), then the firm discloses its trial result upon success but not upon failure (i.e., the unique equilibrium is d(f) = 0 and d(s) = 1).[54] For intermediate values ($k^* \leq c \leq k^{**}$), both equilibria are possible.

We next examine how peer disclosures can affect the firm's disclosure decision. As summarized in Result A.1 and shown in Figure A.1, which disclosure policy the firm follows depends on whether the thresholds k* and k** are smaller or larger than the disclosure cost c. A peer's disclosure can thus affect a focal firm's disclosure decision if it affects the threshold k* below which "disclosure" is the unique equilibrium or the threshold k** above which "non-disclosure" is the unique equilibrium.

[54] Note that, in this case, even though the firm does not actively disclose the trial's result if it failed, the investors rationally infer t=f from the firm's decision not to disclose, so that both t=f and t=s are revealed in equilibrium.

To study the impact of peer disclosures, we thus consider that, before the focal firm makes its disclosure decision, one of its peers discloses the result $\tau \in T$ of its own clinical trial.[55] If the peer's trial studied the same medical condition as the focal firm's trial, then it is likely that the peer's trial result is relevant also for valuing the focal firm. For example, if the peer's trial and the focal firm's trial are independent studies of the same medical treatment, then one would expect that the peer's trial result is informative also about the success probability (and therefore value) of the focal firm. Specifically, we assume that the peer's trial result is informative about the focal firm's value in the sense that

$$E[v|t=s,\tau] - E[v|t=f,\tau] = \delta < \Delta = E[v|t=s] - E[v|t=f] \qquad (A.5)$$

for all $\tau \in T$. That is, if investors already know the peer's trial result (τ), then the focal firm's result (t) provides relatively less additional information than if the investors do not yet know the peer's result. Put differently, the peer's disclosure reduces the amount of asymmetric information between the focal firm and the investors: Conditional on the peer's trial result τ, the lowest possible valuation, gross of the disclosure cost c, is $E[v|t=f,\tau]$ and the highest possible valuation is $E[v|t=s,\tau]$, and the spread between the highest and the lowest possible valuation is smaller than the unconditional spread ($\delta < \Delta$). In other words, the peer's disclosure reduces the investors' uncertainty about the focal firm's true (but unobserved) value v.[56]

An immediate implication is that the peer's disclosure reduces the threshold above which "non-disclosure" is the unique equilibrium (i.e., k** in Figure A.1 shifts to the left): Without the peer's disclosure, this threshold is equal to Δ, and with the peer's disclosure, this threshold is equal to δ (which is smaller than Δ).

[55] We take the peer's disclosure decision as given here. For an analysis of the peer's optimal disclosure policy when the focal firm may subsequently disclose its information, see Jorgensen and Kirschenheiter (2012).

[56] To give a numerical example, assume that the peer's trial result is $\tau \in \{f,s\}$ and that the focal firm's true (but unobserved) value is either high (v=H) or low (v=L) with Pr(v=H) = 0.5 and H – L = 1. Assume further that $Pr(t=s|v=H) = 0.8 > Pr(\tau=s|v=H) = 0.6 > Pr(\tau=s|v=L) = 0.4 > Pr(t=s|v=L) = 0.2$. Finally, assume that the two trials are conditionally independent, i.e., $Pr(t,\tau|v) = Pr(t|v) \cdot Pr(\tau|v)$ for all $t \in \{f,s\}$, $\tau \in \{f,s\}$, and $v \in \{L,H\}$. In that case, we have $\delta = E[v|t=s,\tau] - E[v|t=f,\tau] = 0.584 < \Delta = E[v|t=s] - E[v|t=f] = 0.6$ for all $\tau \in \{f,s\}$.

The effect of peer disclosures on the threshold below which "disclosure" is the unique equilibrium (k* in Figure A.1) is more nuanced. The reason is that the peer's disclosure not only reduces the spread between the highest and the lowest valuation, gross of the disclosure cost c, but also affects the investors' posterior belief about the probability that the focal firm's trial failed. If $Pr(t=f|\tau) \leq Pr(t=f)$, then the effect of the peer's disclosure is unambiguous: It reduces the threshold below which "disclosure" is the only equilibrium (i.e., k* in Figure A.1 shifts to the left). If, in contrast, $Pr(t=f|\tau) > Pr(t=f)$, then the peer's disclosure reduces the threshold below which "disclosure" is the only equilibrium if and only if $\delta/\Delta < Pr(t=f)/Pr(t=f|\tau)$. Note, however, that it follows from $E[Pr(t=f|\tau)] = Pr(t=f)$, that a peer's disclosure has an unambiguous, negative effect on the expected value of the threshold below which "disclosure" is the unique equilibrium (i.e., the expected value of k* in Figure A.1 shifts to the left):

$$E[(E[v|t=s,\tau] - E[v|t=f,\tau])Pr(t=f|\tau)] = \delta Pr(t=f) < \Delta Pr(t=f) = (E[v|t=s] - E[v|t=f])Pr(t=f). \quad (A.6)$$

We summarize the findings below.

Result A.2: *The disclosure of a peer's trial result enlarges the disclosure cost interval (k**,∞) in which "non-disclosure" by the focal firm is the unique equilibrium and shrinks the expected size of the disclosure cost interval (0,k*) in which "disclosure" by the focal firm is the unique equilibrium.*

In other words, by reducing asymmetric information between the focal firm and investors, a peer's disclosure reduces the range of disclosure costs for which the focal firm finds it net-beneficial to remove the (remaining) asymmetric information via costly disclosure. Peer disclosures, in this sense, thus make it less likely that the focal firm discloses its own trial result. This finding is reminiscent of Verrecchia's (1990) result that a reduction in the uncertainty about a firm's value decreases the probability of disclosure and motivates our main hypothesis: Peer disclosures reduce a focal firm's propensity to disclose its own trial result.

Appendix B: Supplemental Analyses and Robustness Tests

Table B.1: Market Reaction around Disclosures of Clinical Trial Results

Panel A: Absolute value of the cumulative abnormal return (CAR) of the focal firm around results disclosures by the focal firm's peers

Variable	mean	sd	p-value	[95% Conf.	Interval]
Absolute CAR (-1,+1) of Focal Firm around Peer Disclosures	0.0156***	0.0157	0.0000	0.0155	0.0157

Panel B: Correlation between peer disclosures and focal firms' stock return volatility

Variable	Stock Return Volatility
Peer Disclosures	-0.2006***

Panel C: Absolute value of the cumulative abnormal return (CAR) of the focal firm around results disclosures by the focal firm

Variable	mean	sd	p-value	[95% Conf.	Interval]
Absolute CAR (-1,+1) of Focal Firm around Focal Firm's Disclosures	0.0162***	0.0162	0.0000	0.0156	0.0168
(i) Absolute CAR (-1,+1) of Focal Firm around Focal Firm's Disclosures in Subsample without Prior Peer Disclosures	0.0183***	0.0176	0.0000	0.0164	0.0202
(ii) Absolute CAR (-1,+1) of Focal Firm around Focal Firm's Disclosures in Subsample with Prior Peer Disclosures	0.0159***	0.0160	0.0000	0.0152	0.0165
Difference in mean between (i) and (ii)	0.0024***				

This table presents information on the stock market reaction around disclosures of clinical trial results on ClinicalTrials.gov for trials that ended between January 2008 and March 2014. Panel A pertains to the absolute value of the focal firm's cumulative abnormal return (CAR) around results disclosures for closely related trials by the focal firm's peers. Panel B presents the correlation between peer disclosures and the focal firm's stock return volatility. Panel C pertains to the absolute value of a focal firm's CAR around its own disclosures. CARs are computed over the three-day window from one day before to one day after a results disclosure using the market model. Stock return volatilities are computed at the daily frequency using one year of daily returns.

Table B.2: Using an Alternative Definition of Medical Conditions to Define Peer Disclosures of Closely Related Trials

	(1)	(2)	(3)
Variables	*Disclosure by FDAAA Deadline*		
Peer Disclosures	-0.0283***	-0.0222***	-0.0306***
	(-3.49)	(-2.60)	(-3.34)
Firm-Level Controls	Yes	Yes	Yes
Trial-Level Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm FE	No	Yes	No
Model	OLS	OLS	Probit
Observations	4,220	4,220	4,220
Adjusted/Pseudo R-squared	0.1585	0.1847	0.1403

This table presents regression estimates of the relation between peer disclosures and focal firms' own disclosure decisions for clinical trials that ended between January 2008 and March 2014, where we use an alternative definition of medical conditions based on the MeSH tree structure (MeSH Tree Level 5 with four three-digit numerals) to determine whether the focal firms' trials and the peers' trials are closely related. The regressions are specified as in Table 3. Columns (1) and (2) present OLS coefficient estimates, column (3) presents marginal effects from a probit model. *t*-statistics, based on standard errors clustered at the trial-level, are reported in parentheses. *Firm-Level Controls* and *Trial-Level Controls* are the same sets of control variables as in Table 3. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table B.3. Alternative Clustering of Standard Errors

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	*Disclosure by FDAAA Deadline*					
Peer Disclosures	-0.0356***	-0.0309***	-0.0385***	-0.0356***	-0.0309***	-0.0385***
	(-3.84)	(-3.25)	(-3.74)	(-3.37)	(-2.83)	(-3.33)
Firm-Level Controls	Yes	Yes	Yes	Yes	Yes	Yes
Trial-Level Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	No	Yes	No
Model	OLS	OLS	Probit	OLS	OLS	Probit
Observations	4,794	4,794	4,794	4,794	4,794	4,794
Adjusted/Pseudo R-squared	0.1620	0.1877	0.1421	0.1620	0.1875	0.1421
Clustering of Standard Errors	Firm-Year Level			Firm Level		

This table presents regression estimates of the relation between peer disclosures and focal firms' own disclosure decisions for clinical trials that ended between January 2008 and March 2014. The regressions are specified as in Table 3, except that the *t*-statistics reported here in columns (1) to (3) are based on standard errors clustered at the firm-year level, and that the *t*-statistics reported here in columns (4) to (6) are based on standard errors clustered at the firm level. Columns (1), (2), (4), and (5) present OLS coefficient estimates, columns (3) and (6) present marginal effects from probit models. *Firm-Level Controls* and *Trial-Level Controls* are the same sets of control variables as in Table 3. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table B.4: Disclosure of Clinical Trial Results at Any Time (i.e., before, on, or after FDAAA Deadline)

	(1)	(2)	(3)
Variables	*Disclosure at Any Time*		
Peer Disclosures	-0.0258***	-0.0209**	-0.0281***
	(-3.23)	(-2.55)	(-3.15)
Market Capitalization	-0.0057	0.0157	-0.0077
	(-0.82)	(0.47)	(-0.99)
Book-to-Market	-0.2721***	-0.1108	-0.3072***
	(-5.88)	(-0.78)	(-5.82)
Stock Return Volatility	1.0504	-1.1377	0.9549
	(1.08)	(-0.83)	(0.89)
Stock Return	-0.0006	0.0176	-0.0005
	(-0.03)	(0.73)	(-0.02)
ROA	-0.1863***	0.1708*	-0.2129***
	(-3.12)	(1.66)	(-3.14)
Loss	-0.0354	-0.0151	-0.0432
	(-1.17)	(-0.39)	(-1.29)
Institutional Ownership	-0.0978***	-0.0255	-0.1152***
	(-2.67)	(-0.24)	(-2.79)
Analyst Following	0.0073***	0.0004	0.0083***
	(4.49)	(0.10)	(4.60)
Investment (CAPX+R&D)	-0.4162***	0.1606	-0.4664***
	(-4.64)	(1.01)	(-4.51)
Own Registrations of New Trials	0.0080	0.0176*	0.0092
	(0.80)	(1.72)	(0.80)
Completed vs. Terminated	0.0476**	0.0554***	0.0516**
	(2.48)	(2.85)	(2.48)
Phase 3	0.1638***	0.1749***	0.1725***
	(10.21)	(10.78)	(10.52)
Phase 4	0.1980***	0.1972***	0.1970***
	(9.22)	(8.75)	(9.77)
Lead Sponsor	0.0526**	0.0273	0.0619**
	(2.20)	(1.03)	(2.32)
Number of Sponsors	0.0129	0.0132	0.0129
	(0.99)	(0.95)	(0.92)
Industry Funding Source	-0.0346	-0.0208	-0.0314
	(-1.16)	(-0.65)	(-0.98)
FDA Oversight	0.0279	0.0206	0.0265
	(1.14)	(0.81)	(0.96)
Normalized Trial HHI	-0.0166	-0.0273	-0.0145
	(-0.56)	(-0.91)	(-0.44)
Own Past Disclosures	0.1085***	0.1024***	0.1223***
	(10.30)	(9.39)	(9.92)
Year FE	Yes	Yes	Yes

Firm FE	No	Yes	No
Model	OLS	OLS	Probit
Observations	4,794	4,794	4,794
Adjusted/Pseudo R-squared	0.1362	0.1691	0.1112

This table presents regression estimates of the relation between peer disclosures and focal firms' own disclosure decisions for clinical trials that ended between January 2008 and March 2014. *Disclosure at Any Time* is a 0/1-indicator equal to one if the focal firm discloses its own trial results at any time (i.e., before, on, or after the deadline). *Peer Disclosures* is equal to ln(1+N), where N is the number of disclosures of results of closely related clinical trials by the focal firm's peers during the 365 days preceding the focal firm's disclosure deadline. Columns (1) and (2) present OLS coefficient estimates, column (3) presents marginal effects from a probit model. *t*-statistics, based on standard errors clustered at the trial-level, are reported in parentheses. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table B.5: Disclosure of Clinical Trial Results by FDAAA Deadline Conditional on Disclosure at Any Time

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	*Disclosure by FDAAA Deadline | Disclosure at Any Time = 1*					
Peer Disclosures	-0.0312***	-0.0231**	-0.0415***	-0.0301***	-0.0205**	-0.0399***
	(-3.17)	(-2.35)	(-3.31)	(-3.01)	(-2.05)	(-3.15)
Market Capitalization	0.0438***	-0.0188	0.0509***	0.0435***	-0.0048	0.0506***
	(4.95)	(-0.41)	(4.72)	(4.79)	(-0.10)	(4.57)
Book-to-Market	0.2202***	-0.1548	0.2773***	0.2344***	-0.1518	0.2966***
	(3.77)	(-0.88)	(3.73)	(3.84)	(-0.83)	(3.88)
Stock Return Volatility	0.7414	0.7569	0.5152	0.9602	1.0067	0.7665
	(0.65)	(0.48)	(0.34)	(0.79)	(0.60)	(0.48)
Stock Return	-0.0076	-0.0118	-0.0035	-0.0063	-0.0151	-0.0006
	(-0.30)	(-0.39)	(-0.11)	(-0.24)	(-0.50)	(-0.02)
ROA	0.2184***	0.2041*	0.3430***	0.2503***	0.2187*	0.3975***
	(3.00)	(1.73)	(3.57)	(3.24)	(1.78)	(3.96)
Loss	0.0709*	0.0650	0.1005**	0.0902**	0.0897*	0.1275***
	(1.89)	(1.33)	(2.25)	(2.30)	(1.75)	(2.79)
Institutional Ownership	0.0620	-0.1019	0.0733	0.0772	-0.1192	0.0938*
	(1.35)	(-0.64)	(1.33)	(1.62)	(-0.69)	(1.66)
Analyst Following	0.0005	0.0027	0.0004	-0.0000	0.0017	-0.0003
	(0.23)	(0.56)	(0.15)	(-0.00)	(0.33)	(-0.12)
Investment (CAPX+R&D)	0.2945**	0.1158	0.3982**	0.3159**	0.1349	0.4274***
	(2.49)	(0.54)	(2.57)	(2.54)	(0.61)	(2.64)
Own Registrations of New Trials	-0.0201*	-0.0139	-0.0278*	-0.0201	-0.0130	-0.0278*
	(-1.66)	(-1.11)	(-1.89)	(-1.64)	(-1.04)	(-1.87)
Completed vs. Terminated	0.0285	0.0287	0.0365	0.0179	0.0207	0.0222
	(1.16)	(1.17)	(1.18)	(0.71)	(0.84)	(0.71)
Phase 3	0.0858***	0.0769***	0.1038***	0.0938***	0.0824***	0.1130***
	(4.21)	(3.66)	(4.21)	(4.57)	(3.91)	(4.56)

Phase 4	0.1195***	0.1014***	0.1502***	0.1310***	0.1052***	0.1629***
	(4.93)	(4.09)	(5.13)	(5.29)	(4.18)	(5.57)
Lead Sponsor	0.0730**	0.1224***	0.0856**	0.0895***	0.1264***	0.1073***
	(2.37)	(3.35)	(2.38)	(2.78)	(3.46)	(2.91)
Number of Sponsors	-0.0248	-0.0104	-0.0338	-0.0265	-0.0130	-0.0355
	(-1.29)	(-0.60)	(-1.37)	(-1.39)	(-0.75)	(-1.47)
Industry Funding Source	0.1846***	0.1666***	0.2123***	0.1595***	0.1562***	0.1813***
	(4.89)	(3.85)	(4.97)	(4.06)	(3.57)	(4.07)
FDA Oversight	0.0920***	0.0820***	0.1161***	0.0953***	0.0840***	0.1199***
	(3.30)	(2.80)	(3.30)	(3.31)	(2.81)	(3.34)
Normalized Trial HHI	-0.0218	-0.0005	-0.0299	-0.0206	-0.0015	-0.0271
	(-0.59)	(-0.01)	(-0.65)	(-0.55)	(-0.04)	(-0.59)
Own Past Disclosures	0.1245***	0.1058***	0.1525***	0.1228***	0.1033***	0.1498***
	(9.61)	(7.82)	(8.97)	(9.43)	(7.61)	(8.77)
Current Own CAR (-1,+1)				0.0282*	0.0283*	0.0333
				(1.70)	(1.71)	(1.61)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	No	Yes	No
Model	OLS	OLS	Probit	OLS	OLS	Probit
Observations	2,897	2,874	2,897	2,831	2,808	2,831
Adjusted/Pseudo R-squared	0.2384	0.2874	0.2007	0.2355	0.2880	0.1994

This table presents regression estimates of the relation between peer disclosures and focal firms' own disclosure decisions for clinical trials that ended between January 2008 and March 2014 in the subsample of observations where the focal firms disclose their results. *Disclosure by FDAAA Deadline* is a 0/1-indicator equal to one if the focal firm discloses its own trial results before or on the FDAAA mandated disclosure deadline. *Disclosure at Any Time* is a 0/1-indicator equal to one if the focal firm discloses its own trial results at any time (i.e., before, on, or after the deadline). *Peer Disclosures* is equal to ln(1+N), where N is the number of disclosures of results of closely related clinical trials by the focal firm's peers during the 365 days preceding the focal firm's disclosure deadline. Columns (1), (2), (4), and (5) present OLS coefficient estimates, columns (3) and (6) present marginal effects from probit models. The number of observations in column (2) is smaller than in column (1), and the number of observations in column (5) is smaller than in column (4), because adding firm fixed effects to the regressions increases the number of "singletons" that are removed by the estimation procedure. The number of observations in column (4) is smaller than in column (1) because *Current Own CAR (-1+1)* is not available for all observations. *t*-statistics, based on standard errors clustered at the trial-level, are reported in parentheses. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table B.6: Disclosure by FDAAA Deadline in Subsample of Trials without Non-Industry Co-Sponsors

	(1)	(2)	(3)
Variables	*Disclosure by FDAAA Deadline*		
Peer Disclosures	-0.0462***	-0.0426***	-0.0527***
	(-5.28)	(-4.72)	(-5.12)
Firm-Level Controls	Yes	Yes	Yes
Trial-Level Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm FE	No	Yes	No
Model	OLS	OLS	Probit
Observations	3,595	3,588	3,595
Adjusted/Pseudo R-squared	0.1861	0.2340	0.1567

This table presents regression estimates of the relation between peer disclosures and focal firms' own disclosure decisions for clinical trials that ended between January 2008 and March 2014 in the subsample of observations pertaining to trials that do not involve any non-industry co-sponsors. The regressions are specified as in Table 3. Columns (1) and (2) present OLS coefficient estimates, column (3) presents marginal effects from a probit model. The number of observations in column (2) is smaller than in column (1) because adding firm fixed effects to the regression increases the number of "singletons" that are removed by the estimation procedure. *t*-statistics, based on standard errors clustered at the trial-level, are reported in parentheses. *Firm-Level Controls* and *Trial-Level Controls* are the same sets of control variables as in Table 3. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table B.7: Descriptive Statistics for Various Subsamples

Panel A: Descriptive statistics for completed and terminated trials

	Completed Trials		Terminated Trials		
Variables	N	mean	N	mean	diff. in means
Disclosure by FDAAA Deadline	3,941	0.336	853	0.233	0.103***
Disclosure at Any Time	3,941	0.619	853	0.537	0.082***
Number of Peer Disclosures	3,941	19.712	853	18.980	0.732
Peer Disclosures	3,941	2.355	853	2.372	-0.017
Lead Sponsor	3,941	0.729	853	0.625	0.104***
Number of Sponsors	3,941	1.643	853	1.730	-0.087***
Industry Funding Source	3,941	0.772	853	0.647	0.125***
FDA Oversight	3,941	0.849	853	0.790	0.059***
Phase 2	3,941	0.461	853	0.532	-0.071***
Phase 3	3,941	0.368	853	0.326	0.042**
Phase 4	3,941	0.171	853	0.142	0.029**
Normalized Trial HHI	3,941	0.217	853	0.189	0.028**
Number of Own Past Disclosures	3,941	1.701	853	1.005	0.696***
Own Past Disclosures	3,941	0.616	853	0.438	0.178***

Panel B: Descriptive statistics for trials in phase 2, phase 3, and phase 4

	Phase 2		Phase 3		Phase 4		Phase 3 - Phase 2	Phase 4 - Phase 3	Phase 4 - Phase 2
Variables	N	mean	N	mean	N	mean		diff. in means	
Disclosure by FDAAA Deadline	2,269	0.208	1,730	0.433	795	0.379	0.225***	-0.054**	0.171***
Disclosure at Any Time	2,269	0.489	1,730	0.694	795	0.740	0.205***	0.046**	0.251***
Number of Peer Disclosures	2,269	20.711	1,730	20.071	795	15.293	-0.640	-4.778***	-5.418***
Peer Disclosures	2,269	2.461	1,730	2.326	795	2.133	-0.135***	-0.193***	-0.328***
Completed vs. Terminated	2,269	0.800	1,730	0.839	795	0.848	0.039***	0.009	0.048***
Lead Sponsor	2,269	0.687	1,730	0.814	795	0.552	0.127***	-0.262***	-0.135***
Number of Sponsors	2,269	1.703	1,730	1.514	795	1.845	-0.189***	0.331***	0.142***
Industry Funding Source	2,269	0.709	1,730	0.890	795	0.564	0.181***	-0.326***	-0.145***
FDA Oversight	2,269	0.869	1,730	0.937	795	0.536	0.068***	-0.401***	-0.333***
Normalized Trial HHI	2,269	0.193	1,730	0.219	795	0.253	0.026***	0.034**	0.060***
Number of Own Past Disclosures	2,269	1.298	1,730	2.055	795	1.333	0.757***	-0.722***	0.035
Own Past Disclosures	2,269	0.504	1,730	0.709	795	0.541	0.205***	-0.168***	0.037

Panel C: Descriptive statistics for trials conducted by non-industry sponsors

Variables	N	mean
Disclosure by FDAAA Deadline	4,557	0.122
Disclosure at Any Time	4,557	0.594
Number of Peer Disclosures	4,557	14.636
Peer Disclosures	4,557	2.083
Completed vs. Terminated	4,557	0.790
Lead Sponsor	4,557	0.606
Number of Sponsors	4,557	2.268
FDA Oversight	4,557	0.513
Phase 2	4,557	0.651
Phase 3	4,557	0.201
Phase 4	4,557	0.148
Normalized Trial HHI	4,557	0.214
Number of Own Past Disclosures	4,557	1.269
Own Past Disclosures	4,557	0.384

This table presents descriptive statistics for various subsamples of our data. Panel A distinguishes between completed and terminated trials. Panel B distinguishes between trials in phases 2, 3, and 4. Panel C pertains to trials conducted by non-industry sponsors (e.g., universities or research institutes). All trials ended between January 2008 and March 2014. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table B.8: Descriptive Statistics for Real Effect Sample

Variables	N	mean	sd	p25	p50	p75
Abandon	10,138	0.174	0.379	0.000	0.000	0.000
Number of Peer Disclosures before Trial End Date	10,138	17.244	19.959	3.000	10.000	25.000
Peer Disclosures before Trial End Date	10,138	2.234	1.273	1.386	2.398	3.258
Firm-Level Controls						
Market Capitalization	10,138	10.875	1.495	10.695	11.395	11.727
Book-to-Market	10,138	0.515	0.173	0.414	0.511	0.632
Stock Return Volatility	10,138	0.017	0.010	0.011	0.014	0.020
Stock Return	10,138	0.166	0.296	0.005	0.137	0.295
ROA	10,138	0.069	0.156	0.054	0.087	0.129
Loss	10,138	0.079	0.269	0.000	0.000	0.000
Institutional Ownership	10,138	0.398	0.367	0.000	0.598	0.707
Analyst Following	10,138	12.523	8.150	4.167	14.417	19.750
Investment (CAPX+R&D)	10,138	0.132	0.108	0.087	0.110	0.130
Number of Own Registrations of New Trials before Trial End Date	10,138	3.509	5.492	0.000	1.000	4.000
Own Registrations of New Trials before Trial End Date	10,138	0.982	0.969	0.000	0.693	1.609
Trial-Level Controls						
Lead Sponsor	10,138	0.758	0.429	1.000	1.000	1.000
Number of Sponsors	10,138	1.574	0.866	1.000	1.000	2.000
Industry Funding Source	10,138	0.791	0.407	1.000	1.000	1.000
FDA Oversight	10,138	0.580	0.494	0.000	1.000	1.000
Phase 0	10,138	0.003	0.056	0.000	0.000	0.000
Phase 1	10,138	0.218	0.413	0.000	0.000	0.000
Phase 2	10,138	0.336	0.472	0.000	0.000	1.000
Phase 3	10,138	0.292	0.455	0.000	0.000	1.000
Phase 4	10,138	0.151	0.358	0.000	0.000	0.000
Normalized Trial HHI	10,138	0.178	0.274	0.047	0.070	0.137
Number of Own Past Disclosures before Trial End Date	10,138	1.580	2.898	0.000	0.000	2.000
Own Past Disclosures before Trial End Date	10,138	0.577	0.769	0.000	0.000	1.099

This table presents descriptive statistics for the real effect sample of 10,138 observations at the focal firm-trial level, pertaining to 103 unique firms and 9,722 unique clinical trials that ended between January 2009 and March 2015. Variable definitions are provided in Appendix C.

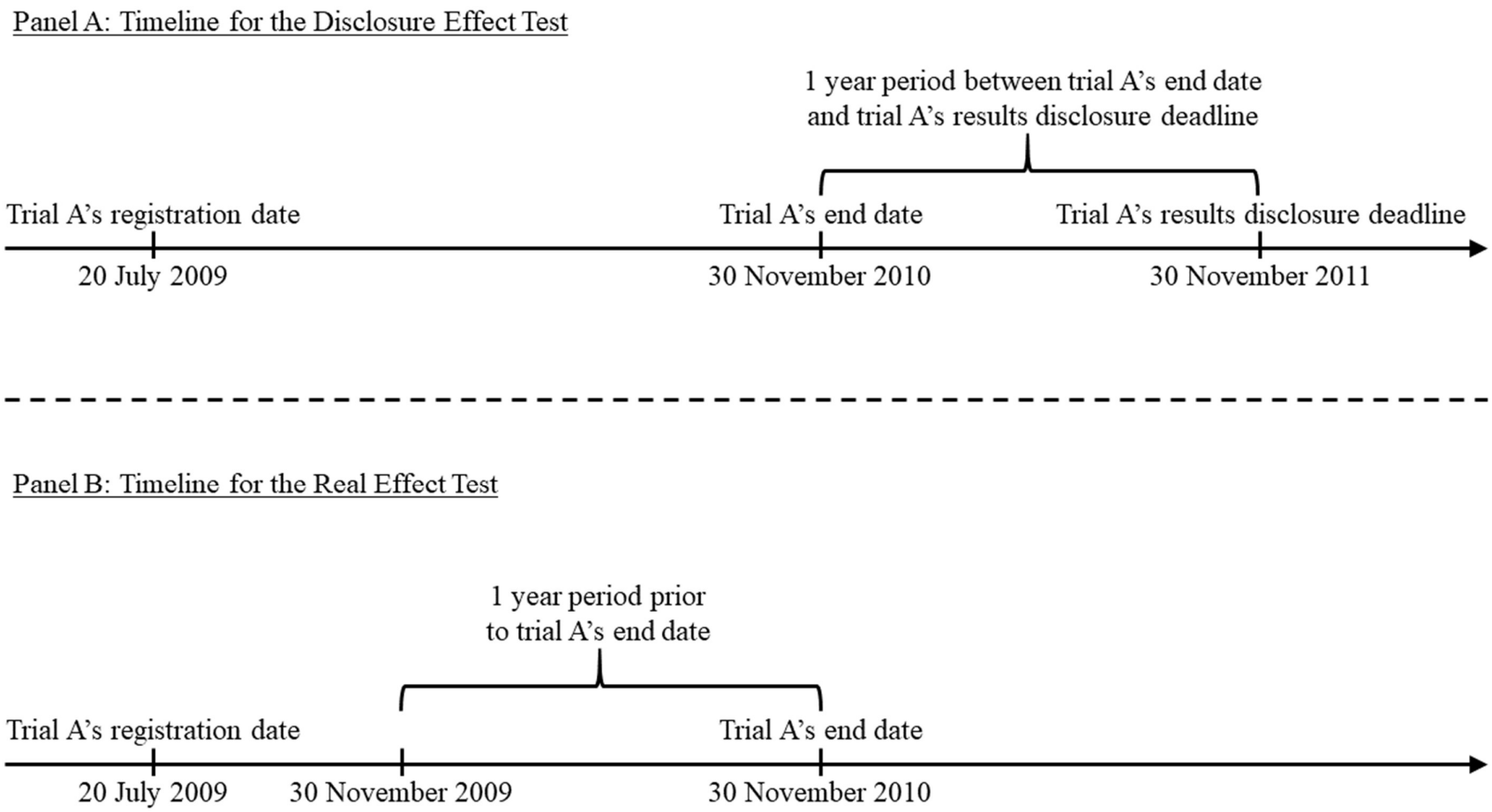
Appendix C: Variable Definitions

Variable	Definition	Source
Disclosure by FDAAA Deadline	0/1-indicator equal to 1 if a focal firm discloses its own trial results before or on the FDAAA mandated deadline.	ClinicalTrials.gov/AACT
Disclosure at Any Time	0/1-indicator equal to 1 if a focal firm discloses its own trial results at any time (i.e., before, on, or after the deadline).	ClinicalTrials.gov/AACT
Number of Peer Disclosures	Number of disclosures of results of closely related clinical trials by other trial sponsors (i.e., peers) during the 365 days preceding the focal firm's disclosure deadline, where clinical trials are considered to be closely related if they examine the same medical condition, as indicated by carrying the same Medical Subject Heading (MeSH).	ClinicalTrials.gov/AACT
Peer Disclosures	Natural logarithm of (1 + *Number of Peer Disclosures*).	ClinicalTrials.gov/AACT
Market Capitalization	Natural logarithm of the market value of equity.	Compustat
Book-to-Market	Book value of equity divided by the market value of equity.	Compustat
Stock Return Volatility	Standard deviation of daily stock returns, estimated using 1 year of data.	CRSP
Stock Return	Yearly stock return, computed using 1 year of daily stock returns.	CRSP
ROA	Net income divided by total assets.	Compustat
Loss	0/1-indicator equal to 1 if the net income is negative.	Compustat
Institutional Ownership	Average percentage of institutional ownership.	Thomson Reuters
Analyst Following	Average number of analysts following the firm.	I/B/E/S
Investment (CAPX+R&D)	Sum of capital expenditure and R&D expenses divided by total assets.	Compustat
Number of Own Registrations of New Trials	Number of newly registered trials of the focal firm, pertaining to the same medical condition, during the 365 days preceding the focal firm's disclosure deadline.	ClinicalTrials.gov/AACT
Own Registrations of New Trials	Natural logarithm of (1 + *Number of Own Registrations of New Trials*).	ClinicalTrials.gov/AACT
Completed vs. Terminated	0/1-indicator equal to 1 if a trial is completed.	ClinicalTrials.gov/AACT
Phase X (for X = 0,1,2,3,4)	0/1-indicator equal to 1 if a trial is in phase X, where X is equal to 0, 1, 2, 3, or 4.	ClinicalTrials.gov/AACT

Variable	Definition	Source
Lead Sponsor	0/1-indicator equal to 1 if the focal firm is the trial's lead sponsor.	ClinicalTrials.gov/AACT
Number of Sponsors	Number of entities (co-)sponsoring the trial.	ClinicalTrials.gov/AACT
Industry Funding Source	0/1-indicator equal to 1 if the trial is sponsored exclusively by industry-sponsors (i.e., does not involve any non-industry sponsors such as universities, research institutes, or the NIH).	ClinicalTrials.gov/AACT
FDA Oversight	0/1-indicator equal to 1 if the trial is conducted under FDA oversight.	ClinicalTrials.gov/AACT
Normalized Trial HHI	Normalized Herfindahl–Hirschman Index computed as follows: For each medical condition and year, we compute the sum of the squared market shares of all firms with completed trials pertaining to the medical condition, where the market shares are based on the firms' total sales. We then normalize the sum by subtracting 1/N and then dividing by 1 – 1/N, where N is the number of firms. If *Normalized Trial HHI* is missing, we replace it with the sample mean.	Compustat
Number of Own Past Disclosures	Number of disclosures of results of other, closely related clinical trials by the focal firm during the 365 days preceding the focal firm's disclosure deadline, where clinical trials are considered to be closely related if they examine the same medical condition, as indicated by carrying the same Medical Subject Heading (MeSH).	ClinicalTrials.gov/AACT
Own Past Disclosures	Natural logarithm of (1 + *Number of Own Past Disclosures*).	ClinicalTrials.gov/AACT
High Competition	0/1-indicator equal to 1 if the number of peer trials that were completed in the 365 days preceding the FDAAA disclosure deadline and examined the same medical condition as the focal firm's trial is larger than the median.	ClinicalTrials.gov/AACT
Relative Later Phase	0/1-indicator equal to 1 if the focal firm's trial is in a later phase than the median of the disclosed peer trials used to compute *Peer Disclosures*.	ClinicalTrials.gov/AACT
Bad News for Focal Firm	0/1-indicator equal to 1 if the focal firm's average cumulative abnormal return (CAR) in the three days around the peer disclosures is negative.	Eventus
Treat	0/1-indicator equal to 1 if the number of trial results disclosures by GSK or Novartis in batch disclosure k that pertain to the same medical condition as the focal firm's trial is larger than the median.	ClinicalTrials.gov/AACT
Post	0/1-indicator equal to 1 during the 365 days after a batch disclosure by GSK or Novartis.	ClinicalTrials.gov/AACT
GSK/Novartis Batch Disclosures	Natural logarithm of 1 plus the number of disclosures of results of closely related clinical trials by GSK or Novartis during a batch disclosure event after GSK or Novartis commitment to full disclosure.	ClinicalTrials.gov/AACT
Abandon	0/1-indicator equal to 1 if the status of the focal firm's trial at the trial's end date is either "suspended," "withdrawn," or "terminated" (i.e., if the focal firm does not complete the trial).	ClinicalTrials.gov/AACT

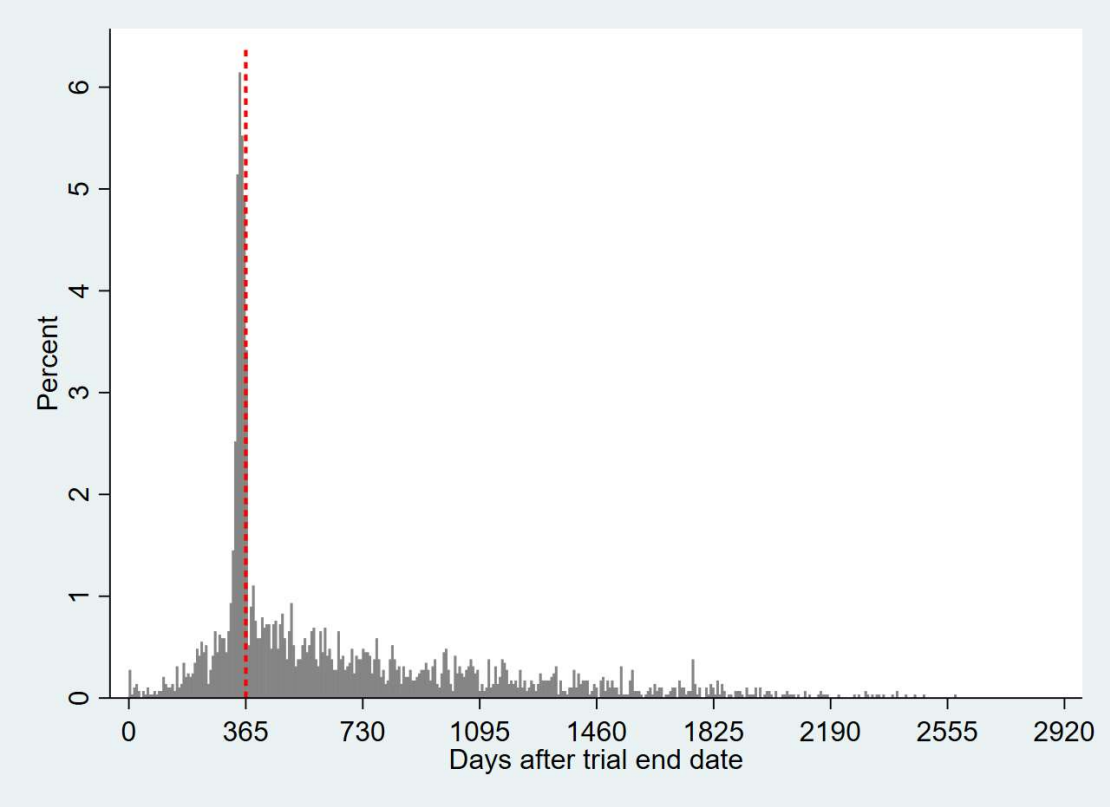
Variable	Definition	Source
Number of Peer Disclosures before Trial End Date	Number of disclosures of results of closely related clinical trials by other trial sponsors (i.e., peers) during the 365 days preceding the focal firm's trial end date, where clinical trials are considered to be closely related if they examine the same medical condition, as indicated by carrying the same Medical Subject Heading (MeSH).	ClinicalTrials.gov/AACT
Peer Disclosures before Trial End Date	Natural logarithm of (1 + *Number of Peer Disclosures before Trial End Date*).	ClinicalTrials.gov/AACT
Number of Own Registrations of New Trials before Trial End Date	Number of newly registered trials of the focal firm, pertaining to the same medical condition, during the 365 days preceding the focal firm's trial end date.	ClinicalTrials.gov/AACT
Own Registrations of New Trials before Trial End Date	Natural logarithm of (1 + *Number of Own Registrations of New Trials before Trial End Date*).	ClinicalTrials.gov/AACT
Number of Own Past Disclosures before Trial End Date	Number of disclosures of results of other, closely related clinical trials by the focal firm during the 365 days preceding the focal firm's trial end date, where clinical trials are considered to be closely related if they examine the same medical condition, as indicated by carrying the same Medical Subject Heading (MeSH).	ClinicalTrials.gov/AACT
Own Past Disclosures before Trial End Date	Natural logarithm of (1 + *Number of Own Past Disclosures before Trial End Date*).	ClinicalTrials.gov/AACT
Absolute CAR (-1,+1) of Focal Firm around Focal Firm's Disclosures	Absolute value of the focal firm's cumulative abnormal return in the three days around its own disclosures.	Eventus
Absolute CAR (-1,+1) of Focal Firm around Peer Disclosures	Absolute value of the focal firm's cumulative abnormal return in the three days around peer disclosures.	Eventus
Current Own CAR (-1, +1)	0/1-indicator equal to 1 if the focal firm's cumulative abnormal return (CAR) in the three-day window (-1, +1) around the focal firm's disclosure date is positive.	Eventus

Figure 1: Timing of Focal Firms' and Peers' Trial Results Disclosures



This figure provides a hypothetical example that illustrates the timing of focal firms' and peers' disclosures in our analysis.

Figure 2: Number of Days between Trial End Date and Results Disclosure Date



This figure shows a histogram of the number of days between the focal firms' trial end dates and the results disclosure dates for the 2,897 observations at the focal firm-trial level where the trial results are eventually disclosed (i.e., where the variable *Disclosure at Any Time* is equal to one).

Sample: 2,897 Observations with *Disclosure at Any Time* = 1	Cumulative Percentage
Trial results are disclosed during last 7 days before FDAAA deadline	5%
Trial results are disclosed during last 14 days before FDAAA deadline	11%
Trial results are disclosed during last 30 days before FDAAA deadline	24%
Trial results are disclosed during last 60 days before FDAAA deadline	30%
Trial results are disclosed during last 90 days before FDAAA deadline	33%
Trial results are disclosed during last 120 days before FDAAA deadline	35%
Trial results are disclosed during last 180 days before FDAAA deadline	39%

Table 1. Sample Selection Procedure

Sample selection procedure	Num. of obs.
Studies downloaded from ClinicalTrials.gov	195,696
Exclude: Overall recruitment status=WITHDRAWN	191,836
Exclude: Primary completion date ≤ 12/2007, or if missing, completion date ≤ 12/2007	162,948
Exclude: Study type not INTERVENTIONAL	129,217
Exclude: Phase 0 or Phase 1	110,058
Exclude: No US FDA oversight, and (only non-US sites or no biological/device/drug/genetic/radiation intervention)	45,109
Exclude: Overall recruitment status not COMPLETED or TERMINATED	22,747
Exclude: Primary completion date ≥ 4/2014, or if missing, completion date ≥ 4/2014	19,728
Exclude: Primary completion and completion dates missing, and verification date ≤ 12/2007	18,860
Exclude: Primary completion and completion dates missing, and verification date ≥ 4/2014	18,854
Exclude: (Recruitment status missing) OR (study type missing) OR (phase missing) OR (FDA oversight missing) OR (US sites missing) OR (intervention type missing) OR (primary completion date AND completion date AND verification date missing)	13,525
Exclude: Non-industry sponsor or sponsor missing	10,651
Exclude: Non-COMPUSTAT sponsor	8,242
Exclude: Duplicate observations of clinical trials whose sponsors are from the same parent firm in COMPUSTAT	8,125
Exclude: Variables needed for analysis missing	5,312
Exclude: Trials sponsored by GSK or Novartis after their commitment to full disclosure	5,238
Exclude: Parent firms that always or never disclose trial results	4,798
Exclude: Month of reported disclosure date < month of reported primary completion date	4,794

This table presents the sample selection procedure for our main analysis.

Table 2. Descriptive Statistics

Variables	N	mean	sd	p25	p50	p75
Disclosure by FDAAA Deadline	4,794	0.317	0.466	0.000	0.000	1.000
Disclosure at Any Time	4,794	0.604	0.489	0.000	1.000	1.000
Number of Peer Disclosures	4,794	19.582	21.860	3.000	12.000	29.000
Peer Disclosures	4,794	2.358	1.294	1.386	2.565	3.401
Firm-Level Controls						
Market Capitalization	4,794	10.603	1.836	10.229	11.325	11.813
Book-to-Market	4,794	0.499	0.187	0.388	0.509	0.621
Stock Return Volatility	4,794	0.018	0.013	0.011	0.014	0.021
Stock Return	4,794	0.209	0.356	0.034	0.182	0.316
ROA	4,794	0.035	0.275	0.046	0.078	0.123
Loss	4,794	0.126	0.332	0.000	0.000	0.000
Institutional Ownership	4,794	0.429	0.365	0.000	0.607	0.707
Analyst Following	4,794	12.937	7.912	4.667	14.500	19.750
Investment (CAPX+R&D)	4,794	0.148	0.180	0.086	0.109	0.149
Number of Own Registrations of New Trials	4,794	2.141	4.086	0.000	0.000	2.000
Own Registrations of New Trials	4,794	0.673	0.860	0.000	0.000	1.099
Trial-Level Controls						
Completed vs. Terminated	4,794	0.822	0.382	1.000	1.000	1.000
Phase 2	4,794	0.473	0.499	0.000	0.000	1.000
Phase 3	4,794	0.361	0.480	0.000	0.000	1.000
Phase 4	4,794	0.166	0.372	0.000	0.000	0.000
Lead Sponsor	4,794	0.711	0.453	0.000	1.000	1.000
Number of Sponsors	4,794	1.658	0.841	1.000	1.000	2.000
Industry Funding Source	4,794	0.750	0.433	0.000	1.000	1.000
FDA Oversight	4,794	0.838	0.368	1.000	1.000	1.000
Normalized Trial HHI	4,794	0.212	0.305	0.047	0.077	0.174
Number of Own Past Disclosures	4,794	1.577	2.860	0.000	0.000	2.000
Own Past Disclosures	4,794	0.584	0.763	0.000	0.000	1.099

This table presents descriptive statistics for our main sample of 4,794 observations at the focal firm-trial level, pertaining to 119 unique firms and 4,561 unique clinical trials that ended between January 2008 and March 2014. Variable definitions are provided in Appendix C.

Table 3. Peer Disclosures and the Likelihood that Focal Firms Disclose their Trial Results by the FDAAA Deadline

	(1)	(2)	(3)
Variables	*Disclosure by FDAAA Deadline*		
Peer Disclosures	-0.0356***	-0.0309***	-0.0385***
	(-4.76)	(-4.01)	(-4.56)
Market Capitalization	0.0204***	0.0160	0.0233***
	(3.21)	(0.58)	(3.00)
Book-to-Market	-0.0043	-0.0546	0.0059
	(-0.10)	(-0.46)	(0.11)
Stock Return Volatility	1.2732	0.2915	1.1252
	(1.60)	(0.28)	(1.10)
Stock Return	-0.0048	0.0151	-0.0009
	(-0.27)	(0.74)	(-0.04)
ROA	0.0415	0.1972**	0.0974
	(0.81)	(2.35)	(1.42)
Loss	0.0218	0.0409	0.0421
	(0.80)	(1.18)	(1.22)
Institutional Ownership	-0.0095	-0.0150	-0.0100
	(-0.28)	(-0.22)	(-0.26)
Analyst Following	0.0047***	0.0057	0.0051***
	(3.19)	(1.47)	(2.95)
Investment (CAPX+R&D)	-0.0432	0.1626	-0.0417
	(-0.55)	(1.24)	(-0.38)
Own Registrations of New Trials	-0.0138	-0.0031	-0.0144
	(-1.43)	(-0.31)	(-1.40)
Completed vs. Terminated	0.0417**	0.0435**	0.0440**
	(2.46)	(2.52)	(2.24)
Phase 3	0.1594***	0.1633***	0.1760***
	(10.58)	(10.46)	(10.42)
Phase 4	0.2034***	0.2010***	0.2474***
	(10.10)	(9.59)	(9.80)
Lead Sponsor	0.0674***	0.0858***	0.0708***
	(2.89)	(3.40)	(2.84)
Number of Sponsors	-0.0041	0.0048	-0.0083
	(-0.29)	(0.35)	(-0.47)
Industry Funding Source	0.1016***	0.0920***	0.1070***
	(3.73)	(3.10)	(3.72)
FDA Oversight	0.0834***	0.0845***	0.0997***
	(4.01)	(3.88)	(4.20)
Normalized Trial HHI	-0.0190	-0.0179	-0.0180
	(-0.67)	(-0.62)	(-0.57)
Own Past Disclosures	0.1579***	0.1467***	0.1569***
	(14.74)	(13.09)	(13.81)
Year FE	Yes	Yes	Yes

Firm FE	No	Yes	No
Model	OLS	OLS	Probit
Observations	4,794	4,794	4,794
Adjusted/Pseudo R-squared	0.1620	0.1877	0.1421

This table presents regression estimates of the relation between peer disclosures and focal firms' own disclosure decisions for clinical trials that ended between January 2008 and March 2014. *Disclosure by FDAAA Deadline* is a 0/1-indicator equal to one if the focal firm discloses its own trial results before or on the FDAAA mandated disclosure deadline. *Peer Disclosures* is equal to ln(1+N), where N is the number of disclosures of results of closely related clinical trials by the focal firm's peers during the 365 days preceding the focal firm's disclosure deadline. Columns (1) and (2) present OLS coefficient estimates, column (3) presents marginal effects from a probit model. *t*-statistics, based on standard errors clustered at the trial-level, are reported in parentheses. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 4. Placebo Test: Peer Disclosures and the Likelihood that Non-Industry Sponsors Disclose their Trial Results by the FDAAA Deadline

	(1)	(2)	(3)
Variables	*Disclosure by FDAAA Deadline*		
Peer Disclosures	-0.0049	-0.0020	-0.0041
	(-0.77)	(-0.31)	(-0.71)
Own Registrations of New Trials	-0.0230***	-0.0227**	-0.0268***
	(-3.80)	(-2.32)	(-3.60)
Completed vs. Terminated	-0.0248	-0.0135	-0.0243
	(-1.47)	(-0.78)	(-1.53)
Phase 3	0.0326*	0.0211	0.0321*
	(1.71)	(1.11)	(1.75)
Phase 4	-0.0146	-0.0112	-0.0110
	(-0.86)	(-0.63)	(-0.61)
Lead Sponsor	0.0175*	0.0364**	0.0186**
	(1.82)	(2.56)	(2.16)
Number of Sponsors	0.0000	0.0061	0.0003
	(0.01)	(0.95)	(0.05)
FDA Oversight	0.0552***	0.0396***	0.0538***
	(4.01)	(2.91)	(4.07)
Normalized Trial HHI	0.0036	0.0063	0.0088
	(0.15)	(0.27)	(0.39)
Own Past Disclosures	0.0526***	0.0444***	0.0415***
	(5.22)	(4.03)	(5.48)
Year FE	YES	YES	YES
Non-Industry Sponsor FE	NO	YES	NO
Model	OLS	OLS	Probit
Observations	4,556	4,556	4,556
Adjusted/Pseudo R-squared	0.0701	0.1262	0.0987

This table presents regression estimates of the relation between peer disclosures and non-industry sponsors' (e.g., universities' or research institutes') own disclosure decisions for clinical trials that ended between January 2008 and March 2014. The number of observations that is indicated in this table (4,556) is smaller than the number of observations that is indicated in Table B.7 (4,557) because it refers to the number of observations that are effectively used in the estimation procedure, after iteratively dropping cases with only a single observation for a given fixed effect (so-called "singletons"). Columns (1) and (2) present OLS coefficient estimates, column (3) presents marginal effects from a probit model. *t*-statistics, based on standard errors clustered at the trial-level, are reported in parentheses. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 5. Difference-in-Differences Analysis

	(1)	(2)	(3)	(4)
Variables	*Disclosure by FDAAA Deadline*			
Treat	0.1651**	0.3192***		
	(2.54)	(4.33)		
Post	0.0414*	0.0561**	0.0427*	0.0580**
	(1.66)	(2.15)	(1.71)	(2.22)
Treat X Post	-0.1782**	-0.2294**		
	(-2.20)	(-2.50)		
GSK/Novartis Batch Disclosures			0.0875**	0.1716***
			(2.35)	(4.06)
GSK/Novartis Batch Disclosures X Post			-0.0931*	-0.1218**
			(-1.95)	(-2.25)
Firm-Level Controls	Yes	No	Yes	No
Trial-Level Controls	Yes	No	Yes	No
Peer Batch Disclosure Event X Year FE	Yes	Yes	Yes	Yes
Peer Batch Disclosure Event X Firm FE	Yes	Yes	Yes	Yes
Model	OLS	OLS	OLS	OLS
Observations	8,076	8,076	8,076	8,076
Adjusted R-squared	0.1980	0.0853	0.1980	0.0856

This table presents estimates of the relation between peer disclosures and focal firms' own disclosure decisions obtained from difference-in-differences models around peer batch disclosures by GSK and Novartis after these firms' public commitment to full disclosure. *Treat* is a 0/1-indicator equal to one if the number of trial results disclosures by GSK or Novartis in a batch disclosure that pertain to the same medical condition as the focal firm's trial is larger than the median. *Post* is a 0/1-indicator equal to one during the 365 days after a batch disclosure by GSK or Novartis. *GSK/Novartis Batch Disclosures* is equal to Ln(1+N), where N is the number of disclosures of results of closely related clinical trials by GSK or Novartis during a batch disclosure event after GSK or Novartis commitment to full disclosure. All columns show OLS coefficient estimates. *t*-statistics, based on standard errors clustered at the trial-level, are reported in parentheses. *Firm-Level Controls* and *Trial-Level Controls* are the same sets of control variables as in Table 3. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6. Completed vs. Terminated Trials and Trials in Different Clinical Phases

	(1)	(2)	(3)	(4)	(5)
	Completed	Terminated	Phase 2	Phase 3	Phase 4
Variables			*Disclosure by FDAAA Deadline*		
Peer Disclosures	-0.0424***	0.0164	-0.0148	-0.0663***	0.0062
	(-4.74)	(1.01)	(-1.40)	(-5.05)	(0.29)
Market Capitalization	0.0197	0.1059	0.0131	0.0958*	-0.0786
	(0.63)	(0.93)	(0.35)	(1.71)	(-0.76)
Book-to-Market	-0.0285	-0.1311	0.0112	0.4195*	-0.7969**
	(-0.22)	(-0.33)	(0.07)	(1.94)	(-2.24)
Stock Return Volatility	-0.9672	13.0019***	1.1589	-3.0951	5.8311
	(-0.83)	(2.97)	(0.90)	(-1.27)	(1.47)
Stock Return	0.0378	-0.0542	0.0729**	-0.0320	-0.0004
	(1.64)	(-0.85)	(2.54)	(-0.78)	(-0.01)
ROA	0.2494***	0.1506	0.0310	0.3370**	0.2337
	(2.69)	(0.60)	(0.29)	(2.27)	(0.54)
Loss	0.0244	0.0759	0.0642	0.0975*	-0.0056
	(0.62)	(0.62)	(1.19)	(1.67)	(-0.04)
Institutional Ownership	0.0167	-0.0696	0.0619	-0.0184	-0.7537*
	(0.20)	(-0.37)	(0.57)	(-0.12)	(-1.76)
Analyst Following	0.0061	-0.0061	0.0015	0.0184***	0.0048
	(1.44)	(-0.66)	(0.27)	(2.65)	(0.54)
Investment (CAPX+R&D)	0.2986**	-0.1445	0.0427	0.5346**	0.6207
	(2.04)	(-0.36)	(0.26)	(2.09)	(0.83)
Own Registrations of New Trials	-0.0044	0.0108	-0.0151	0.0079	0.0130
	(-0.41)	(0.42)	(-1.05)	(0.46)	(0.61)
Completed vs. Terminated			-0.0131	0.1157***	-0.0161
			(-0.57)	(3.61)	(-0.37)
Phase 3	0.1940***	0.0371			

	(11.12)	(0.95)			
Phase 4	0.2218***	0.1437***			
	(9.76)	(2.66)			
Lead Sponsor	0.0770***	0.1979***	0.0082	0.1703***	0.1535*
	(2.75)	(3.72)	(0.22)	(4.28)	(1.93)
Number of Sponsors	-0.0046	0.0191	-0.0178	0.0245	0.0085
	(-0.37)	(0.64)	(-1.28)	(1.04)	(0.21)
Industry Funding Source	0.1145***	-0.0679	-0.0115	0.1638***	0.3769***
	(3.39)	(-1.13)	(-0.27)	(2.73)	(4.57)
FDA Oversight	0.0763***	0.0984**	0.0678**	0.0867	0.0444
	(3.10)	(2.12)	(2.32)	(1.56)	(1.14)
Normalized Trial HHI	-0.0581*	0.0353	0.0451	-0.1271***	0.0069
	(-1.83)	(0.52)	(1.11)	(-2.72)	(0.09)
Own Past Disclosures	0.1445***	0.1311***	0.1349***	0.1433***	0.0830***
	(11.90)	(4.15)	(8.15)	(7.64)	(3.21)
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Model	OLS	OLS	OLS	OLS	OLS
Observations	3,936	833	2,252	1,713	773
Adjusted R-squared	0.2056	0.1137	0.0816	0.2407	0.3490

This table presents regression estimates, from different subsamples, of the relation between peer disclosures and focal firms' own disclosure decisions for clinical trials that ended between January 2008 and March 2014. Column (1) shows the results for completed trials. Column (2) shows the results for terminated trials. Columns (3), (4), and (5) show the results for trials in phases 2, 3, and 4, respectively. The numbers of observations that are indicated in the different columns of this table are smaller than the corresponding numbers of observations that are indicated in Table B.7 because they refer to the numbers of observations that are effectively used in the estimation procedures, after iteratively dropping cases with only a single observation for a given fixed effect (so-called "singletons"). All columns show OLS coefficient estimates. *t*-statistics, based on standard errors clustered at the trial-level, are reported in parentheses. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 7. Competition, Stage of Development, and Stock Price Reaction around Peer Disclosures

	(1)	(2)	(3)
Variables	*Disclosure by FDAAA Deadline*		
Peer Disclosures	-0.0084	-0.0470***	-0.0635***
	(-0.77)	(-4.73)	(-5.53)
High Competition	0.0477		
	(1.18)		
Peer Disclosures X High Competition	-0.0318**		
	(-2.25)		
Relative Later Phase		-0.0892**	
		(-1.99)	
Peer Disclosures X Relative Later Phase		0.0397**	
		(2.54)	
Bad News for Focal Firm			-0.1237***
			(-3.48)
Peer Disclosures X Bad News for Focal Firm			0.0468***
			(3.67)
Firm-Level Controls	Yes	Yes	Yes
Trial-Level Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Model	OLS	OLS	OLS
Observations	4,794	4,282	4,256
Adjusted R-squared	0.1889	0.1882	0.1910

This table presents regression estimates of how the relation between peer disclosures and focal firms' own disclosure decisions for clinical trials that ended between January 2008 and March 2014 varies with competition, with how far advanced the focal firms' trials are, and with the focal firms' stock price reaction around the peer disclosures. All columns show OLS coefficient estimates. *t*-statistics, based on standard errors clustered at the trial-level, are reported in parentheses. *High Competition* is a 0/1-indicator equal to one if the number of peer trials that were completed in the 365 days preceding the FDAAA disclosure deadline and examined the same medical condition as the focal firm's trial is larger than the median. *Relative Later Phase* is a 0/1-indicator equal to one if the focal firm's trial is in a later phase than the median of the disclosed peer trials used to compute *Peer Disclosures*. *Bad News for Focal Firm* is a 0/1-indicator equal to one if the focal firm's average cumulative abnormal return (CAR) in the three days around the peer disclosures is negative. *Firm-Level Controls* and *Trial-Level Controls* are the same sets of control variables as in Table 3. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 8. Sample Selection Procedure for Real Effect Test

Sample selection procedure	Num. of obs.
Studies downloaded from ClinicalTrials.gov	195,696
Exclude: Primary completion date ≤ 12/2008, or if missing, completion date ≤ 12/2008	155,632
Exclude: Study type not INTERVENTIONAL	122,998
Exclude: No US FDA oversight AND no biological/device/drug/genetic/radiation intervention	91,497
Exclude: Overall recruitment status not COMPLETED, TERMINATED, WITHDRAWN or SUSPENDED	48,214
Exclude: Primary completion date ≥ 4/2015, or if missing, completion date ≥ 4/2015	46,538
Exclude: Primary completion and completion dates missing, and verification date ≤ 12/2008	44,709
Exclude: Primary completion and completion dates missing, and verification date ≥ 4/2015	44,670
Exclude: (Recruitment status missing) OR (study type missing) OR (phase missing) OR (FDA oversight missing) OR (intervention type missing) OR (primary completion date AND completion date AND verification date missing)	37,043
Exclude: Non-industry sponsor or sponsor missing	26,481
Exclude: Non-COMPUSTAT sponsor	18,647
Exclude: Duplicate observations of clinical trials whose sponsors are from the same parent firm in COMPUSTAT	18,385
Exclude: Variables needed for analysis missing	11,067
Exclude: Trials sponsored by GSK or Novartis after their commitment to full disclosure	10,983
Exclude: Parent firms that always or never disclose trial results	10,390
Exclude: Parent firms that always or never abandon trial results	10,152
Exclude: Month of reported disclosure date < month of reported primary completion	10,138

This table presents the sample selection procedure for the real effect test.

Table 9. Real Effects: Peer Disclosures and Focal Firms' Decision to Abandon Clinical Trials

	(1)	(2)	(3)
Variables		*Abandon*	
Peer Disclosures before Trial End Date	0.0140***	0.0149***	0.0130***
	(3.05)	(3.19)	(2.85)
Market Capitalization	0.0064	0.0013	0.0066
	(1.29)	(0.06)	(1.46)
Book-to-Market	0.0071	0.0836	0.0132
	(0.24)	(0.94)	(0.47)
Stock Return Volatility	1.6271*	1.1190	1.3398*
	(1.88)	(1.01)	(1.70)
Stock Return	-0.0454***	-0.0557***	-0.0452***
	(-3.08)	(-3.40)	(-3.20)
ROA	-0.1450***	0.0692	-0.1408***
	(-3.11)	(0.88)	(-3.25)
Loss	0.0132	0.0623**	0.0144
	(0.56)	(2.09)	(0.67)
Institutional Ownership	-0.0319	-0.3662***	-0.0252
	(-1.36)	(-3.70)	(-1.18)
Analyst Following	0.0025**	0.0064**	0.0024**
	(2.42)	(2.45)	(2.56)
Investment (CAPX+R&D)	-0.1203*	0.1135	-0.1299**
	(-1.75)	(0.98)	(-1.99)
Own Registrations of New Trials before Trial End Date	-0.0260***	-0.0245***	-0.0287***
	(-5.14)	(-4.78)	(-5.41)
Phase 1	-0.0084	0.0052	-0.0228
	(-0.12)	(0.07)	(-0.36)
Phase 2	0.0568	0.0720	0.0432
	(0.80)	(0.94)	(0.62)
Phase 3	0.0126	0.0314	-0.0007
	(0.18)	(0.41)	(-0.01)
Phase 4	0.0213	0.0400	0.0139
	(0.30)	(0.52)	(0.20)
Lead Sponsor	-0.0167	-0.0223	-0.0137
	(-1.12)	(-1.42)	(-0.93)
Number of Sponsors	-0.0315***	-0.0311***	-0.0296***
	(-3.70)	(-3.49)	(-3.39)
Industry Funding Source	-0.1377***	-0.1234***	-0.1415***
	(-8.01)	(-6.82)	(-7.11)
FDA Oversight	0.0433***	0.0410***	0.0455***
	(5.31)	(4.95)	(5.52)
Normalized Trial HHI	-0.0186	-0.0222	-0.0210
	(-1.11)	(-1.29)	(-1.26)
Own Past Disclosures before Trial End Date	-0.0189***	-0.0198***	-0.0218***

	(-3.20)	(-3.25)	(-3.37)
Year FE	Yes	Yes	Yes
Firm FE	No	Yes	No
Model	OLS	OLS	Probit
Observations	10,138	10,138	10,138
Adjusted/Pseudo R-squared	0.0411	0.0507	0.0473

This table presents regression estimates of the relation between peer disclosures and focal firms' propensity to abandon ongoing trials between January 2009 and March 2015. *Abandon* is a 0/1-indicator equal to one if the status of the focal firm's trial at the trial's end date is either "suspended," "withdrawn," or "terminated" (i.e., if the focal firm does not complete the trial). *Peer Disclosures before Trial End Date* is equal to ln(1+N), where N is the number of disclosures of results of closely related clinical trials by the focal firm's peers during the 365 days preceding the focal firm's trial end date. Columns (1) and (2) present OLS coefficient estimates, column (3) presents marginal effects from a probit model. *t*-statistics, based on standard errors clustered at the trial-level, are reported in parentheses. Variable definitions are provided in Appendix C. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.