The influence of reporting standards and inter-firm relationships on financial reporting

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The Influence of Reporting Standards and Inter-Firm Relationships on Financial Reporting

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Chapter 1: Introduction

1.1. Background

Accounting information is vital for many aspects in business and numerous parties rely on reported information for a variety of purposes. For instance, capital market participants rely on financial reporting and other disclosures for investment decisions and managers use accounting information, of their own firm as well as competitors and suppliers, to make strategic and production decisions. Understanding the factors that influence the informativeness of financial reporting and disclosures is therefore crucial. In this dissertation I focus on two such important factors, namely financial reporting standards and inter-firm relationships.

The adoption of international financial reporting standards (IFRS) in around 110 countries to date has led to great interest in the impact of these standards on the quality of financial reporting from both academics and practitioners. The two main purported benefits of instituting a single set of global accounting standards are potential improvements in the quality of reported information as well as convergence benefits, such as greater ease of comparing financial statements of companies across countries and consistency in auditing practices. However, despite this wide-spread movement toward IFRS, research on the actual materialization of convergence benefits is sparse.

In addition to standards, I examine how inter-firm relationships, such as those with suppliers and industry peers (competitors), affect reporting and disclosure. Most research on financial reporting focuses on the interplay between financial stakeholders (share- and debt holders) and reporting and ignores the importance of firms' disclosures for other parties such as competitors, employees, suppliers or customers (Healy and Palepu 2001). This is surprising, given that firms often attribute non-disclosure of information to proprietary costs (i.e., other firms may use information that a firm discloses to gain a strategic advantage at the expense of the disclosing firm). A survey of 400 CFOs by Graham et al. (2005) also shows that many managers consider how suppliers, customers and employees will perceive a certain disclosure prior to making this disclosure. Yet, despite the important role these parties play in a firm's business and financial reporting environment, accounting research in this area is still in its infancy.

1.2. Outline and Preview

Chapters 2 and 3 of this dissertation focus mainly on the effects of adopting IFRS. Chapter 2 provides evidence on a particularly timely issue relating to these standards. The widespread adoption of IFRS has also led to interest from the United States in adopting these standards, even though little is known about the benefits and costs of adoption for the U.S. This has led to great debate in the U.S. on whether or not to adopt IFRS. The first study in this dissertation examines the perceived benefits and costs of adopting IFRS in the U.S. to investors, by studying market reactions to key events relating to the adoption decision. The findings show that investors' reaction to IFRS adoption is more positive in cases where IFRS is expected to lead to convergence benefits. More precisely, when the majority of a U.S. firm's industry peers has adopted IFRS, the firm's stock price responds positively to IFRS adoption events, suggesting net convergence benefits from adopting IFRS for this particular firm. These findings demonstrate that investors value the potential convergence benefits from adopting IFRS, although these benefits are relatively modest and are only present for particular types of firms. This highlights the importance of considering firms' relationships with and similarity to their peers when evaluating the effects of accounting regulation.

Chapter 3 investigates the impact of changes within IFRS, namely a switch in the standard that governs segment reporting; IAS 14 was replaced by IFRS 8 in 2009. Some argue that IFRS 8 represents an improvement over IAS 14, since it requires management to report segments as they are defined for internal use. However, this also affords managers with considerable discretion in defining segments, which could be abused by management and result in less informative segment reporting. In addition, the requirements for geographical disclosures are less strict compared to IAS 14, which could lead to important geographical segment information becoming less reliable. The main focus of this study is the change in these geographical disclosures post IFRS 8. The evidence shows that despite a slight increase in the quality of geographical segment information, firms that have incentives to reduce the informativeness of segment information will do so. For instance, firms that are less transparent in general or make poor segment reporting decisions under IAS 14, still have poorer segment information under IFRS 8 than peers. Similar to the first study, the findings in Chapter 3 show that changing standards is not a catch-all solution to improving financial reporting quality and that the effect critically depends on other factors such as firms' own reporting incentives.

Finally, Chapter 4 investigates how inter-firm relationships affect forward-looking

disclosures in financial statements and draws from theories from transaction-cost economics. It investigates whether characteristics of supplier relationships influence a firm's decision to voluntarily disclose forward-looking information. Prior literature on relationship-specific investments argues that suppliers are reluctant to invest in relationship-specific assets. The value to the supplier of these investments depends on continuation of the relationship, and thus on the future prospects and performance of a firm. In addition, investing in these assets also results in hold-up problems, which become more severe when a firm's performance deteriorates. Uncertainty about a firm's future prospects due to information asymmetry between firms and suppliers make such investments particularly risky to the supplier. Financial reporting can serve as a reliable source of information to suppliers, which may mitigate this information asymmetry problem and reduce the risks perceived by suppliers of investing in such assets. I find that firms indeed disclose more forward-looking information when supplier relationship-specific investments are more important, particularly when suppliers are more powerful and the cost of disclosing this information is low (i.e., when the potential for competitors to abuse this information is low). My results highlight the important influence of parties other than capital markets on financial reporting and disclosure decisions and complement the emerging accounting literature on this topic (Raman and Shahrur 2008, Hui et al. 2011, Dou et al. 2012, Costello 2013).

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Chapter 2: Investor Perceptions of Potential IFRS Adoption in the United States[1]

2.1. Introduction

This study investigates to what degree the U.S. stock market reacted to public events associated with the adoption of International Financial Reporting Standards (IFRS) by domestic U.S. firms. On April 24, 2007, the Securities and Exchange Commission (SEC) announced it was contemplating the mandatory use of IFRS by U.S. companies. The SEC's motivation was that U.S. investors would benefit from a single set of high-quality global standards. Although several studies have documented positive effects of IFRS adoption in Europe (Barth et al. 2008; Daske et al. 2008; Armstrong et al. 2010), it is unclear whether a switch to IFRS would be beneficial in the U.S. Since current U.S. accounting standards (i.e., U.S. GAAP) and U.S. reporting are generally considered to be of high quality (Leuz et al. 2003; Bradshaw et al. 2004), the switch may not provide significant benefits in terms of "higher quality" financial reporting. It is also unclear whether investors expect the switch to lead to convergence benefits, such as reduced costs of comparing firms' financial reporting globally (SEC 2008; Armstrong et al. 2010; Hail et al. 2010) and greater consistency of financial information by enabling auditors and their clients to develop consistent global practices to deal with accounting issues (Tweedie 2006), especially since U.S. GAAP and IFRS have become increasingly similar in recent years.

This study provides empirical evidence on how investors evaluate the potential switch to IFRS. We examine U.S. stock market reactions to events that affect the likelihood of IFRS adoption, similar to Christensen et al. (2007) and Armstrong et al. (2010).[2] If investors perceive IFRS adoption to be beneficial, we expect to observe a positive (negative) market

[1] This article is co-authored with Philip Joos and was first published in a slightly modified version in March 2013 in The Accounting Review, Vol. 88(2), pp. 577-609. The American Accounting Association is the copyright holder of this article and it has been reprinted with permission from the AAA.

[2] We focus on market reactions for two reasons. First, since the switch to IFRS was proposed by the SEC and its foremost mission is to protect investors, it makes sense to examine the benefits and costs from the investors' viewpoint. This was explicitly stated by the SEC's chief accountant, James Kroeker, at the 2009 AICPA Conference. He stressed that "the fundamental focus of our evaluation of implementing a set of high-quality international standards must be on the impact to investors. I believe that implementing a single set of global accounting standards for U.S. issuers *can, and must*, be done only in a manner that is beneficial to U.S. capital markets and consistent with the SEC's mission of protecting investors" (Kroeker 2009, emphasis in the original). Second, since IFRS has not yet been adopted in the U.S., we cannot examine the direct effects of the standards on financial reporting outcomes.

reaction to events that increase (decrease) the likelihood of adoption. Our main analysis focuses on a differential effect of IFRS adoption across U.S. firms for which we make three predictions. First, we expect a lower market reaction if investors believe IFRS will adversely affect reporting quality due to the lack of implementation guidance, which is a particular concern for firms in the extractive and insurance industries and firms with high litigation risk.[23] Second, we predict that investors will react more positively if they expect IFRS to result in convergence benefits, which is more likely in industries where IFRS is already widely adopted by non-U.S. peer firms. Third, we expect investors' reaction to IFRS adoption to vary with the direct cost impact of introducing these standards and focus on firms that currently report under both U.S. GAAP and IFRS and those that apply LIFO.

We identify 15 events between April 24, 2007 and January 15, 2009 that affected the likelihood of IFRS adoption in the U.S. We use the cumulative three-day market-adjusted return centered on each event date for a sample of U.S. firms to capture investors' reactions to these events. Indicator variables based on SIC codes are assigned to identify whether the firms are in the insurance, extractive, or high-litigation-risk industries. We also expect investors in industries where IFRS is most commonly used compared to other internationally used local standards to benefit from convergence to a greater extent, since the potential reduction in information-processing costs is presumed to be larger for such industries (SEC 2008). Finally, we identify whether a firm applies LIFO and whether it operates in countries that apply IFRS to examine the potential costs and cost reductions associated with IFRS adoption.

Overall, we find a positive market reaction to the events that increase the likelihood of adoption. We also find that the positive reaction is stronger if the adoption of IFRS is expected to result in convergence benefits, and weaker for firms with high litigation risk. However, the findings do not show that investors in insurance or extractive firms are concerned about the lack of industry-specific guidance, which is inconsistent with concerns put forward by the SEC and the Financial Accounting Standards Board (FASB). In addition, we do not find that investors react more positively to IFRS adoption events if cost reductions are expected and the market reaction is not lower for LIFO firms. Our results are consistent with the view that convergence benefits matter to investors, and that the lower implementation guidance under IFRS appears to be an issue for investors in high-litigation-risk firms.

[3] A "lower" market reaction indicates a less positive or more negative reaction, whereas a "higher" market reaction indicates a more positive or less negative reaction, i.e., we are referring to the algebraic direction and not the absolute magnitude of the impact.

Although the study is subject to several caveats, such as the correct identification of events and the assumption that investors respond rapidly to events, the findings are relevant to the current debate on whether the SEC should move forward with the transition to IFRS, especially given the scarcity of empirical evidence to guide this decision.[4] The paper also contributes to the recent literature on the economic consequences of IFRS adoption (e.g., Barth et al. 2008; Daske et al. 2008; Armstrong et al. 2010) and provides evidence on the importance of convergence to investors.

Next, Section 2.2 offers an overview of the events that affect the likelihood of IFRS adoption in the U.S. The theoretical background is presented in Section 2.3, Section 2.4 discusses the sample and variables, and the main results are presented in Section 2.5. Section 2.6 discusses the sensitivity analyses, and Section 2.7 provides concluding remarks.

2.2. Event History

In Spring 2007, the SEC announced for the first time that it was contemplating allowing U.S. companies to use IFRS instead of U.S. GAAP. The SEC was motivated by a longstanding desire to move to a single set of high-quality global accounting standards and by the widespread adoption of IFRS in almost 120 countries to date (IASB 2011). The underlying argument was that investors would benefit from such a move; for example, it would decrease the costs of comparing financial reports on a global basis. However, previous studies suggest that investors might not benefit significantly from this move (e.g., Hail et al. 2010), and there is little empirical evidence to substantiate the SEC's claims. This paper provides such evidence by examining U.S. investors' reactions to events that affect the likelihood of IFRS adoption in the U.S. This methodology has also been used in previous studies to assess the perceived net benefits or costs of new regulations for investors, including Christensen et al. (2007), Zhang (2007), and Armstrong et al. (2010).

To identify the events, we searched the websites of the SEC, FASB, and International Accounting Standards Board (IASB) for relevant press releases, announcements, and meetings. For related news, we searched Factiva and LexisNexis Academic Universe with the words

[4] We are aware of only one other study that examines the impact of IFRS in the U.S. Lin and Tanyi (2010) investigate market reactions to events relating to the general acceptance and use of IFRS. However, they focus on whether investors react to events that increase the use or acceptance of IFRS (e.g., their sample also includes events that capture convergence efforts between IASB and FASB) and they investigate only comparability. In contrast, this study focuses on the impact of IFRS *adoption*, since this is the key topic of debate in the U.S., and investigates several potential consequences for investors.

TABLE 1
Summary of Key Events

Event	Description of Event	Increasing/ Decreasing Likelihood of Adoption	Predicted Market Reaction if: Benefits > Costs (Costs > Benefits)
1) April 24, 2007	SEC announces plan to allow IFRS for U.S. issuers.	Increasing	+ (-)
2) August 7, 2007	SEC Concept Release on allowing U.S. issuers to prepare financial statements in accordance with IFRS.	Increasing	+ (-)
3) October 24, 2007	Senate hearing about international accounting standards.	Increasing	+ (-)
4) November 7, 2007	FAF/FASB positive response to Concept Release. Proposals for improving IASB governance.	Increasing	+ (-)
5) November 15, 2007	SEC approves elimination of Form 20-F reconciliation requirements for foreign issuers using IFRS as issued by IASB.	Increasing	+ (-)
6) December 13, 2007	SEC roundtable: Should U.S. switch to IFRS?	Increasing	+ (-)
7) December 17, 2007	SEC roundtable: What are practical implications of switching to IFRS?	Increasing	+ (-)
8) April 18, 2008	SEC chairman Cox states that SEC is working on a roadmap for adoption of IFRS.	Increasing	+ (-)
9) June 16, 2008	FAF/FASB conference on IFRS: Participants voice need for firm date for IFRS adoption.	Increasing	+ (-)
10) July 21, 2008	IASB officially publishes discussion documents on IASCF Monitoring Group.	Increasing	+ (-)
11) August 4, 2008	SEC roundtable on performance of IFRS during subprime crisis and progress of IFRS.	Increasing	+ (-)
12) August, 27, 2008	Outlines of roadmap discussed during open meeting on IFRS held by SEC.	Increasing	+ (-)
13) October 13, 2008	IASB adapts IAS39.	Unsigned	?
14) November 14, 2008	Roadmap for potential use of financial statements prepared in accordance with IFRS by U.S. issuers.	Increasing	+ (-)
15) January 15, 2009	SEC chairwoman Mary Schapiro expresses doubts about IFRS plans.	Decreasing	- (+)

Table 1 presents a summary of all events included in the sample and their expected impact on the likelihood of IFRS adoption.

"IFRS" and "U.S." Table 1 shows the resulting list of 15 events occurring between April 24, 2007, when the SEC first announced plans to potentially allow the use of IFRS reporting for U.S. firms, and January 15, 2009, when SEC Chairperson Mary Schapiro publicly expressed her doubts about the IFRS plans.[5]

We classify 13 events as increasing the likelihood of IFRS adoption, one event as decreasing it, and we have no directional prediction for one event.

The first event occurred on April 24, 2007, when the SEC first announced that it was considering whether U.S. issuers should switch to IFRS. The SEC had long been supportive of the use of a single set of high-quality global accounting standards and now expressed the intention to move in this direction (SEC 2007). The SEC announced a planned "Concept Release relating to issues surrounding the possibility [of] providing U.S. issuers the alternative to use IFRS." At the time, the SEC was eliminating Form 20-F reconciliations for foreign firms that prepared financial statements under IFRS as promulgated by the IASB. The SEC now decided that switching from U.S. GAAP to IFRS would be the next critical step. The second event occurred on August 7, 2007 when the SEC published the Concept Release, which discussed reporting practices within and outside the U.S., potential IFRS benefits for the U.S. capital market, and implementation issues, including the training of accountants in IFRS and whether to adopt a transition period. We classify these two events as increasing the likelihood of IFRS adoption.

The third event occurred on October 24, 2007 when the U.S. Senate Subcommittee on Securities, Insurance, and Investment held an open meeting about international accounting standards.[6] Its goal was to discuss the Concept Release and the proposed elimination of Form 20-F reconciliations. Among those who testified were IASB Chairman David Tweedie, FASB Chairman Robert Herz, and representatives of the SEC, the American Institute of Certified

[5] To the best of our knowledge, these are all of the relevant events within our sample period. We concentrate on events that are publicly observable or known, which makes it easier to attribute stock returns to these news events. Moreover, our focus is on investors' perception of IFRS *adoption* specifically and thus on actions or news that relate directly to this. This is in line with the approach by Armstrong et al. (2010), who also focus specifically on events that affect the likelihood of adoption. We do not include earlier events such as convergence efforts between IASB and FASB, since we are unsure how to interpret these in our context and they were never explicitly mentioned as related to adoption of IFRS by U.S. firms. By contrast, we did include convergence events occurring after April 24, 2007 that directly relate to the adoption of IFRS. For instance, the elimination of the reconciliation requirement is included, because this was explicitly stated to be a step toward the adoption of IFRS by an SEC spokesperson.

[6] A webcast of the meeting and the testimonies are available at: http://banking.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=a96cc028-3b6d-4996-b849-768e83af35fc

Public Accountants (AICPA), and the Emerging Issues Task Force (EITF). The general view was that a switch to high-quality global standards would be beneficial after IFRS had been improved in areas where it lacked standards, and the differences between IFRS and U.S. GAAP were reduced or eliminated.

In response to the Concept Release, the SEC received more than 85 comment letters that were published on its website. Among the respondents were the Big 4 accounting firms that strongly supported the use of IFRS. The fourth set of events occurred on November 7, 2007 when FASB Chairman Robert Herz expressed the joint standpoint of the FASB and the Financial Accounting Foundation (FAF) in a letter. In line with his earlier statement at the Senate hearing, Herz expressed the FASB's support for the move. He also gave specific suggestions on how to achieve improvements in IFRS and the IASB's governance and funding.[7] On the same day, the IASB trustees agreed that governance improvements were necessary. The IASB published the discussion document on the proposed changes for public comment on July 21, 2008, which marks the tenth event in our sample period.[8] This document proposed establishing a monitoring group consisting of securities regulators to oversee the actions of the IASB and approve any new appointments to the board of the International Accounting Standards Committee Foundation (IASCF) trustees. Since both the Senate hearing and the FASB/FAF response by Herz were supportive of the adoption, and the IASB started to improve its governance system, we classify all three events as increasing the likelihood of IFRS adoption.

The fifth event occurred on November 15, 2007 when the SEC finally approved elimination of the Form 20-F reconciliation. This was a key step in moving toward IFRS because the elimination proposal had led the SEC to consider IFRS for domestic companies (SEC 2007, 12). The SEC's chief accountant, Conrad Hewitt, called this decision “a small but significant step in moving the U.S. to IFRS” (Hewitt 2008). We therefore classify this event as increasing the likelihood of IFRS adoption.

[7] The concern was the IASB's lack of accountability to a single securities regulator, similar to the FASB's accountability to the SEC. This made it possible for countries to create adapted versions of IFRS, which went against the aim of the IASB to have a single set of global standards. In addition, the IASB was funded largely by the Big 4 accounting firms and voluntary donations from around 200 companies, in contrast to the FASB being funded by public companies through SEC registration fees. This led to concerns that major IASB contributors might unduly influence the standard-setting process. Since the IASB's funding and accountability was a major issue that needed to be addressed prior to the U.S. adoption of IFRS (SEC 2008), we view the announcement of governance improvements as an event that increased the likelihood of adoption.

[8] We number our events in chronological order, not in order of when they are discussed in this section.

Events six and seven occurred on December 13 and 17, 2007, when the SEC held roundtables on IFRS to discuss the role of IFRS in the U.S. capital markets and the impact on U.S. issuers' reporting. The participants were representatives from the investment community and U.S. stock exchanges, accounting firms, underwriters, academics, and U.S. issuers. The first roundtable focused on whether the U.S. should switch to IFRS for its domestic issuers, and the second on how to structure the switch. The conclusion that emerged from both roundtables was that there would certainly be benefits in the long run, in terms of higher comparability and competition for capital, from moving to a single set of global accounting standards, which would likely be IFRS. The panelists also agreed that the U.S. should not transition to IFRS without a structured plan. This would give U.S. companies, auditors, investors, and regulators time to prepare, and also allow the IASB trustees to improve IFRS in certain areas and to improve their own organization in terms of independence, accountability, and governance. However, there was no agreement on whether to mandate or allow IFRS, or when the transition should occur. There were also concerns about jurisdictional adaptations of IFRS that were related to the IASB governance problems. Despite these disagreements, the roundtables revealed clear support for the switch. Therefore, we classify these events as increasing the likelihood of IFRS adoption.

The eighth event occurred on April 18, 2008, when SEC Chairman Christopher Cox stated in an address to the U.S. Chamber of Commerce that an official “roadmap” for the adoption of IFRS would be released later that year, with more details on how the transition would be structured. The joint FAF/FASB conference on June 16, 2008 marks the ninth event. Participants including investors, auditors, educators, and issuers voiced a need for a definite date and more information about the potential adoption of IFRS, noting that without a definite date, key players would not start preparing for the switch. Despite the ongoing financial crisis, during the SEC's roundtable on August 4, 2008 (event 11), participants discussing the performance of IFRS during the crisis, and its progress in general remained positive about an imminent transition. The twelfth event occurred on August 27, 2008 when the SEC presented outlines of the roadmap at an open meeting, and all the SEC commissioners voted in favor of opening a public discussion of the roadmap. These four events again show the SEC's commitment to IFRS and the stakeholders' desire for more certainty about the timing and planning, and we classify them as increasing the likelihood of IFRS adoption.

However, the financial institutions required to use IFRS reporting were hit particularly hard by the subprime crisis. Since banks had to state certain assets at fair value and current market prices had declined significantly during the crisis, they would have been required to impair

many of their assets. Largely due to political pressure from the European Commission and finance ministers, and two days after the FASB issued its Staff Position 157-3 on the same accounting issue, on October 13, 2008 the IASB hastily adapted its fair-value accounting standard IAS 39 to give financial institutions more leeway in classifying financial assets out of fair value by designating these as no longer held for sale, enabling firms to avoid these impairment losses. Although the IASB explained the adaptation as an attempt to make IFRS and U.S. GAAP more similar, its actions were deemed damaging to its credibility as an independent standard setter, also because IASB adapted IAS 39 without the usual due process and transparent procedures (Bothwell 2009). Although this event could be classified as decreasing the likelihood of IFRS, it also resulted in convergence between U.S. GAAP and IFRS in this area. As continued convergence between the two sets of standards was also an important prerequisite for IFRS adoption (SEC 2007), it might be viewed as increasing the likelihood of adoption. Since it is difficult to predict investors' reactions, we classify this 13th event as neither increasing nor decreasing the likelihood of IFRS adoption.

Despite the controversy surrounding IAS 39, the SEC published the official roadmap on November 14, 2008, and we classify this 14th event as increasing the likelihood of IFRS adoption. The roadmap sets out seven milestones, which if attained by 2011 would likely lead to the phased mandatory adoption of IFRS by 2014, although the roadmap suggests that some companies will be eligible for early voluntary adoption.[9] Although the roadmap suggests 2014 as the adoption year, the final decision was to be made in 2011.[10]

In January 2009, SEC Chairman Cox, who was largely responsible for developing the IFRS plans, was succeeded by Mary Schapiro, who made several critical remarks about these plans. On January 15, Schapiro expressed her doubts about the IFRS plans at her confirmation hearing before the Senate Banking Committee, stating that she would not be bound by the roadmap and would take time to carefully review the plans before proceeding. She further expressed concerns regarding the IASB's lack of political independence and the quality of

[9] The milestones in the roadmap relate to issues such as improvements in IFRS, in the accountability and funding of the IASCF, and in the ability to use XBRL for IFRS reporting, and training in IFRS, that must be addressed before the mandatory adoption of IFRS. They also relate to the transition plan for mandatory IFRS, including successful early use by eligible firms, the anticipated timing of future rule making by the SEC, and the implementation of mandatory IFRS. The roadmap states that if a firm is among the largest 20 in its industry based on market capitalization, and the industry's most commonly used accounting method worldwide is IFRS, the firm may be allowed to voluntarily adopt IFRS.

[10] On February 24, 2010, the SEC announced that it had changed the proposed adoption date to 2015 to allow companies more time to prepare (see http://www.sec.gov/news/press/2010/2010-27.htm). To date, the SEC has not yet made a final decision on whether the U.S. will adopt IFRS; an announcement was expected mid-2012 (see http://www.journalofaccountancy.com/Web/20125186.htm).

IFRS compared to U.S. GAAP. Since these remarks signaled the SEC's intention to delay, or even halt, the adoption process (Johnson 2009), we classify this final event as decreasing the likelihood of adoption.

2.3. Theoretical Background

2.3.1. Convergence and IFRS Adoption

Whether convergence in accounting standards benefits investors is a much-debated issue. Convergence means increasing the compatibility of accounting standards while maintaining a high level of quality (Pacter 2005; Zeff 2007). For U.S. GAAP and IFRS in particular, convergence efforts have ranged from the joint efforts of the FASB and IASB to make existing standards more similar to the potential adoption of IFRS for use by U.S. companies. Regulators and standard setters often emphasize that convergence benefits investors through lower information-processing costs, since it reduces the need for investors to learn and understand different sets of accounting standards (Chi 2009). Convergence could increase the quality and comparability of financial reporting (SEC 2008; Hail et al. 2010) and enhance the consistency of financial information by enabling auditors and their clients to develop consistent global practices to deal with accounting issues (Tweedie 2006).[11] However, the extent to which these benefits will be realized is unclear. For instance, Barth et al. (1999) show that conceptually, the effect of harmonization or convergence is ambiguous. Depending on its impact on the precision of GAAP and investors' costs and benefits of acquiring expertise in understanding different GAAPs, harmonization may not always lead to more precise information and capital market benefits. In addition, there are different views on whether uniformity in accounting standards is desirable. On the one hand, the SEC has long supported global convergence in accounting standards (SEC 2007) and Barth (2008) states that the use of a common reporting

[11] Similar to Armstrong et al. (2010) and Hail et al. (2010), we view increased reporting quality and convergence benefits as two different but related effects of IFRS adoption. Because there is no standard definition of reporting quality, we view it as the extent to which financial reporting reflects a firm's underlying economic performance. Research has associated quality with earnings attributes such as the degree of earnings management, timely loss recognition, and value relevance (e.g., Francis et al. 2004; Barth et al. 2008) or the quantity of disclosure (e.g., Botosan 1997; Leuz and Verrecchia 2000). As explained above, convergence benefits are broader than reporting quality and can include reduced information-processing costs due to greater ease in comparing firms' financial performance globally. One potential benefit of convergence is comparability, which is the extent to which the information presented allows investors "to identify the similarities in and differences between two sets of economic phenomena" (FASB 1980). Even if reporting quality is held constant, comparability can increase the usefulness of reporting to investors by making it less costly to compare firms (Hail et al. 2010), which has been a key motivation for allowing or requiring the use of IFRS (see, e.g., FASB 2008; FAF 2009; FCAG 2009).

language in business, or a single set of accounting standards, is an important step in making financial reporting more comparable. However, opponents argue that convergence may not leave room for "considering differences in circumstances among companies or countries" (Zeff 2007) and could even result in less informative reporting if a "one-size-fits-all" approach obscures underlying performance or characteristics of firms and thus could result in a loss of information (Chi 2009). Moreover, Kothari et al. (2010) predict that forcing FASB and IASB to compete instead of converge would lead to GAAP rules that facilitate efficient capital allocation. Finally, prior research also highlights the importance of reporting incentives together with accounting standards (e.g., Hung 2000; Ball et al. 2000, 2003; Ball and Shivakumar 2005; Burgstahler et al. 2006), meaning that convergence alone may not necessarily result in more informative reporting and capital market benefits.

Empirically, findings from prior literature provide evidence that convergence does result in capital market benefits and changes in financial reporting characteristics. For instance, Chi (2009) examines whether investors' ability to process earnings information is hindered by firms' use of different GAAPs. She finds that when multiple firms announce their earnings on the same day, the price and trading-volume reaction is greater and the post-earnings-announcement drift is smaller if these firms use fewer different domestic GAAPs. This suggests that investors are able to process information more efficiently when the analysis is not complicated by the presence of multiple standards, which supports convergence as being beneficial to capital markets. Other studies on the effects of IFRS adoption in particular have shown that IFRS results in greater reporting quality and requires greater disclosure than most local GAAPs (Ashbaugh and Pincus 2001; Barth et al. 2008), and can result in greater reporting comparability (Yip and Young 2011). Theoretical research shows that this can reduce information asymmetry problems and estimation risk, which in turn has benefits for liquidity and the cost of equity (Diamond and Verrecchia 1991; Lambert et al. 2007).

Armstrong et al. (2010) find empirical support for this prediction in a European setting, where share prices react positively to events that increase the likelihood of IFRS adoption, in particular for firms that are expected to benefit from IFRS in terms of higher information quality and convergence. Beuselinck et al. (2011) find that disclosure under IFRS revealed new firm-specific information in the year of mandatory adoption in the EU, which subsequently reduced the surprise of future disclosures. There is also evidence that mandatory IFRS adopters experience improvements in liquidity, cost of capital, and equity valuation (Daske et al. 2008). Drake et al. (2010) find that these increases in market liquidity are greater for firms with

high-quality pre-adoption information environments. Since these firms are unlikely to benefit from increased reporting quality, Drake et al. (2010) attribute these positive market effects to increased comparability. Li (2010) also shows that mandatory IFRS adopters experience a decrease in cost of equity and that this can be attributed in part to increased comparability as well as to greater disclosure under IFRS. Wu and Zhang (2010) find that in the EU the use of relative performance evaluation with international industry peers increases after IFRS adoption, while DeFond et al. (2011) report increased U.S. mutual fund ownership in firms that credibly adopt IFRS, which they interpret as consistent with increased comparability under IFRS. Furthermore, in line with prior research, the cited studies show that the effect of IFRS is highly dependent on reporting incentives shaped by regulatory enforcement and other institutional factors.

2.3.2. Potential Effects of IFRS Adoption in the U.S.

Although prior studies find positive capital market effects associated with convergence and IFRS adoption in particular, these findings do not necessarily apply to the U.S. context. First, there are opposing views on whether IFRS is, overall, of higher quality than U.S. GAAP (Hail et al. 2010). IFRS proponents argue that it is less complex than U.S. GAAP, and that the nature of current U.S. standards induces managers to follow rules rather than to consider whether financial reporting reflects the underlying economics of a firm. On the other hand, critics of IFRS claim that its principles-based nature can be abused by managers, since more discretion and less guidance leave more room for earnings management. Also, IFRS and U.S. GAAP have become increasingly similar over time, as the FASB and IASB have worked together intensively to increase and maintain the compatibility of standards (Hail et al. 2010). Examples include IASB's new standards on borrowing costs (IAS23R) and segment reporting (IFRS8) that mirror U.S. GAAP.

If investors believe that these convergence efforts have sufficiently reduced the differences, then adopting IFRS would not result in significant convergence benefits and would bias against finding a more positive market reaction. However, anecdotal evidence suggests that the application of U.S. GAAP versus IFRS still results in different reporting outcomes. For example, Ahold, a Dutch food retailer that operates internationally, showed a net profit of €120 million for 2005 under IFRS, but reported a net loss of €20 million for the same year under U.S. GAAP in its reconciliation footnote. This illustrates that despite ongoing convergence, the use of different accounting standards has a material impact on financial reporting. Second, since reporting quality in the U.S. is among the highest in the world (Leuz et al. 2003), and factors

such as incentives play an important role in determining this quality, it is unclear whether the adoption of IFRS will have a significant impact on the quality of reporting in the U.S.

We acknowledge that it is difficult to predict the overall effect of IFRS adoption. However, we expect cross-sectional variation in the extent to which it is beneficial or costly. We therefore focus on three settings where the effects of adopting IFRS are expected to be most pronounced. First, we examine whether IFRS adoption is perceived by investors as more costly in industries where it will most likely decrease the quality of standards. Although U.S. GAAP and IFRS have become increasingly similar (Hail et al. 2010), the SEC and FASB have expressed concerns about the lack of IFRS implementation guidelines for certain industries, notably the extractive and insurance industries. Their concern is that investors might lose information that is currently available under U.S. GAAP. To the extent that the lack of industry-specific guidance is indeed a concern, then investors in these firms might be opposed to IFRS adoption and react negatively to events that increase the likelihood of adoption. Also, the lack of specific rules could be problematic for industries with high litigation risk. Managers will have to rely more on their own judgment when interpreting IFRS, which could result in more legal challenges to their decisions. To avoid this, firms might make overly conservative accounting choices (Hail et al. 2010) that reduce the informativeness of financial reporting. If the lack of implementation guidance is indeed viewed as a valid concern by investors, we would expect to observe a less positive market reaction for firms in extractive, insurance, and high-litigation-risk industries.

Second, we expect convergence benefits to be more pronounced in industries where many non-U.S. peer firms have already adopted IFRS. Widespread adoption of IFRS in a particular industry may be an indication that the benefits (such as reduced information-processing costs) of adopting these standards are greater, resulting in a larger proportion of non-U.S. firms adopting IFRS. Analogously, these benefits may also apply to U.S. firms in such industries, thus resulting in a more positive market reaction to IFRS adoption events for these firms. In line with this argument, the fact that many global competitors use IFRS would indicate more consistent global practices to deal with accounting issues, and possibly greater familiarity among the international investment community with IFRS reporting in that industry. Supporting this view, the SEC considered allowing certain U.S. firms for which IFRS would be most beneficial to adopt IFRS early, and proposed that the use of IFRS by a majority of significant competitors should be the key requirement for deciding which firms would be eligible for this option (SEC 2008). For these reasons, we expect that U.S. firms in such

industries would benefit from IFRS adoption to a greater extent than firms in industries where IFRS is not widely adopted by non-U.S. peers.

Third, we examine the potential costs and cost reductions of IFRS adoption. Experience with the adoption of new accounting regulations has shown that there are substantial implementation costs. For example, the implementation of SOX Section 404 costs an estimated $3 to $8 million per firm (FEI 2004). The Institute of Chartered Accountants in England and Wales (ICAEW) issued a report discussing the compliance costs of IFRS adoption in Europe. They estimated these costs to be between 0.05 percent (for larger companies) and 0.31 percent (for smaller companies) of revenue. The SEC's estimate of implementation costs for the largest U.S. firms is around 0.125 percent of revenue, or around $32 million per firm for the first three years of filings on Form 10-K (SEC 2008).

IFRS could also result in a recurrent loss of tax benefits for firms that use LIFO. Since U.S. tax regulations require the use of LIFO for tax-reporting purposes, and IFRS does not permit the use of this method, firms applying LIFO valuation would be forced to forgo tax benefits.[12] Although Hail et al. (2010) suggest several approaches to this issue, such as dropping the book-tax conformity requirement or providing a tax credit to LIFO firms, investors in LIFO firms might react negatively to IFRS if it results in substantially higher taxes and lower cash inflows.

By contrast, U.S.-based multinationals might benefit from recurrent cost reductions. Corporations with subsidiaries in countries with mandatory IFRS reporting may be able to reduce their costs because they no longer have to report under both U.S. GAAP and IFRS (SEC 2008; Hail et al. 2010). Investors in these multinationals might therefore react positively to IFRS adoption.

2.3.3. Predictions

Based on the above discussion, we make the following cross-sectional predictions regarding market reactions. First, investors are likely to be concerned that IFRS will adversely affect reporting quality because of the lack of implementation guidance for extractive and insurance firms and firms with high litigation risk. We therefore expect a less positive market reaction for such firms. Second, we expect investors to react more positively if they expect

[12] Although this may seem a minor concern, more than 120 U.S. companies have joined the LIFO Coalition, which aims to preserve the use of LIFO, and have lobbied against the adoption of IFRS (see http://www.sec.gov/comments/s7-27-08/s72708-45.pdf). It is ultimately an empirical question whether investors consider the potential loss of tax benefits to be economically significant.

IFRS to result in convergence benefits, which is more likely in industries where IFRS is already widely adopted by non-U.S. peer firms. Finally, we examine whether investors consider the cost impact of IFRS in their valuations. IFRS is expected to decrease costs for firms that must comply with both U.S. GAAP and IFRS, so we expect such firms to experience a most positive market reaction. By contrast, we expect a lower reaction for firms that use LIFO because of the higher costs resulting from a loss of tax benefits.

2.4. Sample Selection, Variables, and Descriptive Statistics

2.4.1. Sample Selection

Because we are mainly interested in the cross-sectional differences in investor responses, the sample includes all domestic U.S. firms that have the necessary price and financial statement data for the period 2007 to 2009 encompassing the 15 events. Firms are not required to have data for all 15 events, i.e., they are included if they have return data for at least one event and data for the corresponding variables in the cross-sectional analyses. We start with 63,597 domestic U.S. firm-event observations with return data for one of the 15 events. We do not exclude any industries, but do exclude observations for firms with a negative book value of equity, resulting in 61,610 observations. We further exclude firms for which we lack data to calculate the test or control variables, resulting in the final sample of 59,285 firm-event observations for 4,820 firms. Details on sample selection are provided in Appendix 1.

2.4.2. Variable Measurement

The variables used in the analyses are discussed in this section. Further details on the variable measurement and data sources are provided in Appendix 2.

Dependent Variable

The dependent variable is the market reaction to the events identified in Section 2.2. This is measured by the three-day cumulative return centered on the event date, retrieved from CRSP, and is adjusted for other news using a market index. Because IFRS adoption would affect all publicly listed U.S. firms, it is inappropriate to adjust returns with a U.S.-based index, because the index itself would also reflect the market reaction to IFRS adoption events. In the spirit of Armstrong et al. (2010), we use the three-day return to the DJ STOXX 1800 index, excluding

American firms as the market adjustment for the main analyses.[13] We obtain the return data for the STOXX adjustment from Datastream.

Test Variables

First, as discussed in Section 2.3, in some instances reporting quality may decrease due to less implementation guidance. We define indicator variables that capture whether a firm operates in the insurance (*INSUR*) or extractive (*EXTR*) industries, or in industries with a high litigation risk (*HI-LIT*). *INSUR* is equal to 1 if a firm's two-digit SIC code (*SIC2*) is 63 or 64, and *EXTR* is equal to 1 if *SIC2* is 13 or 29.[13][14] Following Kasznik and Lev (1995), Matsumoto (2002), and Field et al. (2005), *HI-LIT* is equal to 1 if a firm's SIC is 2833–2836, 3570–3577, 3600–3674, 5200–5961, 7371–7379, or 8731–8734. If investors expect IFRS adoption to lead to lower reporting quality, we expect the coefficients on these three variables to be negative.

Second, we test whether investors respond more positively to IFRS adoption events if IFRS is expected to result in convergence benefits. As explained earlier, we expect these benefits to be most pronounced in industries where a majority of firms apply IFRS. To assess this, we look at the accounting standards that are applied by peer firms in the same industry on a worldwide basis. We use the Worldscope database to determine the accounting standards used by peers.[15] Global industry peers are selected from Worldscope by ranking firms on market capitalization

[13] Prior studies that have also used non-U.S. firms' returns to adjust for other contemporaneous economic news include Zhang (2007) and Armstrong et al. (2010). A potential drawback of using this DJ STOXX 1800 index excluding American firms is that it includes European firms, most of which will have adopted IFRS. To the extent that these firms also respond positively to IFRS adoption events in the U.S. since it could affect the comparability of their financial reporting, this adjustment could remove some of the effect of the IFRS adoption news we seek to document. An alternative would be to use the DJ STOXX Asia-Pacific index returns, which consist of the 600 largest firms in the Asia-Pacific. One drawback of this index is that Asian and U.S. firms may be dissimilar, so adjusting with this index may not adequately remove market reactions to news unrelated to IFRS adoption. We base our choice of adjustment on the correlations between the index returns and our sample returns. For 2007–2008, the correlation between three-day U.S. returns and the STOXX 600 Asia-Pacific index is 0.64, and the correlation between the U.S. returns and the STOXX Global 1800 ex America index is 0.79. On the event dates, the correlations are 0.66 for the former index and 0.88 for the latter. For completeness' sake, Table 3 shows results for both indices, and Table 6 reports regression results for the STOXX Asia-Pacific index. Nevertheless, we acknowledge the challenge of selecting an appropriate market adjustment, and that using non-U.S. firms' returns as an adjustment does not remove the impact of news events that are unrelated to IFRS and specific to the U.S. (Leuz 2007).

[14] The industry classification of insurance companies is based on Fama and French (1997) and that of extractive industries is based on Hand (2003).

[15] Daske et al. (2008) show that some firms have incorrect accounting-standard classifications in Worldscope. We acknowledge that there are flaws in the commercially available databases, but we do not think that this is a severe problem for our study, since our data are derived from a more recent period and we use only the largest firms to determine the most common standards. Misclassification is likely to be a more serious issue in the years preceding mandatory IFRS adoption and for smaller firms.

in two-digit SIC groups.[16] For the 20 largest firms in each industry group, we determine the statistical mode of the accounting standards and classify an industry as "IFRS-predominant" if IFRS is the most commonly used standard among these 20 firms where we set *D(IFRS)* = 1. We expect a positive coefficient for *D(IFRS)* if investors expect IFRS adoption to lead to net convergence benefits for these firms. In Section 2.6 we conduct several additional analyses to gain more insight into the nature of these convergence benefits.

Third, we examine whether the market reactions vary with the cost impact of IFRS. We expect U.S. firms operating in countries with mandatory IFRS reporting to experience reduced costs by switching to IFRS. We first use the Compustat segment files to determine the geographic origin of a firm's sales. We then determine which countries have mandated the use of IFRS, using the IASPlus website and the classification by Sletten and Ramanna (2009). The variable *IFRS SALES%* represents the proportion of sales in countries that mandate IFRS relative to the firm's total sales. We expect firms with a higher proportion of IFRS sales to benefit more from IFRS adoption. Finally, we determine whether a company uses LIFO via Compustat information about inventory-valuation methods. LIFO is an indicator variable equal to 1 if a firm applies this method to value its inventory.

Control Variables

Following Christensen et al. (2007) and Armstrong et al. (2010), we include the following additional control variables: firm size, turnover, leverage, industry concentration, and auditor size. These variables are proxies for the firm's information environment and information asymmetry with investors. On the one hand, smaller and less liquid firms with low turnover, firms with higher leverage, and those in more concentrated industries are expected to have poorer information environments. If investors expect IFRS adoption to improve reporting quality and reduce information asymmetry, we would expect such firms to benefit more from the adoption of IFRS. On the other hand, larger and more liquid firms attract more institutional owners who prefer conformity in accounting choices (Bradshaw et al. 2004). If investors expect IFRS adoption to result in such convergence benefits, we would expect a more positive reaction for companies where the demand for conformity is higher. Firms with a Big 4 auditor

[16] We also conduct analyses with different industry groupings based on the three-digit SIC as well as the Industry Classification Benchmark (ICB) subsector codes. The ICB system was developed by Dow Jones Indexes and FTSE and is also used in Lang et al. (2010). ICB classifies firms into industry sectors based on their sources of revenue. This system has been adopted by many stock exchanges globally and aims to offer a comprehensive tool for global sector analysis, with a focus on relevance to investors. The findings are robust to alternative industry definitions and are discussed in more detail later in the paper.

are also expected to benefit more from IFRS adoption, since such auditors are better equipped to support the transition (Armstrong et al. 2010).

2.4.3. Descriptive Statistics and Correlations

Table 2 presents descriptive statistics and correlations. Panel A shows that the proportion of firms in extractive (insurance) industries is 4.1 percent (3.3 percent), and 25.12 percent of firms are in high-litigation industries. Furthermore, 40.01 percent of firms operate in an industry where IFRS is commonly used internationally.[17] The descriptive statistics for *D(IFRS SALES)*, which equals 1 if a firm has non-zero sales in a country that mandates IFRS, indicate that 19.80 percent of firms generate sales in a country that mandates IFRS reporting. For such firms, the average proportion of IFRS sales is 22.15 percent of total sales. Additionally, 8.08 percent of sample firms apply LIFO valuation.

Panel B reveals that the correlation between the market reaction to events ($CR_{STOXX\ ex\ Am.}$) and *EXTR* is positive and significant at the $p < 0.05$ level, which is inconsistent with the view that investors in extractive industries are concerned about the lack of industry-specific guidance under IFRS. The same holds for the insurance industries (*INSUR*). By contrast, *HI-LIT* is negatively correlated with the market reaction, consistent with the notion that less guidance under IFRS is perceived as costly for firms with a high litigation risk. The correlation between $CR_{STOXX\ ex\ Am.}$ and *D(IFRS)* is also positive, consistent with convergence benefits being greater in IFRS-predominant industries. The correlation between the event returns and the variables *D(IFRS SALES)* and *IFRS SALES%* is insignificant, which does not support the prediction that investors react more positively to IFRS adoption because of reduced reporting costs. The correlation between *LIFO* and $CR_{STOXX\ ex\ Am.}$ is positive and significant, suggesting that investors do not perceive IFRS adoption to be more costly due to the potential loss of tax benefits. Overall, the correlations in Panel B are preliminary evidence that IFRS is perceived as costly for firms with high litigation risk and as beneficial in cases where investors expect IFRS to lead to convergence benefits.

[17] IFRS is predominantly used in the agricultural and mining industries, several manufacturing industries (such as food, fabrics, and electronic equipment), trucking and transportation, finance and insurance, and leisure services.

TABLE 2
Descriptive Statistics

Panel A: Distribution of Variables

Variable	Mean	25%	Median	75%	Std
$CR_{STOXX\ ex\ Am.}$	0.0052	-0.0263	0.0034	0.0342	0.0688
$CR_{STOXX\ A.P.}$	0.0084	-0.0274	0.0069	0.0418	0.0711
EXTR	0.0413	0	0	0	0.1991
INSUR	0.0326	0	0	0	0.1775
HI-LIT	0.2512	0	0	1	0.4337
D(IFRS)	0.4001	0	0	1	0.4899
D(IFRS SIMILAR)	0.1980	0	0	0	0.3985
D(IFRS SIC3)	0.1613	0	0	0	0.3678
D(IFRS ICB)	0.3748	0	0	1	0.4841
ANALYST	5.3594	1	4	8	5.6724
# FOREIGN INSTITUTIONAL OWNERS	10.7341	2	5	11	15.0068
D(IFRS SALES)	0.1961	0	0	0	0.3971
IFRS SALES%	0.2215	0.1057	0.1832	0.2900	0.1701
LIFO	0.0808	0	0	0	0.2726
SIZE	13.1055	11.7442	13.0042	14.3441	1.9274
HERFINDAHL	0.0748	0.0347	0.0509	0.0800	0.0725
LEVERAGE	0.5299	0.3218	0.5308	0.7473	0.2598
TURNOVER	0.5237	0	1	1	0.4994
BIG4	0.6884	0	1	1	0.4632

(Continued on next page)

Panel B: Correlations

	Variable	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10	[11	[12	[13	[14	[15
[1	CR_{STOXX}		**0.**	**0.**	**-0.**	**0.**	**0.**	**0.**	-0.	-0.	**0.**	**0.**	0.	**0.**	**0.**	**0.**
[2	EXTR	**0.**		**-0.**	**-0.**	**-0.**	**0.**	**0.**	**-0.**	**-0.**	0.	**0.**	**-0.**	**-0.**	**0.**	**-0.**
[3	INSUR	**0.**	**-0.**		**-0.**	**0.**	**0.**	**0.**	**-0.**	**-0.**	**-0.**	**0.**	**-0.**	**0.**	**-0.**	**0.**
[4	HI-LIT	**-0.**	**-0.**	**-0.**		**-0.**	**0.**	0.	**0.**	**0.**	**-0.**	**-0.**	**-0.**	**-0.**	**0.**	**0.**
[5	D(IFRS)	**0.**	**-0.**	**0.**	**-0.**		**-0.**	**-0.**	**-0.**	**-0.**	**-0.**	**0.**	0.	**0.**	**-0.**	**-0.**
[6	ANALYS	**0.**	**0.**	**0.**	**0.1**	**-0.**		**0.**	**0.1**	**0.**	**0.1**	**0.**	**0.**	**-0.**	**0.**	**0.**
[7	# FOREIG	**0.**	**0.**	**0.**	**0.**	**-0.**	**0.**		**0.**	**0.**	**0.**	**0.**	**0.**	**0.**	**0.**	**0.**
]	N	**10**	**05**	**08**	**00**	**04**	**71**		**14**	**08**	**23**	**81**	**05**	**10**	**25**	**37**
[8	D(IFRS	0.	**-0.**	**-0.**	**0.**	**-0.**	**0.**	**0.**		**0.**	**0.**	**0.**	**-0.**	**-0.**	**0.1**	**0.**
[9	IFRS	0.	**-0.**	**-0.**	**0.**	**-0.**	**0.**	**0.**	**0.**		**0.**	**0.**	**-0.**	**-0.**	**0.**	**0.**
[1	LIFO	**0.**	0.	**-0.**	**-0.**	**-0.**	**0.**	**0.**	**0.**	**0.**		**0.**	**0.**	**0.**	**0.**	**0.**
[1	SIZE	**0.**	**0.**	**0.**	**-0.**	**0.**	**0.**	**0.**	**0.**	**0.**	**0.**		**0.**	**0.**	**0.**	**0.**
[1	HERFIN	0.	**-0.**	**0.**	**-0.**	**0.1**	**0.**	**-0.**	**-0.**	**-0.**	**0.**	0.		**0.**	**-0.**	**0.**
[1	LEVERA	**0.**	**-0.**	**0.**	**-0.**	**0.**	-0.	**0.**	**-0.**	**-0.**	**0.**	**0.**	**0.**		**-0.**	**-0.**
[1	TURNO	**0.**	**0.**	**-0.**	**0.**	**-0.**	**0.**	**0.**	**0.1**	**0.1**	**0.**	**0.**	**-0.**	**-0.**		**0.**
[1	BIG4	**0.**	**-0.**	**0.**	**0.**	**-0.**	**0.**	**0.**	**0.**	**0.1**	**0.**	**0.**	**-0.**	**-0.**	**0.**	

Table 2 presents descriptive statistics for variables used in cross-sectional analyses. For both panels, N = 59,285, except for IFRS SALES% in panel A, where N = 11,628. Panel A presents distributions; correlations are presented in Panel B (Pearson (Spearman) correlations are above (below) diagonal). Distributional statistics of IFRS SALES% in panel A are for firms that have non-zero sales in IFRS countries. Correlations in bold are significant at 5% level or less for two-tailed tests. Variable definitions are given in Appendix 2.

2.5. Results

2.5.1. Overall Market Reaction

We first examine the overall market reaction to the 15 events to assess whether U.S. investors on average perceive IFRS adoption to be net beneficial or costly. Table 3 shows an average positive abnormal return across all events (adjusting for STOXX 1800 ex America) of 0.86 percent, which is marginally statistically significant (t-statistic = 1.94; two-tailed p-value = 0.0724). The significance is determined using the empirical distribution of the value-weighted returns for the 15 events, assuming that the mean returns per event are uncorrelated across events.[18] We use the mean (−0.0006) of non-event returns adjusted for STOXX 1800 ex America measured over non-overlapping three-day windows as the benchmark, rather than assuming $H_0 = 0$ as explained in Appendix 2. This allows for unequal variances between event and non-event return distributions and does not assume that the market adjustment fully adjusts for the market return (Armstrong et al. 2010). This second t-statistic is slightly higher (2.08) and marginally statistically significant with a two-tailed p-value of 0.056. We find similar and statistically stronger results with the STOXX Asia-Pacific adjustment.

For comparison purposes, we also include the three-day raw returns for the S&P 500 index for each of the 15 events alongside the three-day raw returns of our sample firms in Table 3, to allow readers to assess the representativeness of the sample. We do not find major discrepancies between the returns for our sample and the S&P 500 index in terms of direction or magnitude.

Although these returns appear to indicate that the overall market reaction to events that increase the likelihood of adoption is positive, we do not interpret this as evidence for the overall desirability of IFRS adoption. We acknowledge the need to appropriately adjust stock returns and to control for the effect of confounding events. This is especially important because the period of interest coincides with the financial crisis and the heightened volatility of financial markets. The last column of Table 3 shows the Chicago Board Options Exchange Volatility index over the three days of each event window. We find that volatility is especially high during the last three events in our sample. In particular, event 13 coincides with the stock market crash of 2008, which had a large influence on the returns during that event. Immediately

[18] To calculate the t-statistics in Table 3 and for the cross-sectional analyses in Tables 4 to 6, we multiply the returns for event 15, which is classified as decreasing the adoption likelihood by −1. This is done to ease the interpretation of the t-statistics, since all the other events are classified as increasing adoption likelihood or are unsigned (Armstrong et al. 2010).

TABLE 3
Overall Reaction to Events Affecting Likelihood of IFRS Adoption

Event date	Impact on Adoption Likelihood	CR	S&P 500 index	*STOXX 1800 ex America*	$CR_{STOXX\ ex\ Am.}$	*STOXX 600 Asia-Pacific*	$CR_{STOXX\ A.P.}$	VIX
April 24, 2007	Increasing	0.0065	0.0075	*-0.0043*	0.0108	*-0.0099*	0.0164	13.12
August 7, 2007	Increasing	0.0443	0.0444	*0.0172*	0.0271	*0.0038*	0.0405	21.98
October 24, 2007	Increasing	0.0039	0.0054	*0.0135*	-0.0096	*0.0055*	-0.0016	20.79
November 7, 2007	Increasing	-0.0162	-0.0179	*-0.0116*	-0.0046	*-0.0214*	0.0052	24.68
November 15, 2007	Increasing	-0.0161	-0.0151	*-0.0041*	-0.0121	*0.0057*	-0.0219	26.50
December 13, 2007	Increasing	-0.0103	-0.0065	*-0.0262*	0.0159	*-0.0430*	0.0328	22.77
December 17, 2007	Increasing	-0.0229	-0.0225	*-0.0214*	-0.0014	*-0.0361*	0.0132	23.48
April 18, 2008	Increasing	0.0136	0.0172	*0.0216*	-0.0080	*0.0387*	-0.0252	20.33
June 16, 2008	Increasing	0.0099	0.0084	*0.0139*	-0.0039	*0.0243*	-0.0144	21.10
July 21, 2008	Increasing	0.0145	0.0132	*0.0175*	-0.0029	*0.0211*	-0.0066	22.76
August 4, 2008	Increasing	0.0072	0.0142	*-0.0175*	0.0247	*-0.0394*	0.0466	22.40
August 27, 2008	Increasing	0.0289	0.0265	*0.0081*	0.0209	*-0.0089*	0.0378	19.89
October 13, 2008	Unsigned	0.1070	0.0987	*0.0601*	0.0470	*0.0607*	0.0463	60.02
November 14, 2008	Increasing	-0.0014	0.0017	*-0.0252*	0.0238	*-0.0361*	0.0347	65.10
January 15, 2009	Decreasing	-0.0321	-0.0246	*-0.0300*	-0.0020	*-0.0063*	-0.0258	48.75
	Mean return across events	**0.0134**	**0.0133**	***0.0048***	**0.0086**	***-0.0019***	**0.0153**	
	T-statistic regular				1.94*		2.39**	
	(two-sided p-value)				(0.0724)		(0.0318)	
	Non-event average				-0.0006		-0.0040	
	T-statistic non-event				2.08*		3.00***	
	(two-sided p-value)				(0.0563)		(0.0095)	
	Mean return excluding event 13	**0.0067**	**0.0072**	***0.0008***	**0.0059**	***-0.0064***	**0.0131**	
	T-statistic regular				1.57		2.02*	
	(two-sided p-value)				(0.1408)		(0.0641)	
	T-statistic non-event				1.73		2.64**	
	(two-sided p-value)				(0.1072)		(0.0206)	

Table 3 presents the value-weighted mean return by event. We multiply returns for event 15 by -1 to calculate the mean across events (see footnote 17). Variables are as defined in Appendix 2. S&P500 index is three-day cumulative return for S&P500 index. VIX is the three-day average Chicago Board Options

Exchange (CBOE) volatility index. *T-statistic regular* shows significance of mean return across events with $H_0 = 0$. For *T-statistic non-event*, H_0 = mean of non-overlapping STOXX-adjusted three-day non-event returns over 2007 and 2008. *, **, and *** indicate significance at 0.10, 0.05, and 0.01 levels, respectively.

preceding this event, the S&P 500 had lost 22 percent of its value over the course of six trading days of October 2 to October 6 (Steverman 2008), while the Dow Jones Industrial Average (DJIA) fell 18 percent in the week starting October 6, making it the worst week in the history of the index (Curran 2008). On Monday October 13, global stock markets temporarily recovered as governments announced plans to bail out financial institutions. These extreme conditions make it difficult to interpret the return on this particular date and it is unlikely that it reflects investors' reaction to IFRS adoption news alone, but it is unclear if and how it would influence the cross-sectional results. In our opinion, the main contribution lies in the cross-sectional analyses presented below, since these results allow for more rigorous testing of alternative explanations for our tests. We find that the results are generally robust to excluding event 13 or any of the 15 events, and discuss this issue in more detail in Section 2.6.

2.5.2. Cross-Sectional Analyses

This section presents the results from cross-sectional analyses that examine whether market reactions vary across firms according to our theoretical predictions. We estimate the following model, which includes all test variables and control variables simultaneously:

$$CR_{STOXX\ ex\ Am.\ i,\ e,} = f(EXTR_{i,e}, INSUR_{i,e}, HI\text{-}LIT_{i,e}, D(IFRS)_{i,e}, IFRS\ SALES\%_{i,e}, LIFO_{i,e}, control\ variables), \quad (1)$$

where *i* denotes firm *i* and *e* denotes the event.

We recognize that news of IFRS adoption affects all firms in the sample simultaneously, potentially resulting in cross-sectional correlations in returns and biased standard errors (Petersen 2009). To address this concern, the reported t-statistics (in parentheses below the coefficients) are based on standard errors clustered at the event level and are adjusted for heteroscedasticity.

Considering the results in the first column of Table 4, we find no support for the idea that investors in extractive and insurance industries respond more negatively to IFRS adoption events. The coefficients for *EXTR* and *INSUR* are positive but insignificant. This result could reflect investors' confidence in the efforts of the IASB to develop specific standards for these two industries. In particular, this would include the second phase of the comprehensive insurance contracts project to replace the current IFRS 4, and the efforts aimed at developing a new standard considering all unique issues of the extractive industry, to replace IFRS 6.

Second, we find a significantly negative coefficient for the *HI-LIT* variable. This indicates that investors in firms with high litigation risk react more negatively to events that increase the likelihood of IFRS adoption. This is consistent with concerns that investors may have about the lack of specific guidance under IFRS resulting in higher litigation risk.

Third, the significant and positive coefficient for *D(IFRS)* is consistent with investors expecting IFRS adoption to result in convergence benefits for firms in industries where IFRS is already widely adopted. This finding supports the SEC's claim that the benefits of IFRS adoption are likely to be most pronounced for firms in IFRS-predominant industries.[19] In Section 2.6, we conduct additional analyses to gain more insight into the nature of these convergence benefits.

Fourth, the findings on the cost impact variables are inconsistent with the theoretical predictions. The coefficient for *IFRS SALES%* is insignificant, which does not support the idea that firms with sales in IFRS countries would benefit significantly from reduced preparation costs. One explanation could be that from the investors' point of view, the cost impact is not important enough to lead to a significant response to news about IFRS adoption. Another explanation is that the tests lack power. *IFRS SALES%* captures the firms that operate in IFRS countries, but not necessarily those that are required to use IFRS. Unfortunately, we cannot identify which U.S. firms are legally required to report in IFRS for their foreign subsidiaries.

Also, firms that apply LIFO do not react more negatively to IFRS adoption. Although the *LIFO* variable has the expected negative sign, it is not significant ($p = 0.51$). Since this variable does not take into account the extent to which LIFO is used, and thus what the cost impact would be of adopting IFRS, we also use the ratio LIFO Reserve/Total Assets and identify firms that use LIFO as their primary inventory-valuation method as alternative proxies, but obtain similar results. Similar to the explanations for the insignificance of *IFRS SALES%*, it could be that investors do not expect that disallowing the use of LIFO under IFRS will have a major cost impact and therefore do not react more negatively to IFRS adoption events.

[19] We also examine whether event returns are positively related to the proportion of global industry peers using IFRS. Untabulated results indicate that the market reaction is significantly positively associated with this proportion, similar to the results for *D(IFRS)*. This is consistent with investors valuing convergence benefits, and with these benefits increasing with the number of firms that use IFRS in a given industry.

TABLE 4
Main Cross-Sectional Analyses

Panel A: Cross-Sectional Analyses

$CR_{STOXX\ ex\ Am.}$ = *f* (EXTR, INSUR, HI-LIT, CONVERGENCE^{+}, IFRS SALES%, LIFO, Control Variables)

$^{+}$*CONVERGENCE is defined as follows:*

(1) D(IFRS) *(3) D(IFRS SIC3)*

(2) D(IFRS SIMILAR) *(4) D(IFRS ICB)*

	Prediction	(1)	(2)	(3)	(4)
Intercept	?	-0.0261	-0.0209	-0.0225	-0.0237
		(-2.58)**	(-2.50)**	(-2.51)**	(-2.50)**
		*[-1.99]**	*[-1.75]*	*[-1.87]**	*[-1.84]**
EXTR	-	0.0112	0.0119	0.0096	0.0117
		(1.52)	(1.56)	(1.26)	(1.56)
		[1.73]	*[1.79]*	*[1.45]*	*[1.71]*
INSUR	-	0.0049	0.0037	0.0064	0.0068
		(1.00)	(0.81)	(1.23)	(1.25)
		[0.84]	*[0.62]*	*[1.08]*	*[1.15]*
HI-LIT	-	-0.0023	-0.0021	-0.0028	-0.0020
		(-2.14)**	(-1.91)**	(-2.36)**	(-1.58)*
		*[-1.70]**	*[-1.40]**	*[-1.99]**	*[-1.40]**
CONVERGENCE^{+}	+	0.0030	0.0076	0.0060	0.0042
		(1.92)**	(1.99)**	(1.93)**	(2.27)**
		*[1.99]***	*[2.14]***	*[1.92]***	*[1.99]***
IFRS SALES%	+	-0.0009	-0.0005	-0.0014	-0.0014
		(-0.22)	(-0.12)	(-0.34)	(-0.33)
		[-0.18]	*[-0.06]*	*[-0.30]*	*[-0.19]*
LIFO	-	-0.0017	-0.0013	-0.0019	-0.0025
		(-0.67)	(-0.56)	(-0.71)	(-0.92)
		[-0.84]	*[-0.73]*	*[-0.90]*	*[-1.00]*
SIZE	?	0.0018	0.0014	0.0016	0.0017
		(1.93)*	(1.74)	(1.88)*	(1.87)*
		[1.33]	*[1.01]*	*[1.25]*	*[1.22]*
HERFINDAHL	?	-0.0003	0.0023	-0.0020	-0.0018
		(-0.05)	(0.34)	(-0.23)	(-0.28)
		[-0.21]	*[0.22]*	*[-0.21]*	*[-0.37]*
LEVERAGE	?	0.0050	0.0047	0.0049	0.0049
		(1.15)	(1.19)	(1.23)	(1.12)
		[1.67]	*[1.74]*	*[1.78]**	*[1.64]*
TURNOVER	?	0.0027	0.0025	0.0024	0.0024
		(1.78)*	(1.65)	(1.48)	(1.56)
		*[2.72]***	*[2.59]***	*[2.37]***	*[2.39]***
BIG4	?	0.0019	0.0014	0.0015	0.0023
		(2.52)**	(2.17)**	(1.97)*	(2.72)**
		*[3.26]****	*[2.98]****	*[2.62]***	*[3.29]****
N		59,285	59,284	56,254	51,501
R^2		0.0079	0.0090	0.0085	0.0077

(Continued on next page)

Panel B: Correlations D(IFRS) Measures

	D(IFRS)	D(IFRS SIMILAR)	D(IFRS SIC3)
D(IFRS SIMILAR)	0.608		
D(IFRS SIC3)	0.344	0.542	
D(IFRS ICB)	0.514	0.286	0.328

Table 4 Panel A presents main cross-sectional analyses. Each model includes a different measure of convergence benefits; numbers correspond to variables defined above table. T-statistics in parentheses are based on White standard errors that are also clustered at event level. T-statistics in square brackets are from comparison of coefficients for three-day event-returns (reported in table) and coefficients with three-day non-event returns as dependent variable. The non-event coefficient is used as the benchmark value instead of assuming $H_0 = 0$.*, **, and *** indicate significance at 0.10, 0.05, and 0.01 levels, respectively (two-sided, unless direction is predicted). Spearman correlations between the different convergence benefit measures are provided in Panel B; all correlations are significant at less than the 0.01 level. Variables are as defined in Appendix 2.

Fifth, the market reaction is positively and significantly related to the control variables *SIZE*, *TURNOVER*, and *BIG4*. As explained in Section 2.4, one explanation for the positive relation between size and event returns is that convergence benefits could be larger, since larger firms are more likely to compete and be compared on a global basis. Moreover, larger and more liquid firms attract institutional ownership and analyst following (O'Brien and Bhushan 1990; Gompers and Metrick 2001). Since institutional investors and analysts have been shown to favor conformity in accounting choices or outcomes (Bradshaw et al. 2004; De Franco et al. 2011), this might be another reason for the positive coefficients for these variables. Finally, the positive coefficient for *BIG4* indicates that investors react more favorably to IFRS adoption for firms with a Big 4 auditor, consistent with these auditors being more able to support the transition from U.S. GAAP to IFRS.

2.6. Sensitivity Analyses

In Section 2.5, we find that the coefficient for *D(IFRS)* is positive and significant, suggesting that investors expect IFRS to lead to convergence benefits. We examine whether this result is robust to different definitions and refinements of our measure of convergence benefits. We also conduct additional analyses to check the sensitivity of our findings to potential confounding events, which is particularly important given that our events take place during the recent financial crisis.

2.6.1. Further Evidence on Convergence Benefits

We perform several analyses to examine whether *D(IFRS)* accurately captures net convergence benefits for U.S. firms. First, as explained earlier, we expect net convergence benefits to be most pronounced for U.S. firms in industries where IFRS is most commonly used by industry peers, assuming that firms within an industry are economically similar. Since there is variation in the extent to which firms are similar within an industry, we refine *D(IFRS)* by explicitly incorporating the degree of economic similarity. We calculate the absolute correlation in daily stock returns between the U.S. firm and each of the top 20 peers using all trading days in the calendar year preceding an event, resulting in 20 correlations per firm. A high absolute correlation indicates that firms are affected to a similar extent by the same economic events, suggesting a high degree of economic similarity.[20] We calculate the average of these 20 correlations for each U.S. firm, and if this average correlation is higher than the median value across all U.S. firms in the same year, we label this firm as having a high degree of economic similarity with the top 20 peers. The variable *D(IFRS SIMILAR)* is equal to 1 for a particular firm if most of its top 20 peers use IFRS and its stock returns are highly correlated with those of the peers. We replace *D(IFRS)* with *D(IFRS SIMILAR)* in the regression analysis; the results are presented in the second column of Table 4, Panel A. The coefficient for *D(IFRS SIMILAR)* is positive and has a slightly higher statistical significance than for *D(IFRS)*.

In a related untabulated analysis, we examine whether investors expect IFRS to make dissimilarities between dissimilar firms more apparent. We calculate the average absolute correlation of a firm with the top 20 largest peers in all *SIC2* industries except for its own, and we identify the industry that has the lowest average correlation. *D(IFRS DISSIMILAR)* equals 1 if IFRS is the predominant standard in that industry. If investors expect IFRS to significantly increase this aspect of comparability, then *D(IFRS DISSIMILAR)* should have a positive significant coefficient. However, if investors expect no comparability increase after IFRS, then *D(IFRS DISSIMILAR)* would have an insignificant or significantly negative coefficient. We

[20] We use absolute correlations because we focus on the *magnitude* of the impact of economic events on firms rather than the *direction*. General economic events, such as changes in oil prices, may affect similar firms to the same extent and cause stock returns to move in the same direction. However, if one firm for instance announces increased R&D spending, investors may perceive this as good news for this firm but as bad news for an economically similar competing firm. Thus, we would observe a positive reaction for the announcing firm, but a negative reaction for the competing firm. In such cases, a high negative correlation may also indicate a high degree of economic similarity, which is why we focus on high absolute correlations as a measure of similarity. However, empirically there are few instances where there is a high negative absolute correlation between firms, and the findings are similar if we use non-absolute correlations to capture similarity.

find that *D(IFRS DISSIMILAR)* has a positive but insignificant coefficient in the regressions, suggesting that investors do not expect IFRS to make the dissimilarities between firms more apparent. However, our measures of convergence benefits remain significant.

Second, to assess the sensitivity of our convergence result to industry definitions, we define *D(IFRS SIMILAR)* at the three-digit SIC level and use this variable, labeled *D(IFRS SIC3)*, instead of *D(IFRS)*. We also define *D(IFRS)* using ICB subsector codes. We find similar results using these two variables, as shown in the last two columns of Table 4, Panel A. Overall, the tests discussed above show that the presence of convergence benefits is a plausible explanation for the higher market reaction in IFRS-predominant industries. The correlations between the different convergence benefit measures are also provided in Panel B of Table 4; all are positive and significant as expected, and most of them are reasonably high (above 0.5).

Next, we examine whether the coefficient on *D(IFRS)* reflects investors' expectations of higher reporting quality under IFRS rather than net convergence benefits. We test whether reporting quality is systematically lower in IFRS-predominant industries using measures of earnings quality, following Francis et al. (2004). If this is the case, then an alternative explanation for the *D(IFRS)* coefficient is that investors expect IFRS to improve reporting quality for firms in those industries. We also examine the sensitivity of the findings in Table 4 and *D(IFRS)* in particular to inclusion of these earnings quality measures in the analyses. Table 5 presents our analyses using seven commonly used earnings quality proxies (accrual quality, earnings persistence, predictability and smoothness, value relevance, earnings timeliness, and conservatism) following Francis et al. (2004), measured in the year preceding the events. First, as Panel A shows, we find that most of these measures (accrual quality, persistence, smoothness, conservatism, and timeliness) indicate that the quality of reporting is *not* lower in IFRS-predominant industries, which is inconsistent with reporting quality being a larger concern for firms in these industries. Second, we find that the coefficients on the convergence benefit proxies are still significant when we include the earnings quality measures in the regressions, although *D(IFRS)* is only weakly significant. For parsimony, we only report the analyses including the accrual quality proxies in Panel B of Table 5, but the findings are similar if we use any of the other earnings quality measures. Overall, these results suggest that *D(IFRS)* proxies for the extent of net convergence benefits rather than expectations of increased reporting quality that could result from IFRS adoption.

TABLE 5

Reporting Quality or Convergence Benefits

Panel A: Average Earnings Quality by Industry Type (D(IFRS) = 0/1)

Earnings Quality Measure[a]	A D(IFRS) = 0	B D(IFRS) = 1	Difference (B - A)
ACCRUAL QUALITY	0.0498	0.0265	-0.0233***
PERSISTENCE	-0.3758	-0.4034	-0.0276***
PREDICTABILITY	0.9934	1.1339	0.1405***
SMOOTHNESS	1.0697	0.9136	-0.1561***
VALUE RELEVANCE	-0.3879	-0.3645	0.0234***
TIMELINESS	-0.4496	-0.4447	0.0049
CONSERVATISM	-0.0109	-0.5293	-0.5184*

[a] Note that *lower* values correspond to *higher* earnings quality (following Francis et al. (2004)). Hence a negative difference in the last column indicates that the earnings quality in industries where D(IFRS) = 1 is *higher* than in industries where D(IFRS) = 0.

Panel B: Cross-sectional Analyses Including Accrual Quality

$CR_{STOXX\ ex\ Am.} = f$ (EXTR, INSUR, HI-LIT, CONVERGENCE^{+}, IFRS SALES%, LIFO, ACCRUAL QUALITY, Control Variables)

$^{+}$*CONVERGENCE is defined as follows:*

(1) D(IFRS) *(3) D(IFRS SIC3)*

(2) D(IFRS SIMILAR) *(4) D(IFRS ICB)*

	Prediction	(1)	(2)	(3)	(4)
Intercept	?	-0.0188	-0.0169	-0.0173	-0.0179
		(-2.42)**	(-2.29)**	(-2.33)**	(-2.23)**
		[-2.20]**	[-2.03]*	[-2.11]**	[-1.94]*
EXTR	-	0.0112	0.0115	0.0114	0.0116
		(1.67)	(1.72)	(1.68)	(1.69)
		[1.61]	[1.68]	[1.61]	[1.59]
INSUR	-	0.0100	0.0092	0.0091	0.0111
		(1.35)	(1.28)	(1.27)	(1.46)
		[1.36]	[1.27]	[1.28]	[1.48]
HI-LIT	-	-0.0023	-0.0021	-0.0022	-0.0022
		(-1.39)*	(-1.35)*	(-1.44)*	(-1.29)
		[-1.20]	[-1.10]	[-1.26]	[-1.21]
CONVERGENCE^{+}	+	0.0023	0.0044	0.0044	0.0047
		(1.42)*	(1.94)**	(1.72)*	(2.47)**
		[1.47]*	[2.18]**	[1.69]*	[2.23]**
IFRS SALES%	+	-0.0001	0.0000	0.0002	-0.0017
		(-0.02)	(0.01)	(0.04)	(-0.44)
		[0.10]	[0.17]	[0.19]	[-0.26]
LIFO	-	0.0007	0.0009	0.0010	0.0000
		(0.50)	(0.64)	(0.73)	(-0.02)
		[0.51]	[0.68]	[0.62]	[0.10]

(Continued on next page)

ACCRUAL QUALITY	?	-0.0083 (-0.43) [0.38]	-0.0080 (-0.42) [0.40]	-0.0072 (-0.37) [0.39]	0.0031 (0.14) [0.84]
SIZE	?	0.0013 (1.73) [1.23]	0.0011 (1.61) [1.06]	0.0012 (1.65) [1.14]	0.0012 (1.58) [1.03]
HERFINDAHL	?	-0.0041 (-0.42) [-0.39]	-0.0026 (-0.26) [-0.21]	-0.0015 (-0.16) [0.17]	-0.0041 (-0.39) [-0.38]
LEVERAGE	?	0.0039 (0.99) [1.89]*	0.0037 (0.93) [1.81]*	0.0035 (0.91) [1.79]*	0.0044 (1.08) [1.91]*
TURNOVER	?	0.0019 (1.09) [1.77]*	0.0018 (1.00) [1.69]	0.0018 (1.02) [1.72]	0.0018 (1.02) [1.67]
BIG4	?	0.0021 (2.19)** [2.98]***	0.0020 (2.16)** [2.97]**	0.0020 (2.18)** [2.95]**	0.0020 (2.16)** [3.15]***
N		28,117	28,117	28,117	25,378
R^2		0.0087	0.0091	0.0091	0.0089

Table 5 presents sensitivity analyses to assess whether reporting quality is a credible explanation for convergence benefit proxies. Panel A presents average earnings quality in industries that are IFRS-predominant versus those that are not. If reporting quality explains the positive coefficient on the convergence benefit proxies in Table 4, we expect to observe *lower* reporting quality (i.e., *high* values on these earnings quality measures) for industries where D(IFRS) = 1. Panel B presents the results for cross-sectional analyses controlling for ACCRUAL QUALITY (for parsimony, results including the other earnings quality measures are untabulated). Calculation of earnings quality measures follows Francis et al. (2004); as these are estimated on a ten-year rolling window basis, the number of observations drops compared to Table 4. For calculation of t-statistics (in parentheses), see footnote to Table 4. *, **, and *** indicate significance at 0.10, 0.05, and 0.01 levels, respectively (two-sided, unless direction is predicted). Variables are as defined in Appendix 2.

2.6.2. Credible Implementation of IFRS

Convergence might lower the costs of comparing information for investors, but this is likely to occur only if firms implement IFRS properly. The intuition is similar to that in DeFond et al. (2011), who use the change in mutual fund ownership after IFRS adoption to infer whether IFRS led to higher reporting comparability, which is a potential benefit of convergence. They find that mutual fund ownership only increases in the event of a "credible increase in uniformity," i.e., if the implementation of IFRS is well enforced. Similarly, we use the World Bank rule-of-law scores from Kaufmann et al. (2009) to measure the implementation quality of IFRS. We assign these scores to each firm in the top 20 peer group based on its country of origin and calculate the average rule-of-law score for each group. We

define two variables, *D(IFRS$_{Weak}$)* and *D(IFRS$_{Strong}$)*, to distinguish between industries where IFRS is commonly used but with different levels of implementation quality. *D(IFRS$_{Weak}$)* (respectively *D(IFRS$_{Strong}$)*) is equal to 1 if IFRS is commonly used and the average rule-of-law score for the peer group is below (above) the median value across industries. If implementation quality matters, then the coefficient for *D(IFRS$_{Strong}$)* should be higher than that for *D(IFRS$_{Weak}$)*. We find that *D(IFRS$_{Strong}$)* is indeed positively and significantly associated with the market reaction, whereas *D(IFRS$_{Weak}$)* is insignificant. However, the difference in the two coefficients is not statistically significant (p = 0.74). A possible explanation is the fact that convergence benefits encompass more than reduced costs of comparing information. For example, enhanced consistency in global accounting practices applied by preparers and their auditors is a convergence benefit that does not rely on the implementation quality of peers. Hence, since both *D(IFRS$_{Weak}$)* and *D(IFRS$_{Strong}$)* capture net convergence benefits to some extent, it is plausible that the coefficients do not differ significantly.

2.6.3. Foreign Institutional Ownership and Analyst Following

Prior research has shown that there is a demand for conformity in reporting choices across firms from analysts and institutional investors (e.g., Bradshaw et al. 2004; De Franco et al. 2011; DeFond et al. 2011). We therefore investigate whether the market reactions are higher when there is greater demand for convergence and include analyst following and a variable for high foreign institutional ownership in the regression model.[21] We find that analyst following is not significantly related to the market reaction, but if a firm has a higher number of foreign institutional owners, the market reaction is significantly higher. Table 6 also shows that despite the inclusion of analyst following and institutional ownership, *D(IFRS SIMILAR)* remains significantly and positively related to the market reaction. This evidence supports the main finding that investors appear to value convergence benefits of IFRS adoption within IFRS-predominant industries.

[21] For parsimony, we have tabulated the sensitivity analyses with *D(IFRS SIMILAR)*, but we find similar results when we measure convergence benefits with *D(IFRS)*, *D(IFRS SIC3)*, and *D(IFRS ICB)*, unless stated otherwise. Results are available from the authors upon request.

TABLE 6
Additional Sensitivity Analyses

	Prediction	(1) Implementation Quality IFRS		Prediction	(2) Analyst Following/ Foreign Institutional Ownership	(3) STOXX 600 AP Market Adjustment	(4) Exclude Event 13
Intercept	?	-0.0262 (-2.63)** *[-2.04]**	**Intercept**	?	-0.0151 (-1.29) *[-0.69]*	-0.0107 (-0.92) *[-0.01]*	-0.0172 (-2.12)* *[-1.35]*
EXTR	-	0.0112 (1.51) *[1.72]*	**EXTR**	-	0.0119 (1.55) *[1.76]*	0.0119 (1.58) *[1.84]*	0.0076 (1.13) *[1.38]*
INSUR	-	0.0052 (1.00) *[0.86]*	**INSUR**	-	0.0037 (0.80) *[0.61]*	0.0039 (0.87) *[0.65]*	0.0001 (0.03) *[-0.27]*
HI-LIT	-	-0.0024 (-2.18)** *[-1.74]**	**HI-LIT**	-	-0.0020 (-1.93)** *[-1.50]**	-0.0024 (-2.26)** *[-1.68]**	-0.0018 (-1.63)* *[-1.13]*
D(IFRS$_{Weak}$)	?	0.0026 (1.14) *[1.12]*	**D(IFRS SIMILAR)**	+	0.0073 (2.02)** *[2.22]***	0.0071 (1.79)** *[2.04]***	0.0052 (1.60)* *[1.78]***
D(IFRS$_{Strong}$)	+	0.0037 (1.69)* *[1.82]***	**ANALYST**	+	0.0000 (0.01) *[0.32]*		
			FORINSTIT	+	0.0035 (1.94)** *[1.65]**		
IFRS SALES%	+	-0.0011 (-0.25) *[-0.22]*	**IFRS SALES%**	+	-0.0007 (-0.17) *[-0.09]*	-0.0007 (-0.18) *[-0.01]*	0.0018 (0.55) *[0.62]*

(Continued on next page)

LIFO	-	-0.0018	**LIFO**	-	-0.0014	-0.0007	0.0001
		(-0.72)			(-0.58)	(-0.34)	(0.03)
		[-0.91]			*[-0.70]*	*[-0.50]*	*[-0.17]*
SIZE	?	0.0018	**SIZE**	?	0.0009	0.0011	0.0011
		(1.97)*			(0.79)	(1.06)	(1.32)
		[1.37]			*[0.20]*	*[0.41]*	*[0.59]*
HERFINDAHL	?	-0.0005	**HERFINDAHL**	?	0.0031	-0.0033	0.0045
		(-0.08)			(0.45)	(-0.48)	(0.68)
		[-0.25]			*[0.32]*	*[-0.45]*	*[0.56]*
LEVERAGE	?	0.0053	**LEVERAGE**	?	0.0046	0.0053	0.0031
		(1.09)			(1.19)	(1.27)	(0.80)
		[1.56]			*[1.74]*	*[1.83]**	*[1.35]*
TURNOVER	?	0.0026	**TURNOVER**	?	0.0017	0.0029	0.0020
		(1.76)*			(1.00)	(1.77)*	(1.25)
		*[2.71]***			*[1.84]**	*[2.74]***	*[2.14]***
BIG4	?	0.0018	**BIG4**	?	0.0011	0.0020	0.0013
		(2.60)**			(1.65)	(2.43)**	(1.89)*
		*[3.37]****			*[2.51]***	*[3.14]****	*[2.65]***
N		59,285			59,284	59,284	55,784
R^2		0.0079			0.0093	0.0080	0.0058

Table 6 presents additional sensitivity analyses, where we differentiate between industries where IFRS is predominant based on average IFRS implementation quality (column 1), include analyst following and foreign institutional ownership (column 2), use an alternative market index to adjust returns (STOXX 600 Asia-Pacific index) (column 3) and exclude event 13 from the analyses (column 4). Variables are as defined in Appendix 2. For calculation of t-statistics (in parentheses and square brackets), see footnote to Table 4. *, **, and *** indicate significance at 0.10, 0.05, and 0.01 levels, respectively (two-sided, unless direction is predicted).

2.6.4. Other News and Market Adjustment

We take several steps to ensure our results are not sensitive to the chosen market adjustment, other news events, and selection of events.

First, we assess the sensitivity of our results to an alternative market adjustment by subtracting the STOXX 600 Asia-Pacific index return instead of the STOXX 1800 Global ex America index return. The results for the overall market reaction (Table 3) are similar for both adjustments. We also find that the cross-sectional analyses are generally robust to this alternative adjustment (column 3 of Table 6 shows the regression results for the *D(IFRS SIMILAR)* specification): the coefficients for the convergence benefit proxies are generally similar to those in the main analysis, except for *D(IFRS)*, which loses significance.

Second, Tables 4 to 6 provide additional information on whether crisis-related news is driving our results. The tables report alternative t-statistics (in brackets), which are based on a comparison of the coefficients in the main analysis with coefficients from the same models when we replace the event returns with non-event returns (see also Armstrong et al. 2010). We do this to eliminate the possibility that we are merely capturing systematic relations between returns and firm characteristics. We find that most of the results are unaltered and that the significance of our metrics of convergence benefits is enhanced by this procedure.

Third, we search in Factiva for other major news in our sample period (April 2007 to January 2009). News about the problems with mortgage securities and the economic downturn was reported in several event windows. This may explain why some of our returns in Table 3 are inconsistent with their predicted signs. For example, for the events on October 24, 2007 and November 7 and 15, 2007, the *Wall Street Journal* reported news on disappointing economic statistics, downgrades of mortgage securities, and slowing economic growth and inflation. The most strongly affected event is October 13, 2008, which overlaps with the 2008 stock market crash, as mentioned earlier. We also repeat the cross-sectional analyses in Table 4 excluding this event; the last column of Table 6 shows the results for *D(IFRS SIMILAR)*. Although the cross-sectional results are weaker when we exclude this event, the results for any of the convergence benefit proxies do not seem to be driven by any particular event. We find similar results if we exclude any other event from the sample. Also, unreported analyses show that excluding banks from the sample (firms with *SIC2* equal to 60 or 61), which were most severely affected by the crisis, does not affect the tenor of our results.

We acknowledge that it is impossible to perfectly adjust for potentially confounding effects, since major news events can occur every day. However, the inferences from our main

cross-sectional analyses are similar when we control for confounding events, and we believe that they provide insight into which firms investors expect will benefit from IFRS adoption.

2.7. Conclusion

The goal of this study is to provide empirical evidence for the costs and benefits of IFRS adoption by U.S. firms from the investors' point of view. We use the stock market reaction to events that affect the likelihood of IFRS adoption and examine whether this varies cross-sectionally in a predictable manner. We find that investors react more positively to events that increase the likelihood of IFRS adoption in cases where IFRS is expected to result in convergence benefits. We find a significantly more positive market reaction for firms operating in industries where IFRS is the predominant choice worldwide, for larger and more liquid firms that are more likely to attract investors who stand to benefit from convergence, and for firms with high foreign institutional ownership. Collectively, these findings suggest that investors expect U.S. adoption of IFRS to result in net convergence benefits. Further, investors in firms with high litigation risk respond less positively to events that increase the likelihood of IFRS, consistent with the notion that IFRS may increase the likelihood of expensive legal challenges or may lead to overly conservative behavior by these firms to avoid litigation.

The findings of this paper must be interpreted carefully in light of several limitations. First, our focus is only on investors, rather than on all parties that could be affected by the change. Second, the methodology relies on a correct identification of events and requires that event-related information be incorporated into stock prices rapidly and without bias (Armstrong et al. 2010). We have carefully identified the relevant events and dates, but we cannot exclude the possibility that participants were privy to relevant information prior to the dates identified here. Third, the findings relate to the expected effects of IFRS adoption, rather than to the realized effects, and should therefore be seen as preliminary evidence for the effects of IFRS adoption.

Despite these limitations, our findings are relevant to the current debate on whether the U.S. should switch to IFRS. The SEC has stated that the transition should be made only if it benefits U.S. investors and capital markets, and this paper provides evidence relevant to that issue. A final contribution is our finding that despite the ongoing efforts of the IASB and FASB to reduce the differences between IFRS and U.S. GAAP, investors still react positively to news that increases the likelihood of having a single set of standards. Our findings highlight the

importance of convergence benefits to investors and show that there are both costs and benefits to the use of a common global accounting standard.

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Appendix 1: Sample Selection

		Number of observations
All U.S. firms not missing return data on one of 15 events		63,597
Less: observations for firms with negative book value of equity	*-1,987*	61,610
Less: firms missing data for control variables:[a,]	*-2,325*[b]	
- *SIZE*	*-1,496*	
- *TURNOVER*	*-1,482*	
- *LEVERAGE*	*-75*	
Final sample main analysis[c]		**59,285**

[a] EXTR, INSUR, HI-LIT, D(IFRS) are defined at the industry-level, for which there are sufficient data available. IFRS SALES%, LIFO and BIG4 are equal to zero if Compustat does not report foreign sales, inventory valuation method or auditor.

[b] The total number of observations that we lose is not equal to the sum of these three individual components, since most observations lacking SIZE also lack data for TURNOVER.

[c] To calculate D(IFRS SIMILAR), D(IFRS SIC3) and D(IFRS ICB), we require either sufficient return data to calculate economic similarity with peers, or a firm's ICB industry code in Datastream, which are not always available. This reduces the number of observations for the cross-sectional analyses with these variables.

Appendix 2: Definition of Variables Used in Cross-Sectional Analyses

Dependent Variable

CR: Three-day cumulative raw return centered on event date for U.S. firm. (Source: CRSP.)

STOXX 1800 ex America: Three-day cumulative return for DJ STOXX 1800 Global index excluding American firms. (Source: Datastream.)

STOXX 600 Asia-Pacific: Three-day cumulative return for DJ STOXX 600 Asia-Pacific index three-day cumulative return. (Source: Datastream.)

$\mathbf{CR}_{\mathbf{STOXX\ ex\ Am.}}$: CR adjusted for STOXX 1800 ex America. (Source: CRSP and Datastream.)

$\mathbf{CR}_{\mathbf{STOXX\ A.P.}}$: CR adjusted for STOXX 600 Asia-Pacific. (Source: CRSP and Datastream.)

Test Variables

EXTR: Indicator variable: 1 if firm has SIC2 = 13 or 29 (extractive industries); 0 otherwise. (Source: Compustat.)

INSUR: Indicator variable: 1 if firm has SIC2 = 63 or 64 (insurance industries); 0 otherwise. (Source: Compustat.)

HI-LIT: Indicator variable: 1 if firm has SIC of 2833–2836 (pharmaceutical), 3570–3577 (computer hardware), 3600–3674 (electronics), 5200–5961 (retail), 7371–7379 (computer software), or 8731–8734 (R&D); 0 otherwise. (Source: Compustat.)

D(IFRS): Indicator variable: 1 if IFRS is the most commonly used set of standards among 20 largest firms in industry globally (based on SIC2); 0 otherwise. Examples: if for a given industry, 10 firms use IFRS, 5 firms use U.S. GAAP and the remaining 5 all use different local GAAPs, D(IFRS) = 1 for the firms in this industry. Another example would be that 8 firms use IFRS, 3 use U.S. GAAP and the other 9 each use a different local GAAP; this industry would also be classified as IFRS-predominant. (Source: Worldscope.)

D(IFRS SIMILAR): Indicator variable: 1 if IFRS is the most commonly used set of standards among 20 largest firms in industry globally (based on SIC2) and average yearly correlation in daily stock returns with these firms exceeds median average value; 0 otherwise. We use daily returns for all trading days in the calendar year preceding an event to calculate the correlation. For a given U.S. firm, the correlation is calculated with each of the 20 largest firm peers separately, and then averaged. (Source: Worldscope/Datastream.)

D(IFRS SIC3): Indicator variable: 1 if IFRS is the most commonly used set of standards among 20 largest firms in industry globally (based on SIC3) and average correlation in daily stock returns with these firms exceeds median in year preceding event; 0 otherwise.

Calculation of the correlation is as described for D(IFRS SIMILAR). (Source: Worldscope/Datastream.)

D(IFRS ICB): Indicator variable: 1 if IFRS is the most commonly used set of standards among 20 largest firms in industry globally (based on ICB subsectors); 0 otherwise. (Source: Worldscope.)

D(IFRS SALES): Indicator variable: 1 if firm has nonzero foreign sales in countries that require IFRS reporting; 0 otherwise. (Source: Compustat segment file for foreign sales; IASPlus and Sletten and Ramanna (2009) used to identify IFRS countries.)

IFRS SALES%: Firm's sales in countries that require IFRS relative to its total sales. (Source: Compustat segment file for foreign sales; IASPlus.com and Sletten and Ramanna (2009) used to identify IFRS countries.)

LIFO: Indicator variable: 1 if firm uses LIFO to value its inventory; 0 otherwise. (Source: Compustat.)

D(IFRS$_{Weak}$): Indicator variable equal to 1 if IFRS is the most commonly used set of standards among 20 largest firms in industry globally (based on SIC2) and the average implementation quality of IFRS is below the median value. Implementation quality is measured using the Kaufmann et al. (2009) country-level rule-of-law score. We calculate the average rule-of-law score across firms applying IFRS in industries where IFRS is most commonly used (i.e., D(IFRS) = 1). (Source: Worldscope for firms' accounting standards; WorldBank/Kaufmann et al. (2009) for rule of law scores.)

D(IFRS$_{Strong}$): Indicator variable equal to 1 if IFRS is the most commonly used set of standards among 20 largest firms in industry globally (based on SIC2) and the average implementation quality of IFRS is above the median value. See also D(IFRS$_{Weak}$) for further details on measure of implementation quality. (Source: Worldscope for firms' accounting standards; WorldBank/Kaufmann et al. (2009) for rule of law scores.)

ANALYST: Number of estimates (NUMEST) from I/B/E/S, measured at end of quarter preceding event. (Source: I/B/E/S.)

FORINSTIT: Indicator variable: 1 if number of foreign institutional owners exceeds median, measured at end of quarter preceding event. (Source: Thomson Research.)

Earnings Quality Variables (following Francis et al. (2004))

ACCRUAL QUALITY: Standard deviation of residuals of Dechow and Dichev (2002) regression model, estimated over ten-year windows for each firm separately. Lower values of standard deviation indicate higher accrual quality.

Dechow and Dichev (2002) model:

$$\frac{\mathrm{ACC}_{i,t}}{\mathrm{Assets}_{i,t}} = \beta_{0,i} + \beta_{1,i}\frac{\mathrm{CFO}_{i,t-1}}{\mathrm{Assets}_{i,t}} + \beta_{2,i}\frac{\mathrm{CFO}_{i,t}}{\mathrm{Assets}_{i,t}} + \beta_{3,i}\frac{\mathrm{CFO}_{i,t+1}}{\mathrm{Assets}_{i,t}} + \varepsilon_{i,t}$$

where:

$ACC_{i,t}$ = total current accruals of firm i in year t, calculated as the difference between income before extraordinary items and cash flow from operations;

$Assets_{i,t}$ = average assets of firm i in year t;

$CFO_{i,t}$ = cash flow from operations of firm i in year. (Source: Compustat.)

PERSISTENCE: Negative of AR coefficient ($\gamma_{1,i)}$ in the following first-order autoregressive (AR1) model of earnings, estimated over ten-year windows for each firm separately:

$EPS_{i,t} = \gamma_{0,i} + \gamma_{1,i}EPS_{i,t-1} + \omega_{i,t}$. (Source: Compustat.)

PREDICTABILITY: Square root of the error variance from AR1 model above (see PERSISTENCE). (Source: Compustat.)

SMOOTHNESS: Standard deviation of firm's income before extraordinary items/standard deviation of cash flow from operations, calculated over ten-year window. (Source: Compustat.)

VALUE RELEVANCE: R^2 of following regression, multiplied by -1 (estimated over ten-year windows for each firm-separately):

$$R_{i,t} = \delta_{0,i} + \delta_{1,i}E_{i,t} + \delta_{2,i}\Delta E_{i,t} + \square_{i,t}$$

where:

$R_{i,t}$ = 15-month return of firm i in year t, ending three months after the fiscal year end;

$E_{i,t}$ = income before extraordinary items of firm i in year t, divided by market value of equity at the end of year t-1;

$\Delta E_{i,t}$ = change of firm i's income before extraordinary items in year t, divided by market value of equity at the end of year t-1. (Source: Compustat and CRSP.)

TIMELINESS: R^2 of following regression, multiplied by -1 (estimated over ten-year windows for each firm separately):

$$E_{i,t} = \theta_{0,i} + \theta_{1,i}NEG_{i,t} + \theta_{2,i}R_{i,t} + \theta_{3,i}NEG_{i,t} * R_{i,t} + \varphi_{i,t}$$

where:

$NEG_{i,t}$ = 1 if $R_{i,t} < 0$, and 0 otherwise, and other variables as defined above. (Source: Compustat and CRSP.)

CONSERVATISM: Defined as $-(\theta_{2,i}+\theta_{3,i})/\theta_{2,i}$, see regression model above. (Source: Compustat and CRSP.)

Control Variables

SIZE: Log of firm's market value at end of prior calendar year. (Source: CRSP.)

HERFINDAHL: Measure of industry concentration (Herfindahl index): sum of each firm's squared percentage market-share, calculated at SIC2 level. (Source: Compustat.)

LEVERAGE: Ratio of firm's total liabilities to total assets. (Source: Compustat.)

TURNOVER: Indicator variable: 1 if firm's mean daily percentage shares traded during calendar year is above median for all firms; 0 otherwise. (Source: CRSP.)

BIG4: Indicator variable: 1 if firm's auditor belongs to Big 4; 0 otherwise. (Source: Compustat.)

Non-Event Return Adjustments

We use three-day non-event market-adjusted returns as a benchmark for assessing the significance of the overall market reaction in Table 3 and for the alternative t-statistics of the cross-sectional analyses in Tables 4 to 8 (see Armstrong et al. 2010). We start from the first trading day in 2007, and calculate the cumulative return for three consecutive non-event trading days for each U.S. firm in our sample. We subtract the contemporaneous three-day STOXX index return for the same three days, similarly to how we calculate CRSTOXX ex Am. and CRSTOXX A.P. We repeat this for the next three consecutive non-event trading days (i.e., the non-event three-day windows do not overlap) and for all non-event trading days in 2007 and 2008.

Note: All test, earnings quality and control variables are measured at the end of the fiscal year preceding an event, unless specified otherwise.

Chapter 3: The Impact of IFRS 8 on Geographical Segment Information[22]

3.1. Introduction

This study examines the impact of IFRS 8 on segment reporting of European firms. Specifically, we investigate (i) the impact of IFRS 8 on geographical segment disclosures; (ii) cross-sectional differences in the effect of IFRS 8 adoption; and (iii) whether IFRS 8 has had any economic consequences using analyst forecast properties and proxies for market liquidity and cost of capital. We focus on geographical segments for two reasons. First, prior research has mainly focused on the determinants and consequences of *business* segment reporting. In comparison, we know much less about the quality of geographical segment disclosures and whether these are relevant to investors, particularly in non-U.S. contexts. The current study attempts to provide empirical evidence on this issue. Second, despite concerns about the impact of IFRS 8 on geographical segment disclosures which arose leading up to its adoption and remained after its implementation, no prior research has examined the actual impact of IFRS 8 on geographical disclosures in detail.[23] This study is the first to conduct such an investigation.

The IASB issued IFRS 8 in November 2006 to replace IAS 14 and became effective in 2009. As part of the ongoing convergence project between FASB and IASB, IFRS 8 is aimed at reducing differences between U.S. GAAP and IFRS. This resulted in IFRS 8 being very similar to its U.S. counterpart, SFAS 131, which was introduced in the U.S. in 1997. A significant difference between IAS 14 and IFRS 8 is the requirement under IFRS 8 to report information for segments as they are defined for internal reporting purposes. The aim of this so-called "management approach" to segment reporting is to increase the usefulness of segment reporting to investors and analysts, because it would allow them to see through the eyes of management (IASB 2012). Importantly, the standard implicitly lowers the disclosure requirements for geographical segments if firms define operating segments according to its products and services. For these firms, IFRS 8 does not require the disclosure of geographical segment information other than minimal entity-wide disclosures. Investors feared this would lead to a significant loss of geographical segment information and was brought forward as an argument against the EU's adoption of IFRS 8 (Véron 2007). We examine whether this is

[22] This article is co-authored with Arnt Verriest.
[23] See e.g.: http://www.taxresearch.org.uk/Blog/2010/01/08/ifrs-8-in-trouble-country-by-country-reporting-is-the-answer/.

indeed a valid concern.

To provide empirical evidence on the actual impact of IFRS 8, we hand-collect segment reporting data for a sample of 844 firms from 18 European countries. We deliberately select a sample of firms with a high proportion of foreign sales. As such, demand for geographical information is likely to be high, making any changes to geographical segment reporting economically relevant. Similar to Berger and Hann (2003; 2007), we examine data in the year before adoption of IFRS 8, as firms are required to restate data for the year preceding the adoption year for comparison purposes. This means we can compare historical IAS 14 data to restated IFRS 8 data for the same year, thus holding other changes that could influence segment reporting constant. This makes it more likely that any observed changes in segment reporting are due to the change in standards rather than changes in a firm's economic circumstances.

We find that, on average, firms report more disaggregated segments under IFRS 8, which implies more detailed geographical disclosures. However, the amount of geographical information (i.e., the number of reported items and the frequency of reporting geographical income) declines significantly. More importantly, we provide evidence that segment disaggregation does not increase uniformly for all firms. First, we find no significant improvements for firms that already reported poorly under IAS 14. This result indicates that improvements do not materialize for the firms with more room for increased disclosure, resulting in greater cross-sectional divergence in geographical segment reporting. Second, we find that corporate transparency affects the impact of IFRS 8. In general, our results show that IFRS 8 led to larger improvements as transparency increases. Most strikingly, our results show that IFRS 8 has *no* effect on segment disclosures for firms without a Big4 auditor. The findings also show that the moderating effects of transparency differ for the amount of information that is disclosed versus the level of segment disaggregation. Finally, we find some, albeit weak evidence that any positive changes to analyst forecast properties or market liquidity post IFRS 8 are less pronounced for firms that report fewer items or aggregate segments under IFRS 8. We also do not find strong evidence that firms with improved segment reporting have significantly greater forecast accuracy or lower dispersion and bid-ask spreads. Collectively, these results cast doubt on whether IFRS 8 achieved its goal of improving the usefulness of segment information to users, since there appear to be no economic consequences even for improved firms.

We contribute to the existing literature in the following ways. First, prior studies typically provide small sample and/or single country evidence on the impact of IFRS 8, whereas we

focus on a large cross-country sample of about 800 European listed firms. As country specific institutional factors also affect the impact of introducing new standards (e.g., Ball et al. 2000; 2003), examining a cross-country sample enhances the generalizability of our findings and provides comprehensive evidence on the impact of IFRS 8. Second, in contrast to most prior studies on segment reporting, our primary focus is on the impact of IFRS 8 on *geographical* segment reporting. This topic is particularly interesting given our setting: European firms are likely to be much more geographically diversified than U.S. firms, making geographical disclosures more important to investors and analysts. Yet, IFRS 8 implicitly lowers many of the disclosure requirements for geographical segments, which was also highlighted as an argument against the adoption of IFRS 8 by the EU (Véron 2007). We are the first paper to examine this issue in detail and find evidence consistent with these concerns. Third, we investigate heterogeneity in adoption of IFRS 8 across firms, an important aspect that has been mostly overlooked in prior research on IFRS 8. As Daske, Hail, Leuz and Verdi (2012) show, firm-level heterogeneity should be taken into account when examining economic consequences of regulation. In particular, we examine whether firms that provide little segment information under the previous standard improve their segment disclosure as these are the firms for which improvements are most essential. However, we find that these are not the firms that increase their segment disclosures under IFRS 8. In addition, firms that improve do not have higher forecast accuracy and market liquidity, or lower forecast dispersion after IFRS 8, which again casts doubt on whether IFRS 8 increased the usefulness of segment information. Fourth, as IFRS 8 is a prime example of a convergence project between the IASB and FASB, our results are also relevant to the debate on the consequences of convergence between the two sets of standards.

The paper proceeds as follows. We discuss prior literature on segment reporting and give a brief overview of IFRS 8 and recent literature on the effects of this standard in Section 3.2. Section 3.3 explains our methodology. Section 3.4 presents our results. Section 3.5 concludes.

3.2. Prior Literature

Our study relates to two main streams of literature. The first is the literature on determinants of segment reporting (e.g., Hayes and Lundholm 1996; Harris 1998; Botosan and Harris 2000; Berger and Hann 2007). These studies mainly focus on competitive incentives to disclose or withhold segment information. The second stream of literature consists of studies that investigate reporting and economic consequences of changes in

segment reporting standards (e.g., Hermann and Thomas 2000; Berger and Hann 2003; Botosan and Stanford 2005; Ettredge, Kwon, Smith and Zarowin 2005; Ettredge, Kwon, Smith and Stone 2006). We provide a brief overview of both streams of literature below. We also discuss important differences between IFRS 8 versus IAS 14 and recent studies on the effects of adopting IFRS 8.

3.2.1. Segment Reporting

As mentioned, prior literature on segment reporting focuses mainly on segment reporting in a U.S. context. These studies investigate the economic determinants of segment reporting quality, whether the change in U.S. segment reporting standards (from SFAS 14 to SFAS 131) has affected the quality of segment reports, and the associated capital market consequences. We interpret segment reporting quality from an investor perspective, which is mainly determined by the amount of information firms disclose (i.e., the number of reported financial items) as well as the level of disaggregation or fineness of segments (i.e., the number of segments disclosed or the degree to which externally reported segments correspond with internally used segment definitions).

In terms of the determinants of segment reporting, Hayes and Lundholm (1996) demonstrate that firms face capital market incentives to disclose detailed segment reports as well as competitive forces that may affect the level of disaggregation of segments. Most empirical studies investigate whether competition and the related proprietary costs affect segment disclosures, as companies themselves often cite these costs as a reason for opposing reporting standards that require them to disclose more disaggregated segments. A firm is reluctant to disclose which activities or geographical areas are most profitable, as competitors may use this information to the disclosing firm's disadvantage. Therefore, managers have incentives to aggregate segments to conceal this information (Berger and Hann 2007). The empirical evidence on the relation between competition and segment reporting, however, is inconclusive. On the one hand, Harris (1998) and Botosan and Stanford (2005) find that firms are less likely to report segments in less competitive industries, which is indeed consistent with the idea that firms disclose less to avoid attracting new competitors. Bens, Berger and Monahan (2011) use confidential U.S. Census data at firms' plant level to investigate how firms aggregate information for external segment reporting purposes and also find that proprietary costs drive aggregation. Botosan and Harris (2000), however, find no evidence that the initiation of voluntary quarterly segment reporting led to changes in the level of competition that firms face, which suggests that the proprietary costs of revealing segment

information are limited. Ettredge, Kwon, Smith and Zarowin (2006) also fail to find that proprietary costs increase for multi-segment firms that have to disclose higher quality segment information. Importantly, Berger and Hann (2007) show that agency costs are a plausible alternative explanation for why firms conceal segment information. They find that firms conceal less, not more, profitable segments before SFAS 131 came into effect, which is inconsistent with the proprietary cost explanation, but supports the idea that firms withhold information to prevent revealing agency problems. This result is in line with Bens, Berger and Monahan (2011) who find that agency costs drive aggregation for multi-segment firms.

In addition to the literature on firm-level incentives that affect segment reporting, prior studies have also examined the impact of introducing new segment reporting standards in the U.S. The FASB replaced SFAS 14 with SFAS131 in 1997, which requires firms to disclose segment reporting using the management approach. This means firms have to report segments as they are defined for internal management purposes. Most of these studies find that line-of-business segment reporting improved as a result. Hermann and Thomas (2000) examine a sample of the 100 largest U.S. firms and find that they disclose more information about business segments after SFAS 131 is implemented. Similarly, Berger and Hann (2003) find that firms disclose more disaggregated information under SFAS 131 and that part of this information is new to analysts. Ettredge, Kwon, Smith and Zarowin (2005) find an increase in the cross-segment variability of income for multi-segment firms, which they interpret as higher quality under SFAS 131. Ettredge, Kwon, Smith and Stone (2006) examine capital market consequences of SFAS 131 introduction and find that the relation between current returns and future earnings improves after the adoption of this standard, which implies that SFAS 131 led to improved segment disclosures, enabling the stock market to better predict future earnings. Overall, these studies show that SFAS 131 resulted in better line-of-business segment disclosures.

Fewer studies have examined the effects of SFAS 131 on geographical disclosures. Moreover, results in this area are mixed. Hope and Thomas (2008) find that SFAS 131 made it easier for managers to engage in foreign empire building. As SFAS 131 no longer requires geographical earnings to be disclosed, monitoring of foreign activities becomes harder for firms' shareholders, making it possible for firms to engage in foreign expansions that do not necessarily enhance firm value. Consistent with this, their findings show that firms that do not disclose geographical earnings post SFAS 131 have relatively larger foreign operations, but lower foreign profit margins and lower firm value. However, Hope, Thomas and Winterbotham (2006) do not find that analyst earnings forecast errors and dispersion are

higher post SFAS 131 for non-disclosers compared to disclosers. This implies that non-disclosure of geographical earnings does not necessarily result in lower earnings predictability. Overall, the evidence is consistent with business segment disclosure improving after SFAS 131, while the findings for geographical segments are mixed.

3.2.2. IFRS 8 versus IAS 14

IFRS 8 was introduced in November 2006 to replace IAS 14 and became mandatory for fiscal periods starting on or after January 1, 2009. IAS 14 required firms to disclose both business and geographical segment information, choose which segment type was primary and which one was secondary, and disclose a specific number of items such as revenue, income, assets, liabilities, capital expenditures, depreciation and other non-cash items. As part of the ongoing convergence project between FASB and IASB, IFRS 8 closely resembles its U.S. counterpart SFAS 131. IFRS 8 also requires firms to report segments that are consistent with how these are reported internally to the Chief Operating Decision Maker. This "management approach" is meant to increase the usefulness of segment disclosures by allowing investors to see through the eyes of management, although there was concern that variation in internal management structures would lead to greater inconsistency in segment reporting across firms (IASB 2012).

Two other features of IFRS 8 are worth mentioning. First, the standard allows firms to report segment items that are not prepared in accordance with IFRS. Firms are required to base segment reporting on management information, which is not necessarily based on IFRS. The use of non-IFRS measures in external reporting could further reduce consistency and comparability across firms' segment disclosures. Second, and important for this study, the switch from IAS 14 to IFRS 8 has implicit but important implications for the disclosure of geographical information. If firms choose business segments as primary segments under IAS 14, firms would still have to disclose geographical segment information under a secondary reporting format, which requires the disclosure of revenue, assets and capital expenditures. In contrast, IFRS 8 does not require any geographical information to be disclosed if this is (allegedly) not prepared for internal use, nor is it required as entity-wide disclosures if the cost of preparing this information would be excessive. The potential loss of geographical segment information was a major concern to investors (Crawford et al. 2012) and was brought forward as an argument for opposing the EU's adoption of IFRS 8 (Véron 2007).

Recently, a number of studies has investigated the effects of the switch to IFRS 8 in Europe. Crawford et al. (2012) examine the segment disclosures of 100 FTSE firms for the

year prior to and the year of IFRS 8 adoption. They find that there is an increase in the number of business and geographical segments reported by these firms, while the number of items increases for business and decreases for geographical segments. Nichols et al. (2012) use a larger sample of European companies and also find that segment disaggregation increases, while the amount of information (number of items) provided decreases slightly. The effects of IFRS 8 in Australia, where it was adopted as AASB 8, are largely similar to those in Europe. Bujega, Czernowski and Moran (2012) and He, He and Evans (2012) find a similar pattern of higher disaggregation, but a lower number of reported items for Australian firms. The latter study also finds that analyst forecast accuracy and dispersion are not significantly different after the introduction of IFRS 8, although they do not take into account potential heterogeneity in the impact of IFRS 8 across firms.

3.2.3. Variation in the Impact of IFRS 8

In addition to the overall effect of IFRS 8 on financial reporting, it is likely that IFRS 8 will not have a uniform impact across all firms. Prior studies show that there is considerably heterogeneity in the reporting and economic consequences of standards depending on firms' reporting incentives (e.g., Ball, Kothari and Robin 2000; Ball, Robin and Wu 2003; Daske, Hail, Leuz and Verdi 2008, 2012). In this study, we focus on firms' pre-IFRS 8 information environment and examine whether firms' geographical segment reporting choices under IAS 14 and firm-level transparency moderate the impact of IFRS 8. Since the aim of IFRS 8 is to improve segment disclosures and firms' information environment, it makes sense to examine whether improvements, if any, are more pronounced for firms with poorer information environments under IAS 14.

A priori, it is difficult to predict what the moderating impact segment reporting choices under IAS 14 would be. On the one hand, firms that disclose little geographical segment information under IAS 14 have a higher potential for improving segment disclosure quality under IFRS 8. We might therefore expect IFRS 8 to lead to greater improvements for these firms. On the other hand, firms that already disclose a minimal amount of information or even less than required under IAS 14 clearly do not have incentives to comply with any standard, making it likely that IFRS 8 would have no effect for these firms. As some argue that the requirements of IFRS 8 are less stringent than under IAS 14 (Véron 2007), it could even be the case that the quality of segment information would actually decrease further for non-compliant firms.

Corporate transparency and monitoring is also expected to have an effect on the impact

of IFRS 8. For instance, the management approach under IFRS 8 provides firms considerable discretion in disclosing segment information. A more independent and competent auditor is expected to prevent firms from abusing this discretion, such that segment disclosures of firms with better auditors is more informative under IFRS 8 compared to firms with a lower quality auditor. One could also argue, however, that more transparent firms already have incentives to disclose high quality segment information under IAS 14. In this case, the impact of IFRS 8 on the disclosures of such firms would be smaller than for less transparent firms.

As the discussion above indicates, it is far from straightforward that IFRS 8 will result in better segment disclosures. We therefore do not predict whether IFRS 8 increases or decreases the quality of segment disclosures, nor do we focus only on the overall impact of IFRS 8. Instead, we investigate how IFRS 8 affects different aspects of segment disclosure and we analyze the potential different impact of IFRS 8 for firms with poorer quality reporting under IAS 14 and/or less transparent information environments. We also investigate the cross-sectional variation in the impact of IFRS 8 on analyst forecast properties and market liquidity. Investigating each of these aspects embodies the key contribution of our study. In doing so, we employ a much larger sample of European firms compared to most prior studies, which enhances the generalizability and relevance of our findings.

3.3. Methodology

3.3.1. Data and Sample Selection

As our paper focuses on the impact of IFRS 8 on geographical segment disclosures, we select all listed non-financial European firms with over 50% of foreign sales in 2009, which is the year IFRS 8 becomes mandatory. This results in a selection of 1,270 firms. The foreign sales selection criterion ensures there is a high demand for geographical segment information by outside investors, as a significant proportion of a firm's sales is generated outside of the home country. This makes geographical disclosures relevant to users of financial reporting. Therefore, any changes associated with IFRS 8 are also likely to be economically meaningful.

We hand-collect data for the year preceding the adoption of IFRS 8 following Berger and Hann (2003; 2007). For instance, for firms adopting IFRS 8 in 2009, we gather the historical segment data under IAS 14 for 2008 from the 2008 annual report as well as the restated segment data under IFRS 8 for 2008 from the 2009 annual report. This provides the cleanest way to measure the impact of IFRS 8, as changes in reporting are more likely due to the

change in standards rather than a firm's operating activities or other circumstances.[24]

As Table 1 shows, we are able to gather geographical segment information for 852 firms. For completeness, we also gather business segment information for our original set of 1,270 firms, which is available for 733 firms (combined these samples represent 861 unique firms).[25]

TABLE 1
Sample Selection

	Combined	**Geographical**		**Business**	
	Number of Firms	Number of Firms	Number of firm-year observations	Num. of Firms	Number of firm-year observations
Non-financial firms with > 50% foreign sales in 2009	1,270	1,270	2,540	1,270	2,540
Less: Annual report unavailable for adoption/pre-adoption year or not available in English	*217*	*233*	*523*	*376*	*860*
	1,053	1,037	2,017	894	1,680
Less: No data for independent variables	*192*	*185*	*354*	*161*	*301*
Sample main analysis	**861**	**852**	**1,663**	**733**	**1,379**

Table 1 shows the intermediate steps in the sample selection process, for the combined sample of firms as well as separately for the geographical and business segment samples.

We focus on the impact of IFRS 8 on geographical segments, but also present some results for business segments to provide a more complete picture of the overall impact of IFRS 8. Table 2, Panel A shows firm characteristics for these firms and Panel B shows the distribution of our sample across countries. 18% of our sample firms record a loss. The firms also have a

[24] If firms restructure their operations in the adoption year, causing changes to firms' segmentation, this would affect the restated lag-adoption year data. In those instances, changes in segment reporting may be due to restructuring rather than IFRS 8. We believe this to be a minor issue, as we observe few instances where firms state they are restructuring in the adoption year. Moreover, conversations with an experienced auditor reveal that certain firms have restructured in response to IFRS 8, meaning that any changes in segment reporting could still be attributed to the change in standards.

[25] There is a small number of firms for which we only found the adoption year annual report. In the reported analyses, we did not exclude these observations as we also control for a variety of firm characteristics in the regressions. However, removing these observations results in little change; all coefficients have the same signs and similar magnitudes, although some marginally (in)significant interaction terms in Table 7 change significance. In column (1), *IFRS8*Analyst* becomes significantly negative, in column (2) *IFRS8*AggTrans* becomes insignificant, in column (3), *IFRS8*Big4* becomes significantly positive and in column (4), interactions with *Abs(DA)* and *Big4* become insignificant. All other findings are similar to those reported in the paper.

high proportion of foreign sales, which is due to our sampling criteria. Panel A further shows that average (median) analyst following is about 6 (3) and 78.44% of our firms have at least 1 analyst following the firm (untabulated). This supports the assumption that there is demand for financial information about these firms. In Panel B, we find that a majority of firms is located in the United Kingdom, Germany and France, which is consistent with the sample distribution in e.g., Daske, Hail, Leuz and Verdi (2008).

TABLE 2
Descriptive Statistics Sample

Panel A: Firm Characteristics Pre-Adoption Year

Variable	N	Mean	Standard Deviation	Q1	Median	Q3
Size	861	13.46	2.47	11.76	13.44	15.04
Herfindahl	861	0.14	0.19	0.04	0.07	0.14
ROA	861	0.06	0.14	0.03	0.07	0.12
D(Loss)	861	0.18	0.39	0.00	0.00	0.00
Foreign Sales %	861	67.86	22.68	54.65	69.21	85.79
Leverage	861	0.22	0.19	0.08	0.20	0.33
MTB	861	2.93	2.64	1.47	2.21	3.57
Analyst	861	6.55	7.87	1.00	3.00	10.00
Big4	861	0.84	0.37	1.00	1.00	1.00

Panel B: Distribution of Firms Across Countries

	Combined Sample	Geographical Segment Sample	Business Segment Sample
Austria	22	22	19
Belgium	24	24	20
Denmark	24	24	20
Finland	47	47	39
France	79	79	66
Germany	107	104	102
Greece	10	10	8
Hungary	3	2	3
Ireland	16	16	15
Italy	40	39	37
Luxembourg	8	8	6
The Netherlands	33	33	32
Norway	36	35	33
Poland	1	1	1
Portugal	5	5	2
Spain	13	13	13
Sweden	60	60	50
Switzerland	59	59	54
United Kingdom	274	271	213
Total	861	852	733

Table 2 shows the distribution of firm-level characteristics of the firms in our sample (Panel A), and the distribution of firms across countries (Panel B). Variables are as defined in Appendix 1.

3.3.2. Model

We rely on the following regression model to test the overall impact of IFRS 8 on reporting choices,

$$SRQ_{it} = \alpha_0 + \alpha_1 IFRS8_{it} + \sum_k \alpha_k CV_i + \varepsilon_{it}, \quad (1)$$

where *i* represents each firm and *t* denotes historical versus restated data. *SRQ* denotes the segment reporting quality of a firm, *IFRS8* distinguishes between the historical IAS 14 and restated IFRS8 data and *CV* represents the set of variables controlling for firm characteristics. As discussed in Section 3.2, it is unclear whether IFRS 8 would improve or decrease the quality of segment reporting; hence we do not predict the sign of α_1.

We use the following two models to test for cross-sectional variation in the impact of IFRS 8:

$$SRQ_{it} = \beta_0 + \beta_1 IFRS8_{it} + \beta_2 Low\ IAS14_i + \beta_3 IFRS8_{it} * Low\ IAS14_i + \sum_k \beta_k CV_i + \varepsilon_{it} \quad (2)$$

$$SRQ_{it} = \gamma_0 + \gamma_1 IFRS8_{it} + \gamma_2 TRANS_i + \gamma_3 IFRS8_{it} * TRANS_i + \sum_k \gamma_k CV_i + \varepsilon_{it}, \quad (3)$$

where *Low IAS14* denotes reporting behavior under IAS14 and *TRANS* denotes measures of firm-level transparency. These and the other variables used in the model are briefly discussed below; more details are provided in Appendix 1.

3.3.3. Variable Measurement

SRQ: Segment Reporting Quality

We define segment reporting quality as the amount of segment reporting information and the level of segment disaggregation, following prior research (e.g., Hayes and Lundholm 1995; Street, Nichols and Gray 2000; Berger and Hann 2003). We realize that this is only one dimension of quality, which does not take into account whether, for instance, information becomes more comparable across firms. However, since we lack a measure of comparability of segment reporting across firms, we choose to focus on the amount of reported information.

To capture the amount of segment information, we identify whether a firm reports segment income (*D(Report Income)*) and the number of items disclosed. As measures of segment disaggregation, we use the number of disclosed segments and a geographical

fineness score adapted from Doupnik and Seese (2001).[26] This score ranges from 0 (e.g., when a firm reports geographical sales using terms as "Other" or "Foreign") to 4 (e.g., when a firm reports at the country or within-country regional level). This measure captures disaggregation more accurately, as illustrated by the following example. Consider firms A and B that each discloses 3 geographical segments; firm A discloses at the continent level (Europe, Americas, Asia), while firm B discloses at the country level (UK, Canada, India). The number of reported segments is 3 for both firms, whereas the geographical fineness score would equal 2 for firm A and 4 for firm B. The level of disaggregation is higher for firm B, but is not reflected in the number of segments measure. Therefore, geographical fineness is arguably a more accurate measure of geographical segment aggregation.

Reporting Behavior under IAS14

For the second part of our analyses, we investigate whether the impact of IFRS 8 differs across firms depending on (1) reporting behavior under with IAS 14 and (2) corporate transparency. We first examine how reporting choices under IAS 14 affect the impact of IFRS 8. As discussed earlier, IAS 14 requires firms to disclose business and geographical segment information, but allows a choice between primary and secondary segments. If a firm chooses the secondary reporting format for its geographical segments, this implies a choice for disclosing less geographical information, as reporting requirements for this format are less extensive. Furthermore, we find that around 18% of firms disclose even less than the minimal IAS 14 disclosure requirements (sales, capital expenditures and assets) for secondary segments. Hence, we examine whether the impact of IFRS 8 is different for these "minimal disclosure" firms. We code an indicator variable *Low IAS14* which equals 1 if a firm chooses the secondary reporting format for geographical segments and reports less than the required three items. As indicated in model (2), we interact this variable with *IFRS8* to investigate whether the impact of this standard is greater or smaller for firms that do not comply with the previous standard. As discussed earlier, it is unclear *ex ante* how firms with minimal disclosure under IAS 14 will report under IFRS 8 and we therefore have no prediction for the sign of β_3.[27]

[26] We exclude "segments" that represent corporate, headquarter or reconciliation segments as these are not defined as operating segments under IFRS 8, similarly to Berger and Hann (2003; 2007).

[27] We recognize that *Low IAS14* may also be capturing firms that do not have material sales, assets or capital expenditures in other geographical regions and are not necessarily firms that report poorly. However, our findings in Table 6 show that low disclosure firms still reduce the number of items they report after IFRS 8 is adopted. Furthermore, when we look at our other dimension of segment

Transparency and Monitoring Environment

In addition to IAS 14 segment reporting behavior, we investigate whether firm-level transparency (*TRANS*) affects the impact of IFRS 8. We draw from Lang and Maffett (2011) and use the absolute value of discretionary accruals (*Abs(DA)*), analyst following (*Analyst*), the accuracy of analyst forecasts (*Accuracy*) and whether a firm uses a Big 4 auditor (*Big4*) as proxies for transparency. We also aggregate these four variables into a single measure of transparency (*AggTrans*), by ranking the variables in percentiles and averaging the ranked values across the four measures. Similar to *Low IAS14*, how corporate transparency affects the impact of IFRS 8 is unclear *ex ante* and we therefore do not predict the sign of γ_3.

Control Variables

We control for a number of firm-level characteristics that could influence segment reporting quality. We control for firm size using the log of total assets (*Size*), for profitability by calculating return on assets (*ROA*) and creating a dummy *D(Loss)* for firms that suffer a loss. We also include *Leverage*, the percentage of foreign sales on total sales (*Foreign Sales*), market-to-book (*MTB*) and a measure of industry concentration (*Herfindahl*) measured at the three-digit SIC level. It is important to note that we include private European firms in addition to listed firms to calculate industry concentration, by using data from the Amadeus database. Ali et al. (2009) show that not including private firms in calculating concentration ratios may cause a bias in these competition measures resulting in substantially different outcomes. This is particularly important for our setting: several European countries do not have a large stock market and many large companies are not listed on a stock market.

3.4. Results

3.4.1. Changes in Segment Reporting under IFRS 8

Before conducting our multivariate analyses, we provide some univariate and descriptive statistics in Table 3 on the changes in reporting due to IFRS 8. Panel A reports results for geographical segments. As mentioned, we use the historical and restated data for the pre-adoption year, so any changes in segment reporting are directly attributable to the switch

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reporting quality, i..e, disaggregation, we find that pre-IFRS 8, *Low IAS14* firms have lower fineness and that the increase in disaggregation after IFRS 8 is also lower for these firms. If *Low IAS14* only captures firms with immaterial foreign sales, assets or capital expenditures, we should not observe any changes in disclosure for such firms at all, since materiality of these items is unchanged.

in standards instead of other factors. Firstly, we find that there are relatively few firms that report as a single geographical segment firm under both regimes: we observe 3 single segment firms under both IAS 14 and IFRS 8. We also find that the number of firms that report segment income under IFRS 8 declines significantly from 289 to 241, suggesting a loss of information about segment income under the new standards. Similarly, the number of income measures and number of items reported decreases significantly. However, the average number of geographical segments increases significantly from 4.59 to 5.05, as does the average geographical fineness of reported segments (2.38 to 2.52).

For completeness, we also examine the overall impact of IFRS 8 on business segments. In Panel B, we find that the number of single business segment firms also does not change significantly after IFRS 8. In contrast to geographical segments, firms report business segment income more often under IFRS 8 than under IAS 14 (597 versus 572), and the average number of income measures also increases slightly. For the number of reported items and segments, we find a similar pattern as for geographical segments: number of items decreases significantly while the number of segments increases under IFRS 8.

Overall, there are two points worth noting in these results. First, there are differences in the effect of IFRS 8 on business and geographical segment disclosures. This suggests that one cannot draw clear conclusions from the impact of IFRS 8 by merely examining business segments without considering geographical segments.[28] Second, the results caution against using a single disclosure quality measure when analyzing the impact of a switch in standards, as we find that quality decreases on certain disclosure aspects (e.g., likelihood of reporting segment income) and increases on other measures (e.g., disaggregation). To test this, we conducted (untabulated) analyses using an aggregate measure of segment reporting quality as our dependent variable, where we rank and average the four (three for business segments) reporting measures. We find that IFRS 8 is not significantly associated with this single aggregate measure, while Table 3 clearly shows that IFRS 8 has an impact on the individual measures, but in different directions.

[28] Given the potential dependence between business and geographical segment disclosures, errors in the business and geographical segment regressions may be correlated. One method to address this is to estimate seemingly unrelated regressions (SUR), which results in equally consistent but more efficient estimates. We obtain the same results with SUR: since the right-hand side regressors are the same for both sets of regressions in Table 4, OLS and SUR result in the same outcome.

TABLE 3
Segment Disclosure IAS 14 vs. IFRS 8

Panel A: Geographical segments

	IAS 14 (N = 836)		**IFRS 8 (N = 827)**		**Difference**	
Number (*Percentage*) of single geographical segment firms	3 *(0.36%)*		3 *(0.36%)*		0 (0.00%)	
Number (*Percentage*) of firms that report income	289 *(34.57%)*		241 *(29.14%)*		-48** *(-5.43%)*	
	Mean	***Median***	***Mean***	***Median***	***Difference mean***	***Difference median***
Number of segments	4.59	4.00	5.05	4.00	0.47***	0.00***
Number of items	3.80	3.00	3.03	2.20	-0.78***	-0.80***
Number of income measures	0.49	0.00	0.43	0.00	-0.07	0.00**
Geographical fineness	2.38	2.19	2.52	2.50	0.14***	0.31***

Panel B: Business segments

	IAS 14 (N = 693)		**IFRS 8 (N = 686)**		**Difference**	
Number (*Percentage*) of single business segment firms	44 *(6.35%)*		39 *(5.69%)*		-5 *(-0.67%)*	
Number (*Percentage*) of firms that report income	572 *(82.54%)*		597 *(87.03%)*		25** *(4.49%)*	
	Mean	***Median***	***Mean***	***Median***	***Difference mean***	***Difference median***
Number of segments	3.14	3.00	3.31	3.00	0.18**	0.00**
Number of items	5.57	6.00	5.33	6.00	0.25**	0.00***
Number of income measures	1.19	1.00	1.29	1.00	0.10*	0.00

Table 3 shows the mean and median of several segment disclosure characteristics based on the historical IAS 14 data and restated IFRS 8 data for the pre-adoption year. Significant differences in the means and medians are based on two-sided t-tests and Wilcoxon median tests respectively. Variables are as defined in Appendix 1. *, **, *** denote significance at the 10%, 5% and 1% level.

3.4.2. Impact of IFRS 8: Multivariate Analysis

We present the multivariate analysis of the overall impact of IFRS 8 in Table 4. We run regression model (1), clustering standard errors by firm and including country-fixed effects to capture potential differences in segment reporting practices between countries.[29] Columns 1

[29] We have also run the analyses with standard errors clustered by firm and country. Results are similar to those reported in the paper. We have also included the changes of each control variable along with their levels (i.e., change in *Size*, *Leverage* etc.) in an additional analysis. Results are robust

and 2 of Panel A show that IFRS 8 has a negative impact on the amount of geographical segment information firms disclose per segment: the likelihood a firm reports geographical segment income decreases significantly under IFRS 8, as does the number of reported items per segment. In terms of marginal effects, we find a 5.9% decrease in the likelihood of disclosing geographical segment income under IFRS 8. The number and fineness of geographical segments increases, which indicates an improvement in the level of disaggregation. For business segments, we find that IFRS 8 increases the likelihood of a firm reporting income by 3.6% as well as the number of segments, while the number of reported items is significantly lower under IFRS 8. So similar to the univariate results in Table 3, Table 4 shows that IFRS 8 has a different impact on segment reporting, depending on the type of segments and the measure of segment reporting quality.

We also find that for geographical segments, industry concentration marginally affects the likelihood of reporting income as well as the number of items positively, which is consistent with the explanation that, as competition intensifies, the proprietary costs of disclosing become higher and thus the likelihood of disclosing segment income decreases. However, concentration does not seem to affect the disaggregation of business and geographical segments and has a significantly negative relation with *D(Report Income)* and number of items for business segments, which is inconsistent with the proprietary cost explanation for withholding segment information.

to this procedure.

TABLE 4
Impact of IFRS 8 on Business and Geographical Segment Reporting in Pre-Adoption Year

Model: $SRQ_{it} = \beta_0 + \beta_1 IFRS8_{it} + \sum_k \beta_k CV_{it} + \varepsilon_{it}$

Panel A: Geographical Segments

VARIABLES	(1) SRQ = D(Report Income)	(2) SRQ = Number of items	(3) SRQ = Number of segments	(4) SRQ = Geographical fineness
Intercept	0.214	3.286***	-0.483	2.252***
	(0.311)	(4.695)	(-0.742)	(10.234)
IFRS8	-0.260***	-0.777***	0.459***	0.136***
	(-4.325)	(-12.923)	(7.180)	(7.340)
Herfindahl	0.620*	0.831*	0.582	0.089
	(1.666)	(1.769)	(1.454)	(0.661)
ROA	0.654	0.259	0.200	-0.316
	(0.971)	(0.377)	(0.364)	(-1.580)
D(Loss)	0.254	0.201	-0.084	0.105
	(1.019)	(0.840)	(-0.312)	(1.321)
Leverage	0.003	-0.254	-0.060	0.035
	(0.008)	(-0.812)	(-0.199)	(0.309)
Foreign Sales%	-0.006*	-0.003	0.015***	0.004***
	(-1.883)	(-1.146)	(5.453)	(3.488)
Size	-0.022	0.095***	0.268***	-0.008
	(-0.566)	(2.815)	(6.233)	(-0.664)
MTB	0.020	0.015	-0.004	-0.016***
	(1.238)	(1.018)	(-0.264)	(-3.889)
Country FE	YES	YES	YES	YES
Clustered SE	Firm	Firm	Firm	Firm
Num. of Obs.	1,659	1,663	1,663	1,663
Num. of Firms	850	852	852	852
Log likelihood	-990.185			
Pseudo/Adj. R-squared	0.047	0.060	0.164	0.097

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Panel B: Business Segments

VARIABLES	(1) SRQ = D(Report Income)	(2) SRQ = Number of items	(3) SRQ = Number of segments
Intercept	-0.578	3.200***	-0.624
	(-0.543)	(4.275)	(-1.207)
IFRS8	0.352***	-0.259***	0.195***
	(3.432)	(-3.546)	(4.736)
Herfindahl	-1.465***	-0.942	0.372
	(-2.970)	(-1.622)	(1.413)
ROA	-0.525	-1.292	-0.646
	(-0.650)	(-1.492)	(-1.284)
D(Loss)	-0.355	-0.109	-0.089
	(-1.108)	(-0.374)	(-0.508)
Leverage	-0.397	-0.589	0.301
	(-0.873)	(-1.309)	(0.979)
Foreign Sales%	0.008*	0.004	-0.004*
	(1.952)	(0.996)	(-1.782)
Size	0.151***	0.184***	0.286***
	(2.897)	(5.014)	(8.049)
MTB	0.041	-0.009	0.033
	(1.111)	(-0.246)	(1.228)
Country FE	YES	YES	YES
Clustered SE	Firm	Firm	Firm
Num. of Obs.	1,355	1,379	1,379
Num. of Firms	720	733	733
Log likelihood	-545.838		
Pseudo/Adj. R-squared	0.066	0.052	0.161

Table 4 presents regression analyses of the overall impact of IFRS 8 on geographical segment (Panel A) and business segment (Panel B) characteristics. All variables are as defined in Appendix 1. All regressions include country-fixed effects; Z- and t-statistics are presented below the coefficients in parentheses and are based on robust standard errors clustered by firm. *, **, *** denote significance at the 10%, 5% and 1% level (two-sided).

3.4.3. Primary vs. Secondary Segments and Switching

Next, we examine whether the effects of IFRS 8 on segment reporting quality depend on whether a particular type of segment is primary or secondary under IAS 14. This is potentially important because IFRS 8 reduced the disclosure requirements more for secondary segments. We therefore would expect any detrimental effects to be more pronounced when segments were defined as secondary. In Table 5, we differentiate between firms that define geographical segments as primary or secondary under IAS 14 and examine

whether the impact of IFRS 8 differs across the two sets of firms.[30] Interestingly, Panel A shows that for both samples, the likelihood of reporting income and the number of items is lower, while segment disaggregation is higher under IFRS 8. At first glance, this result seems counterintuitive for the primary segments, as IFRS 8 still requires income to be reported for primary segments. However, when we take into account whether firms "switch", i.e., whether geographical segments change from being primary under IAS 14 to secondary under IFRS 8, we find that the lower likelihood of reporting geographic segment income is driven by the firms that switch. We also find that the increase in disaggregation is much greater for firms that do switch, which could suggest that firms compensate for reporting less information per segment by increasing the number and fineness of segments. Similarly, in Panel C we find that when firms switch geographical segments from secondary under IAS 14 to "primary" operating segments under IFRS 8, there is a positive effect on the likelihood of reporting income and the number of reported items, but that the positive effect on disaggregation disappears.[31] Collectively, these results suggest seem to show that firms use the discretion in IFRS 8 to reduce the amount of information they provide about geographical segments.

We repeat the same set of analyses for business segments. We find that the increased likelihood of reporting income is driven by firms that switch business segments from secondary to primary: column (4) of Panel D shows that IFRS8 is only significantly positive when business segments are secondary, while Panel F, column (1) shows that it is insignificant for non-switchers.[32] We also find that disaggregation only increases for firms that continue to define business segments as primary under IFRS 8.

Overall, our results continue to show that for the geographical segments in particular, there seems to be a trade-off between reporting more information per segment versus disaggregation. In particular, Panel C shows that increases in the amount of reported information are not accompanied by higher levels of disaggregation. This again highlights the importance of examining different types of segments and different measures of quality separately.

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[30] We include the same control variables as in Table 4, but for parsimony do not report them in Table 5.

[31] Technically, IFRS 8 does not distinguish between primary and secondary segments. When we refer to switching from secondary to primary, we mean that segments that were classified as secondary under IAS 14, are now defined as the "primary" reportable operating segments under IFRS 8.

[32] We are unable to estimate the coefficients for D(Report Profit) for switchers in the business segment sample, as the logistic regressions will not achieve convergence due to small sample sizes.

	(1)	(2)	(3)	(4)	(5)	(6)	
	SRQ = D(Report Income)	SRQ = Number of items	SRQ = Number of segments	SRQ = Geographical fineness	SRQ = D(Report Income)	SRQ = Number of items	S N se
IFRS8	-0.098	-0.660***	0.276***	0.039	-3.798***	-2.410***	0.
	(-0.600)	(-5.804)	(3.009)	(1.291)	(-4.138)	(-6.727)	(
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm	
Observations	440	472	472	472	102	110	
Pseudo/Adj. R-squared	0.218	0.220	0.246	0.116	0.397	0.364	

(Continued on next page)

	SRQ = D(Report Income)	SRQ = Number of items	SRQ = Number of segments	SRQ = D(I Incom
IFRS8	-0.157	-0.343***	0.215***	1.306**
	(-0.689)	(-4.414)	(4.816)	(5.792
Control Variables	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm
Observations	824	1,025	1,025	266
Pseudo/Adj. R-squared	0.089	0.043	0.179	0.199

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	SRQ = D(Report Income)	SRQ = Number of items	SRQ = Number of segments
IFRS8	0.373	-0.857***	0.106
	(1.254)	(-5.669)	(0.807)
Control Variables	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm
Observations	164	188	188
Pseudo/Adj. R-squared	0.211	0.284	0.050

Table 5 presents regression analyses of the impact of IFRS 8 on geographical segment reporting (Panel A-C) and busi
form subsamples based on whether segments were defined as primary or secondary under IAS 14. We also distingu

3.4.4. Cross-Sectional Variation in the Impact of IFRS 8

Next, we examine potential cross-sectional variation in the effect of IFRS 8. As this study focuses mainly on geographical segment disclosures, the analyses in Tables 6 to 8 deal with this type of segment information only.[33]

Reporting Behavior under IAS 14

Table 6 examines whether the effect of IFRS 8 is different for firms with low geographic segment disclosures under IAS 14; the results indicate that this is indeed the case. In column (1), we find that IFRS 8 only significantly decreases the likelihood of disclosing income for firms for which *Low IAS14* = 0. This means that for firms that disclose (more than) the minimum required number of items, IFRS 8 leads to a 7.0% reduction in the likelihood of disclosing income (see marginal effects shown in the table), while IFRS 8 has no impact for firms that disclose little information under IAS 14. This result is by construction: *Low IAS14* firms do not disclose segment income under the previous regime and continue to do so under IFRS 8. This is also why the main effect of *Low IAS14* is negative and significant in columns (1) and (2). Secondly, we find that for *Low IAS14* firms, IFRS 8 does lead to a reduction in the number of reported items, albeit to a lesser extent than for firms with high disclosure, as the interaction term is significantly positive. Again, this result is partially by construction, as low disclosure firms are those that did not report many items in the first place. Surprisingly though, the overall effect of IFRS 8 for high disclosure firms is still negative and significant, as the F-test at the bottom of column (2) indicates. Finally, and most notably, when we consider the level of disaggregation, we find that the number of segments and disaggregation increases for firms with higher amounts of disclosure under IAS 14, while for firms with low IAS 14 disclosures, the positive effect of IFRS 8 on the number of disclosed segments is reduced by half. Similarly, the positive effect of IFRS 8 on disaggregation for low disclosure firms is approximately 46% ((0.156-0.084)/0.156) less than for high disclosure firms. Collectively, these results show that when IFRS 8 leads to a decrease in the amount of disclosed information, this reduction is exacerbated for firms that were already providing less information under IAS 14. Similarly, improvements in the level of disaggregation due to IFRS 8 are more pronounced for already compliant firms. This pattern suggests that IFRS 8

[33] We do not differentiate between primary and secondary segments or switchers for these analyses, because we explicitly take into account cross-sectional variation in the impact of IFRS 8. Moreover, the analyses in Table 6 cannot be performed separately for primary and secondary segments, as *Low IAS14* equals 0 for all observations when geographical segments are primary under IAS 14.

TABLE 6
Cross-Sectional Variation in the Impact of IFRS 8: Low Disclosure under IAS14

Model: $SRQ_{it} = \beta_0 + \beta_1 IFRS8_{it} + \beta_2 Low\ IAS14_i + \beta_3 IFRS8_{it} * Low\ IAS14_i \sum_k \beta_k CV_{it} + \varepsilon_{it}$

	(1)	(2)	(3)	(4)
VARIABLES	SRQ = D(Report Income)	SRQ = Number of items	SRQ = Number of segments	SRQ = Geographical fineness
Intercept	1.072	4.123***	-0.677	2.324***
	(1.537)	(6.568)	(-1.023)	(10.533)
IFRS8	-0.298***	-0.937***	0.511***	0.156***
	(-4.415)	(-13.240)	(7.016)	(7.104)
Low IAS14	-3.376***	-2.401***	0.580***	-0.165***
	(-6.714)	(-24.675)	(3.018)	(-2.856)
IFRS8* Low IAS14	0.053	0.846***	-0.279*	-0.084**
	(0.104)	(9.525)	(-1.944)	(-1.976)
Marginal effects of IFRS8				
Low IAS14 = 0	-0.070			
	(-4.37)***			
Low IAS14 = 1	-0.006			
	(-1.97)**			
Control Variables				
Herfindahl	0.382	0.560	0.642	0.048
	(1.008)	(1.244)	(1.601)	(0.347)
ROA	0.186	0.100	0.235	-0.436**
	(0.356)	(0.156)	(0.433)	(-2.132)
Leverage	-0.004	-0.001	0.015***	0.004***
	(-1.314)	(-0.496)	(5.326)	(3.725)
Foreign Sales%	-0.073*	0.049	0.279***	-0.017
	(-1.872)	(1.552)	(6.404)	(-1.369)
Size	0.026	0.015	-0.004	-0.019***
	(1.417)	(1.190)	(-0.281)	(-4.058)
MTB	0.382	0.560	0.642	0.048
	(1.008)	(1.244)	(1.601)	(0.347)
D(Loss)		0.145	-0.071	0.072
		(0.662)	(-0.265)	(0.876)
Country FE	YES	YES	YES	YES
Clustered SE	Firm	Firm	Firm	Firm
Num. of Obs.	1,659	1,663	1,663	1,663
Num. of Firms	850	852	852	852
F-test: IFRS8 + IFRS8*Low IAS14	0.24	2.86*	3.49*	3.85**
Pseudo/Adj. R-squared	0.142	0.190	0.168	0.108

Table 6 presents regression analyses of the differential impact of IFRS 8 on geographical segment disclosures for firms that were non-compliant under IAS 14 (i.e., Low IAS14 = 1). All variables are as defined in Appendix 1. Pseudo R-squared is reported in column (1), adjusted R-squared is reported in columns (2) – (4). All regressions include country-fixed effects; Z- and t-statistics are presented below

the coefficients in parentheses and are based on robust standard errors clustered by firm. *, **, *** denote significance at the 10%, 5% and 1% level (two-sided).

does not uniformly lead to better geographical segment reporting; rather, it suggests that the discrepancy between firms that reported poorly versus those that reported adequately increases.

Transparency and Monitoring Environment

We next examine the effect of corporate transparency on the impact of IFRS 8. These findings are shown in Table 7. We first examine the relation with *D(Report Income)*. Given the difficulties with interpreting interaction terms in logistic regression models (e.g., Ai and Norton 2003), we provide the marginal effects of IFRS 8 at the Q1 and Q3 levels of the transparency variables (for Big4, the marginal effects are shown for the levels 0 and 1). We find that *IFRS8* generally has a negative impact on the likelihood of reporting geographical segment income, regardless of the transparency level. For the number of disclosed items (column (2)), we find that IFRS 8 only leads to a marginally significant decrease when transparency is high. We find that this is driven by the *Analyst* and *Big4* components of the *AggTrans* variable. Although this seems counter-intuitive at first sight, one explanation could be that under IAS 14, scrutiny by auditors and analysts was less of a concern, as the standard was more restrictive in nature. In comparison, IFRS 8 provides more discretion, making it harder (for auditors in particular) to insist on the disclosure of more information. This would result in the interaction between IFRS 8 and transparency having a negative coefficient.

In column (3), we find that firms that have higher analyst following and higher forecast accuracy are the firms that report more segments. Column (4) shows the most interesting set of results. We find a significant and positive interaction between transparency and IFRS 8 in its relation with geographical fineness. Moreover, the main effect of IFRS 8 is -0.017 and not significantly different from zero. This implies that for very opaque firms, IFRS 8 has no impact on disaggregation. When we look at the individual measures of transparency, we find that IFRS 8 has a positive impact on fineness for firms that have higher quality accruals (lower *Abs(DA)*), higher analyst following, higher forecast accuracy, and a Big4 auditor. In particular, the (untabulated) regression with *Big4* shows that IFRS 8 has no impact on geographical fineness for non-Big 4 clients, as the coefficient on *IFRS8* is insignificant, while the interaction term has a significantly positive coefficient.

TABLE 7

Cross-Sectional Variation in the Impact of IFRS 8: The Effect of Transparency

Model: $SRQ_{it} = \beta_0 + \beta_1 IFRS8_{it} + \beta_2 TRANS_i + \beta_3 IFRS8_{it} * TRANS_i + \sum_k \beta_k CV_{it} + \varepsilon_{it}$

	(1)				
	SRQ = D(Report Income)				
	Aggregate Transparency Measure	Individual Transparency Measures			
VARIABLES	TRANS = AggTrans	TRANS = Abs(DA)	TRANS = Analyst	TRANS = Accuracy	TRANS = Big4
Intercept	0.495	-0.211	-0.286	0.739	0.188
	(0.535)	(-0.281)	(-0.374)	(0.798)	(0.270)
IFRS8	-0.127	-0.196***	-0.178**	-0.250***	-0.213
	(-0.489)	(-2.685)	(-2.350)	(-3.286)	(-1.571)
TRANS	0.728	1.101	-0.010	0.033	-0.214
	(0.841)	(1.182)	(-0.763)	(1.380)	(-0.944)
IFRS8* TRANS	-0.277	-0.869	-0.013	0.031	-0.058
	(-0.598)	(-1.439)	(-1.606)	(0.882)	(-0.383)
TRANS = Q1 or = 0	-0.025	-0.040***	-0.039**	-0.052***	-0.048
	(-0.49)	(-2.66)	(-2.33)	(-3.27)	(-1.53)
TRANS = Q3 or = 1	-0.027	-0.042***	-0.037**	-0.052***	-0.045
	(-0.49)	(-2.69)	(-2.36)	(-3.27)	(-1.58)
Herfindahl	0.197	0.672*	0.639*	0.232	0.640*
	(0.430)	(1.794)	(1.714)	(0.509)	(1.704)
ROA	2.319***	1.302*	0.597	2.216**	0.646
	(2.615)	(1.853)	(0.889)	(2.465)	(0.932)
D(Loss)	0.578*	0.402	0.258	0.581**	0.230
	(1.930)	(1.589)	(1.045)	(1.960)	(0.922)
Leverage	0.114	-0.013	-0.024	0.065	-0.001
	(0.285)	(-0.036)	(-0.072)	(0.164)	(-0.004)
Foreign Sales%	-0.010**	-0.006*	-0.006*	-0.010**	-0.006*
	(-2.447)	(-1.802)	(-1.858)	(-2.510)	(-1.873)
Size	-0.060	-0.016	0.018	-0.046	-0.005
	(-1.005)	(-0.392)	(0.372)	(-0.941)	(-0.125)
MTB	0.012	0.015	0.023	0.012	0.021
	(0.646)	(0.928)	(1.430)	(0.663)	(1.308)
Country FE	YES	YES	YES	YES	YES
Clustered SE	Firm	Firm	Firm	Firm	Firm
Num. of Obs.	1,220	1,591	1,659	1,220	1,659
Num. of Firms	621	815	850	621	850
F-test: IFRS8+IFRS8*TRANS=0	3.17*	3.53*	7.28***	5.71**	16.29***
Pseudo R-squared	0.060	0.052	0.049	0.062	0.048

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VARIABLES	(2) SRQ = Number of items	(3) SRQ = Number of segments	(4) SRQ = Geographical fineness
Intercept	3.335***	-1.038	2.234***
	(3.769)	(-1.167)	(8.585)
IFRS8	-0.332	0.041	-0.017
	(-1.095)	(0.139)	(-0.211)
AggTrans	0.804	-0.400	-0.742***
	(1.006)	(-0.549)	(-3.059)
IFRS8* AggTrans	-0.867*	0.878	0.319**
	(-1.690)	(1.604)	(2.258)
Herfindahl	0.458	0.764	0.104
	(0.784)	(1.616)	(0.655)
ROA	0.367	0.523	-0.544**
	(0.356)	(0.623)	(-2.012)
D(Loss)	0.375	0.027	0.049
	(1.267)	(0.079)	(0.510)
Leverage	-0.289	-0.069	-0.055
	(-0.754)	(-0.196)	(-0.495)
Foreign Sales%	-0.009**	0.018***	0.004***
	(-2.116)	(4.951)	(2.896)
Size	0.072	0.304***	0.022
	(1.473)	(4.890)	(1.381)
MTB	0.020	-0.016	-0.014***
	(1.224)	(-1.078)	(-2.680)
Individual Transparency Measures			
IFRS8*Abs(DA)	0.391	0.260	-0.522*
	(0.672)	(0.341)	(-1.686)
IFRS8*Analyst	-0.019***	0.019**	0.004*
	(-2.929)	(2.148)	(1.849)
IFRS8*Accuracy	-0.003	0.010**	0.002**
	(-0.529)	(2.446)	(2.232)
IFRS8*Big4	-0.317**	0.212	0.104*
	(-2.050)	(1.240)	(1.736)
Country FE	YES	YES	YES
Clustered SE	Firm	Firm	Firm
Num. of Obs.	1,222	1,222	1,222
Num. of Firms	622	622	622
F-test: IFRS8+IFRS8*AggTrans = 0	27.66***	11.15***	19.59***
F-test: IFRS8+IFRS8*Abs(DA) = 0	0.53	0.97	1.35
F-test: IFRS8+IFRS8*Analyst= 0	79.13***	24.51***	25.71***
F-test: IFRS8+IFRS8*Accuracy = 0	122.93***	44.80***	47.82***
F-test: IFRS8+IFRS8*Big4 = 0	155.21***	49.40***	61.25***
Adj. R-squared	0.059	0.172	0.111

Table 7 presents regression analyses of the differential impact of IFRS 8 on geographical segment disclosures for firms with different levels of transparency. Transparency is measured using the absolute value of discretionary accruals, analyst following, forecast accuracy and the presence of a Big 4 auditor. All variables are as defined in Appendix 1. All regressions include country-fixed effects; Z- and t-statistics are presented below the coefficients in parentheses and are based on robust standard

errors clustered by firm. *, **, *** denote significance at the 10%, 5% and 1% level (two-sided).

These cross-sectional analyses yield two interesting insights. First, the results with the transparency measure show somewhat contradictory results. While we have weak evidence for the notion that transparency enhances or even drives the negative impact of IFRS 8 for the number of disclosed items per geographical segment, it does exactly the opposite for the level of segment disaggregation. This again highlights the importance of examining the effects of a standard on different aspects of segment reporting separately. Second, all cross-sectional findings show that increases in disaggregation under IFRS 8 are *least* pronounced or even absent for firms with poor segment reporting and low transparency under IAS 14. This suggests that improvements in disclosures do not materialize for firms where there is arguably most room for improvement.

3.4.5. Economic Consequences of IFRS 8

Prior studies do not consistently find that IFRS 8 led to capital market consequences or changes in analyst forecast properties (e.g., He, He and Evans 2012; Vorst 2012; Weissenberger and Franzen 2012). One reason for this result could be that these studies lack statistical power due to small sample sizes. But these studies also do not account for the differential impact of IFRS 8 cross-sectionally, as is evident from our analyses. Moreover, Daske, Hail, Leuz and Verdi (2012) emphasize the importance of examining firm-level heterogeneity in the economic consequences of IFRS. This is why we examine whether forecast accuracy, dispersion and bid-ask spreads are significantly different after the implementation of IFRS 8, taking this heterogeneity into account.

Forecast accuracy is measured as the absolute difference between the first annual consensus forecast and actual earnings per share, scaled by lagged price, multiplied by -1; dispersion is the standard deviation of forecasts; bid-ask spreads are the yearly average of the daily difference between bid and ask prices, scaled by the midpoint of the bid-ask spread. We examine whether these indicators are different in the year after IFRS 8 adoption, compared to the year prior to adoption. To account for heterogeneity in the impact of IFRS 8, split our sample into firms that increase (*Improve SRQ*), decrease (*Worsen SRQ*), or do not change in terms of segment reporting, using the four SRQ measures. We thus estimate the following models:

$$Accuracy_{it} = \delta_0 + \delta_1 IFRS8_{it} + \delta_2 Improve\ SRQ_i + \delta_3 IFRS8_{it} * Improve\ SRQ_i + \delta_4 Worsen\ SRQ_i + \delta_5 IFRS8_{it} * Worsen\ SRQ_i + \sum_k \delta_k CV_{it} + \varepsilon_{it} \quad (4)$$

$$Dispersion_{it} = \zeta_0 + \zeta_1 IFRS8_{it} + \zeta_2 Improve\ SRQ_i + \zeta_3 IFRS8_{it} * Improve\ SRQ_i + \zeta_4 Worsen\ SRQ_i + \zeta_5 IFRS8_{it} * Worsen\ SRQ_i + \sum_k \zeta_k CV_{it} + \varepsilon_{it} \quad (5)$$

$$Bid - Ask_{it} = \eta_0 + \eta_1 IFRS8_{it} + \eta_2 Improve\ SRQ_i + \eta_3 IFRS8_{it} * Improve\ SRQ_i + \eta_4 Worsen\ SRQ_i + \eta_5 IFRS8_{it} * Worsen\ SRQ_i + \sum_k \eta_k CV_{it} + \varepsilon_{it} \quad (6)$$

We interact *Improve SRQ* and *Worsen SRQ* with IFRS8. If IFRS 8 had any economic consequences, we expect them to be most pronounced for firms that increase or decrease the amount of reported segment information after IFRS 8. Hence, we expect δ_3 to be positive and ζ_3 and $\eta 3$ to be negative, and δ_5 to be negative and ζ_3 and $\eta 3$ to be positive. We also control for a variety of factors that could affect forecast accuracy and dispersion, following Hope (2003), and bid-ask spreads, following Daske et al. (2008).[34]

In Panel A, we examine the effects of IFRS 8 for firms that start and stop reporting segment income. We find that in the year following IFRS 8 adoption, firms that continue to (not) report income have marginally higher accuracy (column (1)) and lower bid-ask spreads (column (3)). It may seem strange that firms without changes to segment reporting experience positive effects on forecast accuracy and bid-ask spreads. However, since most firms adopt IFRS 8 in 2009, we are effectively comparing these variables for 2008 and 2010. This period coincides with the recent financial crisis, which likely drives these results and makes it hard to interpret the IFRS 8 coefficient. We do not find significant negative effects for firms that stop reporting income. The only counterintuitive significant result is that for the 28 firms that start reporting income, forecast accuracy is lower post IFRS 8, which is inconsistent with our expectations. Upon closer inspection, seven out of these 28 firms are switchers, i.e., business segments were primary and geographical segments were secondary under IAS 14, but under IFRS 8, they classify geographical segments as their main operating segments and only disclose minimal or no information about business segments. This might explain why accuracy decreases for this group of firms. However, this finding should be interpreted with

[34] For the accuracy and dispersion regressions, we include size, profitability, standard deviation of ROE, leverage, auditor, analyst following, earnings surprise, forecast horizon and Zmijewski's (1984) financial distress measure as control variables. For the bid-ask spread regression, we include a US listing dummy, share turnover, return volatility, index membership, firm size, profitability, leverage and auditor as control variables. Daske et al. (2008) also include firm-fixed effects, which isn't feasible for our sample. Instead we included profitability, leverage and auditor variables as an alternative way to control for firm effects. Precise definitions of these variables are provided in Appendix 1.

great care, given the limited number of firms that start reporting profits.

In the remainder of the Panels, we find some, albeit weak evidence that is consistent with our priors. In Panel B, we find that dispersion decreases for firms that start reporting a higher number of items in segment under IFRS 8, which is consistent with our expectations. Further, columns (3) in Panels C and D again show that bid-ask spreads are lower post-IFRS 8, but that this is effect is not present for firms that aggregate segments under IFRS 8. Overall, although we find some weak evidence that firms that either report fewer items or aggregate segments under IFRS 8 experience negative economic consequences, most of the results in Table 8 are either insignificant or inconsistent with our expectations. Nevertheless, these results are in line findings of Hope et al. (2006), who find that the lack of geographical segment information under SFAS 131 did not have detrimental effects on earnings predictability. Another important caveat we alluded to earlier is that most firms adopt IFRS 8 in 2009, which means that we examine changes in forecast properties and liquidity from 2008 to 2010. This period coincides with the recent financial crisis, which had a large impact on forecasts and liquidity. We therefore caution against drawing strong conclusions from the analyses in Table 8. Nevertheless, it is interesting to find that the economic consequences of IFRS 8 do differ somewhat between firms that exhibit improvements or decreases in reporting quality. These results again highlight the importance of firm-level heterogeneity in examining the reporting and economic consequences of regulation changes.

TABLE 8
Economic Consequences of IFRS 8

Model: $Economic\ Consequence\ Variable_{it} = \delta_0 + \delta_1 IFRS8_{it} + \delta_2 Improve\ SRQ_i + \delta_3 IFRS8_{it} * Improve\ SRQ_i + \delta_4 Worsen\ SRQ_i + \delta_5 IFRS8_{it} * Worsen\ SRQ_i + \sum_k \delta_k CV_{it} + \varepsilon_{it}$

Panel A: Start or Stop Reporting Income

	(1)	(2)	(3)
Economic Consequence Variable =	Accuracy	Dispersion	Bid-Ask Spread
IFRS8	0.142*	0.001	-0.014**
	(1.842)	(0.036)	(-2.133)
D(Start report income)	-0.070	0.258**	-0.002
	(-0.191)	(2.293)	(-0.252)
IFRS8*D(Start report income)	-0.911*	-0.106	0.001
	(-1.823)	(-1.161)	(0.045)
D(Stop report income)	-0.212	0.034	-0.012**
	(-0.841)	(0.734)	(-2.083)
IFRS8*D(Stop report income)	0.242	-0.063*	0.004
	(1.116)	(-1.723)	(0.458)
Control Variables	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm
Observations	1,255	1,242	816
Adj. R-squared	0.229	0.097	0.057

Panel B: Increase or Decrease Number of Reported Items

	(1)	(2)	(3)
Economic Consequence Variable =	Accuracy	Dispersion	Bid-Ask Spread
IFRS8	0.049	-0.007	-0.025**
	(0.463)	(-0.372)	(-2.093)
D(Number Reported Items Increase)	-0.566*	0.128**	-0.001
	(-1.649)	(2.064)	(-0.062)
IFRS8*D(Number Reported Items Increase)	0.355	-0.095*	0.006
	(0.923)	(-1.671)	(0.432)
D(Number Reported Items Decrease)	-0.329**	0.082***	-0.016
	(-2.407)	(3.220)	(-1.462)
IFRS8*D(Number Reported Items Decrease)	0.126	0.007	0.025
	(0.913)	(0.282)	(1.542)
Control Variables	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm
Observations	1,255	1,242	816
Adj. R-squared	0.230	0.100	0.060

(Continued on next page)

Panel C: Increase or Decrease Number of Segments

Economic Consequence Variable =	(1) Accuracy	(2) Dispersion	(3) Bid-Ask Spread
IFRS8	0.243***	-0.011	-0.023**
	(2.643)	(-0.674)	(-2.469)
D(Number Reported Segments Increase)	0.107	0.012	-0.016*
	(0.706)	(0.418)	(-1.921)
IFRS8*D(Number Reported Segments Increase)	-0.363**	0.004	0.032
	(-2.234)	(0.140)	(1.468)
D(Number Reported Segments Decrease)	0.193	0.044	-0.013
	(0.943)	(0.851)	(-1.507)
IFRS8*D(Number Reported Segments Decrease)	-0.163	-0.008	0.020*
	(-0.753)	(-0.159)	(1.883)
Control Variables	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm
Observations	1,255	1,242	816
Adj. R-squared	0.226	0.085	0.061

Panel D: Increase or Decrease Geographical Fineness

Economic Consequence Variable =	(1) Accuracy	(2) Dispersion	(3) Bid-Ask Spread
IFRS8	0.211**	-0.015	-0.024**
	(2.146)	(-0.897)	(-2.420)
D(Geographical Fineness Increase)	0.003	0.013	-0.013
	(0.021)	(0.465)	(-1.584)
IFRS8*D(Geographical Fineness Increase)	-0.252	0.032	0.029
	(-1.570)	(1.105)	(1.484)
D(Geographical Fineness Decrease)	-0.073	0.076	-0.010
	(-0.332)	(1.606)	(-1.019)
IFRS8*D(Geographical Fineness Decrease)	-0.054	-0.028	0.021*
	(-0.287)	(-0.606)	(1.958)
Control Variables	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm
Observations	1,255	1,242	816
Adj. R-squared	0.226	0.088	0.061

Table 8 presents regression analyses of the impact of IFRS 8 on the average analyst forecast accuracy, forecast dispersion and bid-ask spreads. Accuracy is winsorized at the bottom 5% level and dispersion at top 5% level (result similar without winsorizing). We differentiate between firms that exhibit an increase, decrease or no change in the quality of geographical segment disclosures. We use the four segment reporting quality measures that were used in the earlier analyses. In Panel A, we differentiate between firms that stop or start reporting income or remain the same; in Panel B, we differentiate between firms that increase, decrease or report the same number of segment items; in Panel C, we differentiate between firms that increase, decrease or report the same number of segments; in Panel D, we differentiate between firms that increase, decrease or have the same level of geographical fineness. We control for Log(MVE), ROE, D(Loss), Leverage, Big 4 auditor, Earnings Surprise, Earnings Volatility, Log(Analyst Following), Log(Forecast Horizon), Exchange score and Z-score in the accuracy and dispersion regressions, following Hope (2003). We control for Size, ROE, D(Loss), Leverage, Big 4 auditor, US listing dummy, Log(Share Turnover, Log(Return Volatility) and Index

Membership in the bid-ask spread regression, following Daske et al. (2008). All variables are as defined in Appendix 1. T-statistics are presented below the coefficients in parentheses and are based on robust standard errors clustered by firm *, **, *** denote significance at the 10%, 5% and 1% level.

3.5. Conclusion

This paper investigates the impact of IFRS 8 on geographical segment disclosures, cross-sectional heterogeneity in IFRS 8 effects and whether its introduction had any economic consequences. We hand-collect data for a sample of 861 European firms with over 50% foreign sales, as geographical segment information and a change therein is relevant to investors of those firms. We analyze the historical IAS 14 segment data and restated IFRS 8 data for the pre-adoption year and find that IFRS 8 led to more disaggregated geographical segment reporting, but also to less items being reported. Interestingly, we find that the increase in disaggregation is significantly lower for firms that already had low geographical segment reporting quality under IAS 14. This implies that IFRS 8 did not lead to the same level of improvement for the firms with more room for increase disclosure, resulting in greater cross-sectional divergence in segment reporting. We also find that the negative effect of IFRS 8 on the number of reported items and the probability of reporting segment earnings is stronger for more transparent firms, while the increase in the level of disaggregation is greater for transparent firms. Finally, we find that analyst forecast accuracy and dispersion and market liquidity are not affected by IFRS 8, not even when IFRS 8 improved segment reporting.

Aside from providing more detailed evidence on the effect of IFRS 8 and the factors that affect its impact for a large sample of firms, we contribute to prior literature on segment disclosures by showing that the level disaggregation and the amount of financial items are two distinct quality dimensions of segment reporting. As such, this paper's arguments and findings direct attention to hitherto neglected determinants of geographical segment information. Future research can focus on whether there are other substitutive effects in segment reporting; for instance, whether firms make a tradeoff between the amount and level of business segment information and geographical segment information.

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Appendix 1: Variable Definitions

SRQ

D(Report Income): Indicator variable equal to 1 if a firm reports an income measure at the segment level, 0 otherwise.

Number of items: Number of segment line items reported.

Number of segments: Number of segments reported by a firm. Similarly to Berger and Hann (2003; 2007), we exclude "segments" such as headquarters, corporate or unallocated segments, as these do not represent real operating segments under IFRS 8.

Geographical fineness: Score ranging from 0 to 4 representing the level of disaggregation for geographical segments, refined from Doupnik and Seese (2001). Each segment is assigned a score based on the following scheme, which is averaged to obtain a firm-level geographical fineness score.

0 if geographical region cannot be traced (e.g., "other", "foreign", "rest of the world", "overseas", "abroad").

1 if segment represents multiple continents (e.g., "Africa and Middle East", "Asia and Pacific").

2 if segment represents a single continent (e.g., "Australia and New Zealand", "The Americas", "USA and Canada") or "rest" of continent (e.g., "rest of Europe").

3 if segment represents a group of countries within continents (e.g., "Eastern Europe").

4 if segment represents a single country (and more detailed areas such as parts of countries, regions, provinces and cities).

Other Variables

IFRS8: Indicator variable equal to 1 for pre-adoption year data restated in IFRS 8, 0 otherwise. For Table 8, *IFRS8* is equal to 1 for the year following IFRS 8 and 0 for the year preceding adoption. E.g., if a firm adopts IFRS 8 in 2009, IFRS8 equals 1 for the 2010 observation and 0 for the 2008 observation.

Low IAS14: Indicator variable equal to 1 if firm chooses secondary reporting format for geographical segments under IAS 14 and discloses less than 3 items, 0 otherwise.

Abs(DA): Absolute value of discretionary accruals (DA); DA calculated using the cross-sectional modified Jones model (industry regressions with at least 8 firms per industry).

Analyst: Number of analysts following a firm (number of estimates from I/B/E/S).

Accuracy: Forecast accuracy, defined as absolute difference between consensus forecast and actual annual earnings per share, divided by lagged price, multiplied by -1.

Big4: Indicator variable equal to 1 if a firm uses a Big 4 auditor, 0 otherwise.

AggTrans: Aggregate indicator of transparency; average of the percentile ranked values of Abs(DA), Analyst, Accuracy and Big4.

Herfindahl: Herfindahl-Hirschman index based on the top 50 public and private firms in SIC3 industry (restricted to top 50 firms following the U.S. Census calculation). Data retrieved from Amadeus.

ROA: Firm-level operating income divided by total assets.

D(Loss): Indicator variable equal to 1 for firms with EPS < 0, 0 otherwise.

Foreign Sales%: Proportion of foreign sales on total sales.

Size: Log of total assets

MTB: Market value of equity divided by book value of equity.

Leverage: Total debt scaled by total assets

Dispersion: Standard deviation of analyst forecasts of annual earnings from I/B/E/S.

Bid-Ask Spread: Yearly average of the absolute difference between the daily bid and ask price, divided by the midpoint between the bid and ask price.

Earnings Surprise: Absolute value of current year net income minus prior year's net income, divided by prior year's net income.

Earnings Volatility: Standard deviation of ROE over the previous five years. If current year < 2009, we use all prior years after 2004 to avoid problems with the mandatory adoption of IFRS in 2005.

ROE: Net income divided by market value of equity.

Log(Analyst): Log of number of analysts following a firm.

Log(Forecast Horizon): Log of number of days between forecast date and earnings announcement date.

Log(MVE): Log of market value of equity in US$.

Exchange Score (Hope (2003)): Summary of all the major stock exchanges on which a firm was listed during the sample period. Listings on domestic exchanges as well as European (other than London), London, Asian, and U.S. listings are recorded. Listings on U.S. exchanges are given a weight of 1.5, all other listings are given a weight of 1, and the scores for each firm are summed.

Index Membership: Indicator variable equal to 1 if firm has shares that are constituents of national or international stock market indices as defined in Worldscope field 05661.

Log(Return Volatility): Annual standard deviation of monthly stock returns.

Z-score: Zmijewski (1984) financial distress score. Z-score = -4.3 – 4.5*(net income/total assets) +5.7*(total debt/total assets)-0.004*(current assets/current liabilities).

Chapter 4: Supplier Relationship Characteristics and Disclosure of Forward-Looking Information

4.1. Introduction

This study investigates whether the characteristics of a firm's relationships with its suppliers influence its decision to disclose forward-looking information. Financial reporting and disclosures play an important role in alleviating information asymmetry problems between a firm and its stakeholders. Most research on this topic is aimed at understanding the relationship between accounting information and financial stakeholders, such as investors (e.g., Healy and Palepu 2001, Beyer et al. 2010) or debt holders (e.g., Watts 2003, Armstrong et al. 2010). However, despite the fact that disclosures can be directed at other types of stakeholders (such as suppliers, customers or employees), research on the importance of accounting information to these parties is sparse (Healy and Palepu 2001).

In supply chain relationships, parties' perceptions of each other's reputation and future performance can affect their willingness to trade and the terms of trade (e.g., Bowen et al. 1995, Matsumoto 2002) or their willingness to undertake risky relationship-specific investments (e.g., Raman and Shahrur 2008, Suh and Houston 2010, Dou et al. 2012). These perceptions are based on a variety of information sources, including publicly disclosed information. Graham et al. (2005) find that around 60% of CFOs believe smoother earnings and earnings that meet expectations provide a positive signal to suppliers about the performance and stability of their firms. Several studies have also directly examined whether earnings properties vary with supplier relationship characteristics, but the findings of these studies are mixed. Bowen et al. (1995) and Raman and Shahrur (2008) present evidence that suggests firms manipulate earnings to present an overly optimistic picture to suppliers and customers, resulting in a less informative earnings signal. In contrast, Dou et al. (2012) and Hui et al. (2011) show that firms manage earnings to provide better information to suppliers. Overall, these studies do not provide a clear answer to whether and how supplier relationships affect the informativeness of firms' financial reporting.

This study takes a different approach and looks at disclosures instead of earnings properties. I examine whether firms are more likely to disclose forward-looking information voluntarily when relationship-specific investments by suppliers are more important and when suppliers are in a position to demand such information. Relationship-specific investments are investments that facilitate particular transactions between two parties and are characterized

by returns that depend on the continuation of a particular relationship (Crawford 1990). Examples include machinery to build customized parts for buyers or investments in human capital, knowledge or technology to serve particular clients. These investments are risky to the investing party because their value depends on the continuation of a particular relationship and thus the future performance and prospects of the other party. Uncertainty about a buyer's future makes suppliers reluctant to invest in such assets, which gives buyers incentives to disclose information that could reduce this uncertainty. In addition, buyer firms may want to signal their reputation through disclosures to increase suppliers' willingness to invest since high reputation firms are perceived as more attractive partners (e.g., Dyer 1996).

I deliberately examine forward-looking disclosures instead of earnings properties for two reasons. First, relationship-specific investments drive demand for information about a firm's prospects rather than its past. Although earnings provide some information about a firm's future performance, they are primarily a summary measure of a firm's *historical* performance. Second, the interpretation of earnings properties is not straightforward, which makes it difficult to infer whether supplier relationships ultimately increase or decrease the informativeness of financial reporting. Specifically, the disclosure measures used in this study simply capture whether forward-looking information is disclosed (i.e., whether more information is made available to stakeholders), whereas earnings properties such as the level of (discretionary) accruals or income smoothing could be indicative of more *and* less informative reporting.[35]

I use two different proxies for forward-looking information. First, following Karuna (2010), who proposes voluntary disclosure proxies based on firms' segment reports, I examine whether firms are more likely to report R&D expenditures and order backlog at the industrial segment level when supplier relationship-specific investments are more important. Both of these items are forward-looking in nature. R&D expenditures reflect the innovation strategies of a firm and knowledge of future product markets and demand. Hughes and Williams (2008) use the disclosure of R&D as an example of a signaling device to alter the behavior of other product market participants. Order backlog represents unfulfilled sales orders and is seen as a leading indicator of future earnings and demand (Rajgopal et al. 2003). Moreover, Karuna (2010) shows that the disclosure of these items varies with the degree of

[35] For instance, Dechow et al. (2010) state that while smoothing transitory cash flows may result in a more informative earnings number, smoothing of permanent changes in cash flows results in a loss of information. Furthermore, they caution that it is hard to disentangle whether smoothness is due to the "(i) fundamental earnings process; (ii) accounting rules; [or] (iii) intentional earnings manipulation".

competition firms face.[36]

Second, I use management forecasts as another proxy for forward-looking disclosures. Although management forecasts are widely used as a measure of voluntary disclosures (see Hirst et al. 2008), it isn't immediately apparent that they are a suitable measure in this study. Forecasts are generally aimed at informing capital markets rather than product markets (Karuna 2010), which makes it difficult to detect the influence of supplier-related incentives on firms' disclosures. But given that forecasts are informative of a firm's future performance and can be used to enhance a firm's reputation with its stakeholders (Bhojraj et al. 2011), forecasts might vary with supplier relationship characteristics.

I use the U.S. Bureau of Economic Analysis Input-Output tables to identify supplier industries and two measures of relationship-specific investments, namely industry R&D intensity following Raman and Shahrur (2008) and the extent to which goods and services are publicly traded (Nunn 2007, Dou et al. 2012). Controlling for various factors that affect forward-looking disclosures, I find that when relationship-specific investments are more important to suppliers, firms are more likely to disclose R&D and order backlog at the segment level. I also find that this relationship is affected by suppliers' bargaining power relative to the buyer firm: firms are more likely to disclose forward-looking information when supplier industries are relatively more concentrated. I find similar results with management forecasts: firms are more likely to issue forecasts and issue a higher number of forecasts when supplier relationship-specificity and supplier bargaining power are greater.

This study makes several contributions. First, it contributes to the literature on the relation between a firm's financial reporting decisions and non-financial stakeholders' demand for information. The findings of this study suggest that public disclosures do serve a role in mitigating information asymmetry problems within supply chains. The findings also support the notion that reputation reduces contracting frictions in supply chains (e.g., Dyer 1996, Das and Teng 1998) and recent evidence that firms use disclosures to enhance their reputations with non-financial stakeholders (Bhojraj et al. 2011). Furthermore, the results support the claim in Ramanna (2012) that certain types of reporting can be seen as an information

[36] Ex ante, it is not obvious whether high R&D or order backlog convey good or bad news to suppliers. The arguments in this paper only relate the importance of relationship-specific investments to demand for forward-looking information, not whether there is a differential demand for good versus bad news. This is similar to Karuna (2010), who argues that these items convey forward-looking information to competitors and finds evidence consistent with that. In addition, I also find that competition is related to the disclosure of segment items and that the association between relationship-specific investments and disclosures is influenced by the level of competition firms face. These findings provide further support for the validity of these disclosure measures.

channel through which implicit contracts between a firm and stakeholders can be sustained or made more efficient.

Second, the study adds to recent papers on supplier relationships and earnings properties, which do not provide a clear answer to whether supplier relationships enhance or decrease the informational value of financial reporting. The findings suggest that disclosures are made to inform rather than mislead suppliers, consistent with Dou et al. (2012) and Hui et al. (2011).

The remainder of the paper is structured as follows. Section 4.2 provides an overview of prior literature, followed by the hypothesis development in Section 4.3. Section 4.4 explains the research methodology, Section 4.5 presents the research findings, and Section 4.6 provides concluding remarks.

4.2. Theoretical Background

4.2.1. Supplier Relationships and Buyer Disclosures

This study examines whether and how relationships with suppliers affect a firm's disclosure choices. Many studies have investigated the influence of financial stakeholders (shareholders and debt holders) on firms' mandatory and voluntary financial reporting decisions (see e.g., Healy and Palepu 2001, Beyer et al. 2010). In comparison, much less attention is focused on the influence of non-financial stakeholders, such as suppliers, on firms' public reporting. This is surprising given the vital role that information plays in coordinating production decisions and selecting supply chain partners, and the economic significance of supply chains.[37]

There is reason to believe that a firm's reporting decisions are influenced by non-financial stakeholders. Many contracts or relationships between firms and non-financial stakeholders involve a variety of unwritten agreements or implicit claims. For suppliers, such claims include the continuing demand of products or services by a buyer firm (Bowen et al. 1995). If stakeholders believe that a firm will continue to fulfill these unwritten terms of the contract, which is more likely for firms that are financially sound, stakeholders are more willing to agree to more favorable terms of trade. This gives firms incentives to inform stakeholders about their current and future performance through, for instance, financial reporting. In

[37] Private conversations with a purchasing manager at a multi-national electronics company also revealed that before selecting and contracting with suppliers of chips and other electronic components, the company uses reported financial information to assess the financial viability and bankruptcy risk of potential suppliers. This anecdotal example suggests that financial information concerning the future of supply chain partners plays an important role in firms' decision making.

addition, firms that have a better reputation are seen as more attractive partners because they are more likely to fulfill explicit or implicit contract terms due to higher reputation costs of not doing so (e.g., Das and Teng 1998). This could also incentivize firms to signal their reputation to stakeholders through disclosures.

Several studies find empirical support for these ideas. An early study by Bowen et al. (1995) finds that firms are more likely to manage earnings upward, by making long-run income-increasing accounting choices when implicit claims with stakeholders are more important. More recently, Graham et al. (2005) find that the majority of the 400 financial executives they surveyed indicate they manage earnings to influence suppliers' and customers' perception of their firms. Bhojraj et al. (2011) show that firms provide earnings guidance more frequently if they value their reputation with non-financial stakeholders such as employees and customers, which suggests that disclosures help build reputation with these types of stakeholders. Related to this, Dhaliwal et al. (2012) cite a number of studies that show how firms use non-financial disclosures, namely corporate social responsibility reports, to influence their reputation with non-financial stakeholders such as employees, customers, media and regulators. The evidence in these studies suggests that public disclosures are an important source of information for non-financial stakeholders.

Finally, there is evidence that financial reporting is explicitly relied upon in supply relationships. Examining publicly disclosed supply contracts, Costello (2011) finds that these agreements often include covenants based on accounting information to avoid opportunistic behavior and that the use of covenants is increasing in information asymmetry and asset specificity of the supplier-buyer relationship. The findings of her study clearly demonstrate the importance of accounting information for supply contracts and that the use of such information varies predictably with the characteristics of the relationship.

4.2.2. Studies on Supplier Relationships and Earnings Properties

Building on the idea that stakeholders influence financial reporting, a number of recent studies investigate whether earnings management is systematically related to supplier relationship characteristics. Raman and Shahrur (2008) examine whether relationship-specific investments made by suppliers and customers give firms incentives to engage in earnings management. Similar to Bowen et al. (1995), Raman and Shahrur argue that a firm's financial reporting is used by suppliers and customers to assess the prospects of the company and thus whether it is worthwhile to undertake relationship-specific investments. This in turn gives

firms an incentive to manage financial reporting to influence these stakeholders' perceptions. Their study finds that earnings management through discretionary accruals is positively related to relationship-specific investments by using stakeholders' R&D expenses as a measure of this type of investment. In addition, the authors examine whether earnings management is used to increase the usefulness of earnings numbers to stakeholders or whether it is used opportunistically to mislead stakeholders to undertake suboptimal relationship-specific investments. Their findings are more consistent with the latter explanation: suppliers and customers invest more after periods in which firms engage in more earnings management, but the duration of the firm's relationship with stakeholders is also shorter.

Dou et al. (2012) examine this relationship in an international context and focus on one particular aspect of earnings management, namely income smoothing. They argue that relationship-specific investments by suppliers are especially risky when contract enforceability is low because this circumstance makes it easier for buyer firms to renege on their obligations. Firms therefore have an incentive to signal to suppliers their commitment to fulfilling the implicit claims of their obligations by presenting a more stable or smoother earnings pattern. Their study shows that firms tend to smooth earnings more in countries with weak contract enforceability and for which relationship-specific investments are more important. In contrast to Raman and Shahrur (2008), Dou et al. (2012) conclude that firms manage earnings mainly to better inform these related parties rather than for opportunistic purposes. Consistent with Dou et al. (2012), Hui et al. (2011) show that manufacturing firms report more conservatively (i.e., recognize losses on a timelier basis) if there is demand for this reporting practice by suppliers and when suppliers have greater bargaining power. The conclusion from this latter study is also that there are supplier-related incentives for firms to make accounting choices that increase the informativeness of financial reporting.

4.2.3. The Role of Public Disclosure

Although the findings summarized above suggest that public financial reporting is important to suppliers, firms could also privately disclose the necessary information to suppliers. This reduces the role of and need for public disclosure through financial statements. However, there are arguments why suppliers would rely on publicly disclosed information.[38]

[38] The arguments proposed here are similar to those concerning the use of publicly reported information by lenders. Public financial reporting is often explicitly used in debt contracts, e.g.,

First, disclosures in financial statements are likely to be more reliable since they are subject to review by auditors and other stakeholders, which enhances the credibility of such information. Firms can have incentives to distort the information communicated to suppliers. Cachon and Lariviere (2001), for instance, argue that firms have an incentive to overstate demand forecasts to induce suppliers to build excess capacity. This benefits the firm since the supplier could provide more goods if demand exceeds the initial true forecast, but is costly for the supplier since building capacity is not without cost. To the extent that publicly reported information is subject to guidelines and scrutiny by outside parties such as investors and analysts, the credibility of such information is likely enhanced.

Second, FASB's Statement of Financial Accounting Concepts No. 8 prescribes consistency in financial reporting, i.e., the application of the same accounting methods across periods within an entity. This means that the choice to report information in a certain way can be seen as an implicit commitment to a particular disclosure regime. Therefore, the value of public disclosures to a supplier is higher since this commitment allows the supplier to continually evaluate the value of its investments in the supply relationship.

Third, privately disclosed internal firm data is less comparable across firms, making it hard for suppliers to process this information correctly (Hui et al. 2011). Public disclosures, such as those considered in this study, are guided to some extent by SEC regulations (e.g., Item 101(c), (VIII and XI) apply to the segment items studied in this paper), which may enhance the usefulness of these disclosures to suppliers.

Finally, most firms deal with multiple suppliers from different industries, making disclosure through one public channel potentially more cost effective than disclosing information privately to each individual supplier. In addition, firms that want to signal their reputation to all potential suppliers in the market can more easily do so through public disclosures. This advantage also provides a rationale for why firms would use public disclosures to inform suppliers.

4.3. Hypotheses

In this study, I focus on a particular aspect of supplier relationships that affects suppliers' demand for information about buyer firms, namely the importance of relationship-specific

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through the inclusion of earnings-based covenants. In addition, financial information is useful to lenders in a more general sense: e.g., Ball et al. (2008) argue that publicly reported information mitigates agency problems between lenders and borrowers by increasing transparency about a borrower's credit quality in general.

investments by suppliers. Such investments support transactions between a buyer and supplier and are by definition specific to a particular relationship. The value of such investments therefore depends largely on the continuation of the relationship (Crawford 1990). Examples include machinery to build customized parts for buyers or investments in human capital, knowledge or technology to serve particular buyer firms. These investments impose a substantial risk on the party investing in these assets (the supplier) since the net present value of the investment depends largely on how the other party in the relationship (the buyer) will act after committing to the investment.

Financial reporting and disclosures affect suppliers' willingness to invest in these assets as follows. First, information asymmetry between suppliers and buyers can hinder suppliers' ability to correctly gauge the financial viability of the buyer and the extent to which continuation of the relationship is likely. The uncertainty in determining the net present value of this investment can lead to reluctance on the supplier's part to invest because relationship-specific investments are by definition worth less outside of the relationship (Williamson 1979). Credible disclosures about the prospects of a buyer firm could therefore help a supplier accurately assess the riskiness of investing in relationship-specific assets.[39]

There is a second reason that information about the future financial performance of buyer firms matters to suppliers. Relationship-specific investments represent sunk investments, which create incentives for hold-up and opportunism ex post and future bargaining problems. For instance, if a supplier invests in machinery dedicated to producing input for a particular buyer, it depends heavily on the buyer's continuing demand for this product. Knowing this, the buyer could take advantage of the supplier and negotiate lower prices by threatening to take its business elsewhere, leaving the supplier with significant excess capacity (Joskow 1987). Even when a contract is in place, these may not fully protect from opportunistic behavior.[40] Under normal conditions, a buyer has less incentive to behave opportunistically because the possibility for repeated interaction between supplier and buyer provides

[39] I argue that forward-looking disclosures are relevant to both potential and existing suppliers' investment decisions. Obviously, these disclosures matter to new suppliers that are contemplating entering into a new relationship with a firm and undertaking relationship-specific investments. In addition, existing suppliers are likely also interested in reliable information about their buyer's prospects, as over time, continued investments may be necessary. For instance, in the automobile industry, when new car models are introduced, suppliers may incur additional investments in existing machinery to be able to produce new parts.

[40] Contracts cannot completely protect a supplier from opportunistic behavior since they are not always complete (e.g., Holmström and Roberts 1998) or honored (e.g., Teece 1976, Klein et al. 1978). Note that I do not assume that contracts do not exist, but rather I argue that disclosures can play an additional role in resolving uncertainty and signaling reputation to suppliers, which can make a firm a more attractive transaction partner (e.g., Dyer 1996).

incentives to adhere to the pre-specified terms of trade (e.g., Taylor and Plambeck 2007). However, when the buyer's performance deteriorates and continuation of the relationship is less likely, the risk for hold-up increases.[41] Again, disclosures that are informative of a buyer firm's future performance allow suppliers to assess the likelihood of such opportunistic behavior by the buyer and make an informed investment decision. Firms have an incentive to provide this information to their suppliers because a rational supplier can anticipate these problems and would be unwilling to invest otherwise.

Finally, disclosures can help a firm build its reputation with suppliers (e.g., Bhojraj et al. 2011). This matters because the cost of behaving and being seen as opportunistic increases with a firm's reputation, and therefore firms with higher reputation are seen as more attractive transaction partners (e.g., Dyer 1996). This gives firms incentives to signal their reputation to suppliers through disclosures. This leads to the following hypothesis:

H1: The importance of supplier relationship-specific investments is positively associated with the likelihood of forward-looking disclosures by the buyer.

Despite demand for forward-looking information, firms may not be willing to publicly disclose this because there are proprietary costs of disclosing segment or forward-looking information (see e.g., Berger and Hann 2007, Li 2010, Bens Berger and Monahan 2011, Karuna 2011). Given the proprietary nature of these items and the potential reluctance to disclose this information, the likelihood of disclosure varies with the ability of the supplier to demand disclosure of such information. A supplier's ability to demand this information is likely related to its bargaining power relative to the buyer firm. Consistent with this argument, Hui et al. (2011) find that when a supplier has greater bargaining power and is able to dictate the terms of trade, a buyer will be more responsive to a supplier's demand for higher accounting conservatism. In short, I hypothesize that the demand for disclosure of forward-looking information that is proprietary in nature is more likely to be met when a supplier has greater bargaining power in the relationship.

H2: The association between the importance of supplier relationship-specific investments and

[41] To illustrate this idea, Raman and Shahrur (2008) refer to the case where General Motors issued a significant profit warning in 2005, after which the company pressed its suppliers for price breaks to reduce its operating costs.

the likelihood of forward-looking disclosures by the buyer is more positive when suppliers have more bargaining power.

4.4. Methodology

This section describes the calculation of the variables used in the analyses and presents details on model specification and sample selection. The details on variable measurement and data sources are provided in the Appendix.

4.4.1. Variable Measurement

Forward-Looking Disclosure Variables

I use two types of measures to capture firms' forward-looking disclosure decisions. First, I draw from Karuna (2010), who uses disclosed industrial segment line items in firms' financial reports as measures of voluntary forward-looking disclosure. The disclosure of R&D expenditures and order backlog at the segment level is required by SEC regulation Item 101(c), but only if these are deemed significant and "*material to an understanding of the registrant's business taken as a whole by the firm*". This materiality condition affords firms considerable discretion over disclosing this information. Karuna (2010) shows that there is indeed variation in the extent to which firms report these items and that disclosure varies predictably with the degree of competition a firm faces. Because the information conveyed by these segment items is forward-looking in nature, it is useful for a firm's (potential) competitors in deciding how and whether to compete. For instance, information about how much R&D a firm invests in certain markets reveals the firm's assessment of the prospects of these markets. Hughes and Williams (2008) also use disclosed R&D investments as an example of a commitment device that can alter other parties' (in their setting, rival firms') production decisions. Similarly, order backlog (orders that are unfulfilled at the end of the reporting period and are scheduled to be executed in a later period) is a leading indicator of future earnings and financial viability of a firm (Rajgopal et al. 2003) and signals dependence on suppliers to complete these orders. This information is useful for suppliers deciding to undertake relationship-specific investments. I use the Compustat segment file to determine whether a firm discloses R&D or order backlog for its primary industrial segment. If R&D or order backlog are not missing, I code R&D Discl. or OB Discl. equal to 1, and 0 otherwise.

Second, I use quarterly management forecasts as a proxy for forward-looking disclosures. Management forecasts are frequently used as measures of voluntary and forward-looking

disclosures (see Hirst et al. 2008). Although forecasts are widely used as a measure of forward-looking disclosures, they are primarily aimed at capital markets. It is less clear that such forecasts are useful to suppliers in this context and may not be sufficiently sensitive to product market-related incentives for disclosure (Karuna 2010). However, forecasts are still informative of a firm's future performance, and research has shown that firms use forecasts to build reputation with stakeholders (Bhojraj et al. 2011). Hence, I use forecasts as a second proxy for forward-looking disclosures.

I obtain quarterly management forecasts from I/B/E/S Guidance, which contains sales, earnings, dividends and capital expenditure forecasts from 2001 onward. I code which firms in the sample issue any forecast (D(Forecast)), the number of forecasts a firm issues (N Forecast), and the average precision of these forecasts (Forecast Precision), where the precision of a single forecast can be 1 (open-ended forecast), 2(closed-ended forecast) or 3 (precise forecast).

Supplier Variables

To capture supplier relationships, I use the U.S. Bureau of Economic Analysis (BEA) Input-Output (IO) tables.[42] These tables show how industries' output (the value of goods and services produced) is divided across the industries that receive these outputs. I use the most detailed IO tables, which are published in years ending in 2 or 7 (e.g., 2002 and 2007).[43] To measure the extent to which a firm in a particular industry X depends on a supplier industry i, I calculate how much input from supplier industry i is required to produce a dollar of output for industry X:

$$Input\ Ratio_{X,i} = \frac{\$\ value\ of\ inputs\ from\ supplier\ industry\ i}{\$\ value\ of\ output\ for\ industry\ X} \quad (1)$$

This Input Ratio is used as a measure of the dependence of industry X on that supplier industry and is the first step in calculating the supplier relationship variables defined below.

Supplier Relationship-Specificity

The Input Ratio represents the degree to which a particular industry depends on another supplier industry but does not capture whether the supplier also undertakes

[42] A simplified example of a IO table is provided in the Appendix, along with a description of how Input Ratios are calculated.

[43] The sample period in the paper spans from 1998 to 2007. Although R&D intensity can be calculated yearly, the BEA data are only collected every five years. I match the R&D intensities from years 1998 to 2002 to the Input Ratios from the IO table of 1997. The R&D intensities from years 2003 to 2007 are matched to the 2002 IO table.

relationship-specific investments. To measure the likelihood that suppliers will invest in relationship-specific assets, I rely on two measures used in prior studies (see Nunn 2007, Raman and Shahrur 2008, Dou et al. 2012).

The first measure of relationship-specificity is based on supplier industries' R&D intensity as a proxy for the relationship-specificity of investments, as firms with high R&D likely generate relationship-specific assets (Gompers 1995, Allen and Phillips 2000, Raman and Shahrur 2008). Industry R&D intensity is equal to the sum of R&D for all firms in an industry divided by industry total assets. Since the IO Tables use 6-digit IO codes to define industries, whereas the Compustat database uses other industry classifications (e.g., SIC, NAICS and GICS), I match the two datasets using the IO codes-NAICS concordance provided on the BEA website. When there is no match for a particular 6-digit IO code, I match at a higher level successively (5-digit, 4-digit etc.).[44] Finally, I multiply the Input Ratio obtained in the first step with the R&D intensity for each of the supplier industries that provide goods or services to industry X, and sum these over all *n* supplier industries for industry X. The resulting measure, labeled "SRS1", represents the average importance of supplier relationship-specific investments for industry X.

$$SRS1_X = \sum_{i=1}^{n} Input\ ratio_{X,j} \times R\&D\ intensity_j \quad (2)$$

I also use a second measure of supplier relationship-specificity following Nunn (2007) and Dou et al. (2012), who use Input Ratios based on BEA data and then apply a classification by Rauch (1999) to calculate the proportion of inputs that require relationship-specific investments used to produce one unit of output. Rauch (1999) classifies inputs into three categories: goods sold on an organized exchange, goods for which there exists a reference-price in trade publications, and goods for which neither exist (differentiated goods). If a good can be sold on an organized exchange (for instance, unwrought lead which is traded on the London Metal Exchange), it is unlikely to be relationship-specific or require relationship-specific investments. In contrast, many specific components used in the production of Boeing aircrafts are not publicly exchanged and are produced specifically for Boeing, which requires the manufacturer of such components to invest in dedicated machinery to produce these goods.

[44] To illustrate, if the R&D intensity for a particular 6-digit IO code industry is not available (i.e., there are no firms in Compustat with an NAICS that matches with that particular IO code), I calculate the R&D intensity for all firms with the corresponding higher level 5-digit IO code and assign this R&D intensity to the industry.

To calculate the degree of supplier relationship-specificity with this classification, Nunn (2007) first determines to which of the three Rauch categories an industry belongs. He then combines this classification with the BEA tables to determine which supplier industries provide goods that are differentiated and likely require relationship-specific investments. The total value of inputs from such supplier industries divided by the output of the receiving industry is the second measure of the importance of supplier relationship-specific investments (denoted as "SRS2"). To illustrate, firms in automobile or aircraft manufacturing industries require many specialized inputs that are not traded on organized exchanges and receive high SRS2 scores. In contrast, firms that process natural resources such as raw agricultural, livestock or mining goods have low SRS2 scores because their main inputs are easily traded.[45]

The use of industry-level measures to capture the importance of supplier relationship-specificity to individual firms is similar to the approach in, for example, Raman and Shahrur (2008), Hui et al. (2011) and Dou et al. (2012). Whether this is a valid approach depends on the firms' similarity within the industry (i.e., whether firms have a similar supplier network and require similar inputs). To maximize firms' similarity and the validity of this method, I use the most detailed six-digit IO industry classification to measure SRS.

Supplier Bargaining Power

I use suppliers' industry concentration relative to the buyer firm to measure suppliers' bargaining power. Crook and Combs (2007) state that dependency on important resources (such as relationship-specific investments) leads to greater bargaining power for the firm that holds these resources. In addition, the concentration of resources also creates a bargaining advantage. In the context of supplier-buyer relationships, less competition in a supplier industry should be associated with greater bargaining power for suppliers since it is harder for a firm to switch to alternative suppliers. This may also increase the willingness for buyers to disclose information demanded by suppliers. I therefore expect that concentration in supplier industries affects the firm's decision to disclose forward-looking information. As suppliers' ability to demand information depends on the bargaining position of the buyer firm as well, I divide the concentration in supplier industries by the industry concentration of the buyer firm, which more accurately captures suppliers' relative bargaining power. I use the four-firm concentration ratio to measure industry concentration, which has frequently been used in

[45] I obtain these data from Nathan Nunn's website: http://economics.harvard.edu/faculty/nunn/data_nunn. See Table 2 in Nunn (2007) for an overview of the extent to which industries rely on suppliers that provide differentiated inputs.

prior accounting research to capture the competitiveness of an industry (e.g., Harris 1998, Li 2010).[46] [47]

To calculate supplier bargaining power, I first calculate the concentration measures for each of a firm's supplier industries separately. These measures are multiplied by the Input Ratios and then summed over all supplier industries to obtain a measure of the average degree of concentration in supplier industries. This is divided by the industry concentration of the buyer firm itself to obtain a measure of suppliers' relative bargaining power (SBP).

4.4.2. Model and Sample Selection

In the analyses, I control for other factors that could influence the disclosure of these items, such as the extent of competition in a firm's own product market, firm size, risk, leverage, growth opportunities, analyst following and profitability. In addition, I control for R&D expenditures or order backlog at the firm-level to partially alleviate concerns that the disclosure variable captures materiality rather than voluntary disclosure (Heitzman et al. 2010). I estimate the following binomial logit model:

$$Prob\left[Segment\ Discl.Variable_{i,t} = 1\right] =$$

$$logit(\beta_0 + \beta_1 SRS_{i,t} + \beta_2 PCM_{i,t} + \beta_3 MARKETSIZE_{i,t} + \beta_4 ENTRYCOST_{i,t} + \beta_5 CONC_{i,t} + \beta_6 LOG(SALES)_{i,t} + \beta_7 STDRET_{i,t} + \beta_8 LEV + \beta_9 MTB_{i,t} + \beta_{10} ANALYST_{i,t} + \beta_{11} ROA_{i,t} + \beta_{12}\ FIRM\ R\&D\ or\ OB_{i,t}), \quad (3)$$

where Segment Discl. Variable is R&D Discl or OB Discl. and SRS is as defined above. Model (3) also includes year-fixed effects and the tables report Z-statistics based on heteroscedasticity-robust standard errors clustered by industry in the tables.[48] Under H1, I

[46] Although it is generally assumed that highly concentrated industries are less competitive, it should be noted that firms in highly concentrated industries may still face a high degree of competition. For instance, when competition is characterized as Bertrand-type competition, prices in a duopoly can be driven down to perfect competition levels due to the "cut-throat" nature of price competition (Cabral 2000). However, similar criticisms can be made about alternative measures of competition. For instance, price-cost margins are also frequently used as a measure of competition, where higher price-cost margins are assumed to be indicative of lower competition, despite several theoretical models showing that more intense competition may actually drive down price-cost margins (Boone 2008). Since concentration in supplier industries is more indicative of a firm's ability to switch to another supplier compared to a measure such as industry price-cost margin, and also relates to the notion of resource concentration resulting in higher bargaining power, I use these measures in this study.

[47] Results are similar if I use the Herfindahl-Hirschman index to measure industry concentration. The findings are also robust to the use of unscaled supplier industry concentration (SCON) as a proxy of bargaining power instead of dividing it by buyer firms' industry concentration.

[48] Since the supplier variables are measured at the industry level, I cluster standard errors by industry. Following Raman and Shahrur (2008) and Hui et al. (2011), I also repeat the analyses clustering standard errors by firm. These results are similar to and often more statistically significant than those

expect $\beta_1$to be positive, meaning that the likelihood of discretionary disclosure is higher when supplier relationship-specific investments are more important. For H2, I divide my sample based on the median values of suppliers' relative bargaining power and examine whether the relationship between supplier relationship-specificity and disclosure is more positive for firms with more powerful suppliers.

For regressions using management forecasts as the dependent variable, I estimate the following model:[49]

$$Forecast_{i,t} = \gamma_0 + \gamma_1 SRS_{i,t} + \gamma_2 CONC_{i,t} + \gamma_3 LOG(SALES)_{i,t} + \gamma_4 LOG(MVE)_{i,t} + \gamma_5 STDRET_{i,t} + \gamma_6 LEV_{i,t} + \gamma_7 MTB_{i,t} + \gamma_8 ANALYST_{i,t} + \gamma_9 ROA_{i,t} + \gamma_{10} LOSS_{i,t} + \gamma_{11} FIRM\ R\&D_{i,t} + \varepsilon_{i,t}, \quad (4)$$

where Forecast is equal to D(Forecast), N Forecast or Forecast Precision. I control for firm and other industry characteristics that could affect forecasting activity, such as firm size, profitability, return volatility, growth opportunities and competition. As before, I include year-fixed effects and cluster the standard errors by industry in each regression. I also split the sample into high and low supplier bargaining power samples, as before, to examine the differential impact of SRS on the likelihood of forecasts. Because N Forecast and Forecast Precision are continuous variables, I include an interaction between SRS and SBP in the model to capture this effect. As with segment disclosures, I expect firms are more likely to issue a forecast when supplier relationship-specific investments are more important (i.e., γ_1 is positive). I also expect the number of forecasts to be positively related to SRS. If a firm issues forecasts to inform suppliers about its prospects, I expect forecasts will be more precise if suppliers have more relationship-specific investments.

The sample period spans from 1998 to 2007. I choose to start my sample period in 1998 to reduce the potential effect of the adoption of SFAS131 in 1997, which has been shown to affect firms' segment reporting decisions (e.g., Herrmann and Thomas 2000, Street et al. 2000, Berger and Hann 2003, 2007). Table 1 shows the composition of the sample. After matching the Compustat Segment data to the IO table data and control variables, the number of observations used in the empirical analyses is 40,097. This number drops to 12,798 when I match the sample to the Nunn (2007) data, which are only available for a select number of

reported in the paper (e.g., SRS1 is significant in Table 4, Panel A when I cluster by firm).

[49] I estimate a logit model when D(Forecast) is the dependent variable, as this is a binary variable. For N Forecast and Forecast Precision, the model is estimated using OLS.

industries. Since I/B/E/S Guidance only provides forecasts from 2001 onward, the number of observations for the analyses ranges between 1,201 (when Forecast Precision and SRS2 are used) to 26,011.

TABLE 1
Sample Composition

		Segment Disclosure Sample		Forecast Sample (2001-2007)
Firm-year observations not missing data for R&D Discl. and OB Discl. for period 1998-2007		76,480		50,048
Less: observations without a match to BEA IO tables (necessary for calculating supplier variables)	*-/-5,355*	71,125	*-/-3,152*	46,896
Less: observations missing other supplier variables/control variables	*-/-31,028*		*-/-20,885*	
SRS1 sample		40,097		26,011
Less: observations missing match to Nunn (2007) data	*-/-27,299*		*-/-18,651*	
SRS2 sample		12,798		7,360

Table 1 describes the composition of the sample. The data for segment disclosure measures are from the Compustat Segment database and matched to the IO tables/Nunn data via firms NAICS codes. Management forecasts are from I/B/E/S Guidance and are only available from 2001 onward, which is why there the number of observations is lower for the forecast sample.

4.5. Results

4.5.1. Descriptive Statistics

Table 2 shows the distribution of variables used in the analyses. It shows that 41% of firms disclose R&D at the industrial segment level and 21% disclose order backlog. 21% of firms issue at least one forecast, which tends to be a closed-ended forecast, as the average precision is close to 2. The mean of the Input Ratio-weighted average R&D intensity in supplier industries is around 0.01 and on average the proportion of non-publicly traded inputs is around 58%, with widespread variation across industries. There is also considerable

variation in the average concentration of supplier industries (SCON). The distribution of the supplier bargaining power (SBP) is skewed, but since I only use this variable to partition the sample at the median value of SBP (to test H2), this does not pose a problem.

The correlations in Table 3, Panel A show that the supplier relationship-specificity variables SRS1 and SRS2 are generally significantly and positively correlated with the segment disclosure measures, except for the correlation between SRS1 and OB Discl. In Panel B, I also find that the likelihood of issuing a forecast is positively associated with SRS, providing some preliminary support for H1. Although I do not predict a direct relation between supplier industry concentration and firms' disclosure decisions, the correlation is negative and significant in both panels. It suggests that when suppliers are generally more powerful due to lack of competition, firms are less likely to disclose proprietary forward-looking information.

TABLE 2

Descriptive Statistics

Variable	Mean	Standard Dev.	P25	P50	P75
Dependent Variable					
R&D Discl.	0.41	0.49	0.00	0.00	1.00
OB Discl.	0.21	0.41	0.00	0.00	0.00
D(Forecast)	0.21	0.41	0.00	0.00	0.00
N Forecast	1.11	2.90	0.00	0.00	0.00
Forecast Precision	2.15	0.41	2.00	2.00	2.25
Supplier Variables					
SRS1	0.01	0.02	0.00	0.00	0.01
SRS2	0.58	0.26	0.35	0.63	0.82
SCON	0.41	0.42	0.12	0.27	0.58
SBP	54.69	4800.10	0.43	1.65	9.92
Control Variables					
PCM	1.23	0.74	1.06	1.12	1.23
MARKETSIZE	9.50	2.16	8.49	9.94	11.00
ENTRYCOST	7.62	1.81	6.46	7.60	9.10
CONC	0.33	0.36	0.04	0.16	0.57
LOG(SALES)	5.17	2.34	3.69	5.17	6.71
LOG(MVE)	5.60	2.18	4.05	5.58	7.04
STDRET	0.17	0.13	0.09	0.13	0.20
MTB	1.23	0.69	0.79	1.10	1.53
FIRM R&D	0.06	0.15	0.00	0.00	0.08
FIRM OB	0.10	0.72	0.00	0.00	0.00
MTB	1.23	0.69	0.79	1.10	1.53
ANALYST	4.39	5.84	0.00	2.00	6.00
LEVERAGE	0.20	0.21	0.01	0.15	0.34
LOSS	0.36	0.48	0.00	0.00	1.00
ROA	-0.06	0.47	-0.06	0.02	0.07

Table 2 shows the distribution of the variables used in the analyses. Variables are defined in the Appendix.

TABLE 3
Correlation Tables (Pearson above/Spearman below diagonal)

Panel A: R&D Discl/OB Discl.

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
[1]	R&D Discl.		**0.31**	**0.12**	**0.31**	**-0.06**	-0.01	**-0.02**	**0.13**	**-0.08**	**-0.16**	**-0.28**	**0.15**	**-0.16**	**0.14**	**-0.04**	**-0.12**	**0.31**	**-0.04**
[2]	OB Discl.	**0.31**		**0.02**	**0.25**	**-0.07**	0.00	**-0.05**	**-0.02**	**-0.05**	**0.09**	**0.04**	-0.01	**-0.02**	**-0.07**	0.01	**0.05**	**-0.06**	**0.12**
[3]	SRS1	**0.05**	**-0.01**		**0.18**	**0.72**	0.00	**-0.04**	**0.08**	**0.04**	**-0.13**	**-0.07**	**0.16**	**-0.08**	**0.02**	0.00	**-0.05**	**0.12**	0.00
[4]	SRS2	**0.29**	**0.25**	0.01		**-0.36**	-0.01	**-0.26**	**-0.02**	**-0.37**	**-0.06**	**-0.15**	**0.16**	**-0.34**	**0.09**	**-0.07**	**-0.08**	**0.17**	**0.24**
[5]	SCON	**-0.11**	**-0.13**	**0.73**	**-0.49**		0.01	**0.02**	**-0.03**	0.00	**-0.04**	0.01	**0.03**	**0.07**	**-0.05**	**-0.04**	**0.01**	**-0.04**	**-0.01**
[6]	SBP	**0.12**	**-0.14**	**0.54**	**-0.05**	**0.52**		0.00	0.00	0.01	**-0.01**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
[7]	PCM	**0.03**	**-0.12**	**-0.05**	**-0.24**	**0.01**	**0.22**		**0.02**	**-0.18**	**-0.10**	**-0.05**	**-0.10**	**0.09**	**0.08**	**-0.03**	**0.24**	**-0.04**	**-0.02**
[8]	MARKETSIZE	**0.14**	**-0.04**	**0.11**	**-0.05**	0.00	**0.45**	**0.23**		**0.36**	**-0.62**	**0.12**	**-0.01**	**-0.01**	**0.04**	**0.15**	**-0.03**	**0.11**	**-0.03**
[9]	ENTCOST	**-0.08**	**-0.06**	0.00	**-0.31**	**0.05**	**0.07**	**0.05**	**0.49**		**-0.08**	**0.15**	**-0.01**	**-0.06**	**0.03**	**0.16**	**-0.05**	**0.05**	**-0.03**
[10]	CONC	**-0.20**	**0.10**	**-0.17**	**-0.17**	**-0.01**	**-0.83**	**-0.28**	**-0.56**	**-0.05**		**0.14**	**-0.08**	**0.07**	**-0.08**	**-0.02**	**0.04**	**-0.15**	**0.01**
[11]	LOG (SALES)	**-0.28**	**0.04**	**-0.08**	**-0.15**	-0.01	**-0.16**	**-0.05**	**0.11**	**0.12**	**0.19**		**-0.37**	**0.23**	**-0.09**	**0.52**	**0.29**	**-0.37**	**0.01**
[12]	STDRET	**0.18**	**0.03**	**0.17**	**0.21**	0.00	**0.09**	**-0.22**	**-0.03**	**-0.03**	**-0.09**	**-0.44**		**-0.13**	**0.12**	**-0.16**	**-0.26**	**0.24**	-0.01
[13]	LEV	**-0.20**	**-0.02**	**-0.08**	**-0.35**	**0.07**	**-0.09**	**0.08**	**-0.04**	-0.01	**0.11**	**0.30**	**-0.19**		**-0.08**	**-0.02**	**0.04**	**-0.22**	**-0.03**
[14]	MTB	**0.14**	**-0.06**	-0.01	**0.08**	**-0.04**	**0.06**	**0.10**	**0.08**	**0.07**	**-0.08**	-0.01	**0.06**	**-0.14**		**0.17**	0.01	**0.27**	**-0.01**
[15]	ANALYST	**-0.04**	0.00	**-0.03**	**-0.03**	**-0.05**	**-0.03**	-0.01	**0.14**	**0.14**	**0.01**	**0.56**	**-0.16**	0.01	**0.25**		**0.10**	**-0.05**	**-0.01**
[16]	ROA	**-0.14**	**0.08**	**-0.08**	**-0.06**	**-0.02**	**-0.09**	**0.13**	**-0.04**	**-0.02**	**0.10**	**0.40**	**-0.38**	**-0.05**	**0.15**	**0.23**		**-0.45**	**0.02**
[17]	FIRM R&D	**0.44**	**-0.02**	**0.21**	**0.53**	**-0.05**	**0.21**	**-0.02**	**0.15**	**0.08**	**-0.25**	**-0.34**	**0.35**	**-0.39**	**0.30**	**0.05**	**-0.27**		**-0.02**
[18]	FIRM OB	**-0.04**	**0.43**	**0.09**	**0.37**	**-0.07**	**-0.10**	**-0.13**	**-0.13**	**-0.09**	**0.08**	**0.02**	**0.04**	**-0.05**	**-0.05**	0.00	**0.07**	**0.15**	

(Continued on next page)

Panel B: Forecast Variables

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]
[1]	D(Forecast)	**1.00**	**0.75**	**.**	**-0.02**	**0.18**	**-0.08**	-0.01	0.00	**0.18**	**0.20**	**-0.13**	**-0.08**	**0.07**	**0.28**	**0.07**	**-0.11**	**-0.02**
[2]	N Forecast	**0.99**	**1.00**	-0.02	0.00	**0.19**	**-0.07**	0.00	**-0.02**	**0.16**	**0.19**	**-0.11**	**-0.09**	**0.06**	**0.28**	**0.06**	**-0.11**	-0.01
[3]	Forecast Precision	**.**	0.02	**1.00**	0.00	0.00	0.00	0.02	-0.01	0.00	**0.03**	0.00	-0.01	0.01	**0.05**	0.01	-0.01	0.01
[4]	SRS1	**0.02**	**0.02**	0.01	**1.00**	**0.15**	**0.70**	0.00	**-0.10**	**-0.11**	**-0.07**	**0.20**	**-0.10**	**-0.01**	0.01	**-0.09**	**0.17**	**0.18**
[5]	SRS2	**0.18**	**0.19**	0.02	0.01	**1.00**	**-0.44**	-0.02	**-0.05**	**-0.17**	**-0.20**	**0.17**	**-0.36**	**0.07**	**-0.06**	**-0.11**	**0.14**	**0.23**
[6]	SCON	**-0.08**	**-0.08**	-0.01	**0.70**	**-0.54**	**1.00**	0.01	**-0.02**	**-0.02**	**-0.02**	**0.06**	**0.05**	**-0.06**	**-0.04**	-0.01	**0.05**	-0.01
[7]	SBP	**-0.02**	-0.01	0.01	**0.49**	**-0.04**	**0.49**	**1.00**	**-0.01**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
[8]	CONC	**-0.01**	**-0.02**	-0.01	**-0.16**	**-0.19**	-0.01	**-0.85**	**1.00**	**0.13**	0.00	**-0.07**	**0.06**	**-0.06**	**-0.04**	**0.04**	**-0.08**	**-0.16**
[9]	LOG(SALES)	**0.18**	**0.19**	0.01	**-0.11**	**-0.17**	**-0.03**	**-0.18**	**0.18**	**1.00**	**0.78**	**-0.37**	**0.23**	**-0.08**	**0.50**	**0.27**	**-0.43**	**-0.39**
[10]	LOG(MVE)	**0.21**	**0.22**	**0.03**	**-0.09**	**-0.19**	0.00	**-0.04**	**0.03**	**0.81**	**1.00**	**-0.39**	**0.11**	**0.24**	**0.63**	**0.23**	**-0.40**	**-0.18**
[11]	STDRET	**-0.11**	**-0.11**	0.00	**0.19**	**0.23**	**0.01**	**0.08**	**-0.08**	**-0.45**	**-0.46**	**1.00**	**-0.13**	**0.05**	**-0.17**	**-0.27**	**0.38**	**0.26**
[12]	LEV	**-0.08**	**-0.09**	-0.02	**-0.12**	**-0.37**	**0.06**	**-0.08**	**0.10**	**0.32**	**0.17**	**-0.20**	**1.00**	**-0.03**	**-0.02**	**0.03**	**-0.06**	**-0.21**
[13]	MTB	**0.12**	**0.12**	0.01	-0.01	**0.05**	**-0.04**	**0.04**	**-0.06**	-0.01	**0.32**	**0.02**	**-0.11**	**1.00**	**0.15**	**0.07**	-0.01	**0.25**
[14]	ANALYST	**0.32**	**0.33**	**0.07**	**-0.04**	**-0.02**	**-0.06**	**-0.03**	0.00	**0.55**	**0.68**	**-0.20**	**0.02**	**0.24**	**1.00**	**0.08**	**-0.19**	**-0.05**
[15]	ROA	**0.15**	**0.15**	-0.01	**-0.13**	**-0.11**	**-0.05**	**-0.12**	**0.10**	**0.39**	**0.41**	**-0.39**	**-0.05**	**0.20**	**0.23**	**1.00**	**-0.38**	**-0.44**
[16]	LOSS	**-0.11**	**-0.12**	0.00	**0.14**	**0.14**	**0.03**	**0.11**	**-0.10**	**-0.43**	**-0.40**	**0.45**	**-0.08**	**-0.07**	**-0.20**	**-0.83**	**1.00**	**0.34**
[17]	FIRM R&D	**0.09**	**0.10**	**0.04**	**0.28**	**0.59**	**-0.03**	**0.23**	**-0.25**	**-0.36**	**-0.15**	**0.37**	**-0.39**	**0.27**	**0.05**	**-0.30**	**0.36**	**1.00**

Table 3 presents correlations between all variables. Panel A presents correlations of variables used in the first set of analyses with R&D Discl. and OB Discl. as dependent variables. Panel B presents correlations for variables used in the forecast analyses. I do not report the correlation between Forecast Precision and D(Forecast) because precision is only available for firms that issue a forecast. Pearson correlations are presented above the diagonal, Spearman below. Correlations in bold are significant at less than the 5% level. All variables are defined in the Appendix.

4.5.2. Main Findings

Tables 4 and 5 present the regression analyses for H1 and H2. I first examine whether the likelihood of disclosing forward-looking information is related to the degree of relationship-specificity in supplier industries, regardless of supplier industry concentration. Table 4 shows partial support for this first hypothesis. Although the coefficient on SRS1 in Panel A has the predicted sign, it is not significant at conventional levels. However, Panel B shows that SRS2 is positively and significantly related to both disclosure measures (with p-values below 0.01). I find that a one standard deviation from the mean of SRS2 results in an 8.5% (6.4%) increase in the likelihood of disclosure of R&D (order backlog) at the industrial segment level. This seems economically significant compared to the average likelihood of disclosing these items (41% for R&D, 21% for order backlog). Overall, these results suggest that when investments of suppliers are more relationship-specific, firms are more likely to disclose forward-looking information that is useful to suppliers. This is consistent with the idea that firms voluntarily provide forward-looking information to alleviate potential information asymmetry problems and reduce the risks suppliers may perceive from investing in such assets. The results are also in line with the findings of Dou et al. (2012) and Hui et al. (2011), who find that when suppliers play an important role, firms provide earnings that are more informative to suppliers (i.e., earnings are smoother and more conservative). Table 4 further shows that the degree of competition a firm faces in its own product market is significantly related to these disclosure decisions, which is consistent with the findings in Karuna (2010).

TABLE 4

Supplier Relationship-Specificity Analyses

Panel A: SRS1			*Panel B: SRS2*		
	R&D Discl.	***OB Discl.***		***R&D Discl.***	***OB Discl.***
Intercept	-0.034	-1.228	**Intercept**	0.846	-0.281
	(-0.051)	(-1.468)		(1.254)	(-0.375)
SRS1	5.977	3.267	**SRS2**	1.432***	1.898***
	(1.406)	(0.668)		(2.595)	(4.062)
PCM	-0.204**	-0.400	**PCM**	-0.356	-0.205
	(-2.232)	(-0.669)		(-0.590)	(-0.471)
MARKETSIZE	0.212***	0.134*	**MARKETSIZE**	0.070	0.041
	(2.805)	(1.839)		(0.833)	(0.719)
ENTCOST	-0.224***	-0.101*	**ENTCOST**	-0.209***	-0.221***
	(-3.175)	(-1.752)		(-2.594)	(-3.831)
CONC	0.238	0.906**	**CONC**	-0.060	0.328
	(0.631)	(2.276)		(-0.269)	(1.522)
LOG(SALES)	-0.234***	-0.013	**LOG(SALES)**	-0.295***	-0.076*
	(-4.357)	(-0.267)		(-6.156)	(-1.922)
STDRET	-0.054	0.563	**STDRET**	0.340	0.148
	(-0.161)	(1.526)		(1.265)	(0.402)
LEV	-0.179	-0.217	**LEV**	-1.152***	-0.339
	(-0.342)	(-0.480)		(-3.444)	(-1.112)
MTB	0.095	-0.309***	**MTB**	0.345***	-0.318***
	(1.605)	(-4.425)		(3.839)	(-2.893)
ANALYST	0.029***	0.011	**ANALYST**	0.018*	-0.015
	(3.508)	(1.397)		(1.756)	(-1.093)
ROA	0.267**	0.516**	**ROA**	0.888***	0.995***
	(2.019)	(2.016)		(6.783)	(4.400)
FIRM R&D	7.627***		**FIRM R&D**	6.632***	
	(5.357)			(6.641)	
FIRM OB		1.593***	**FIRM OB**		2.694***
		(3.143)			(6.877)
Log likelihood	-22,580.247	-19,286.896	**Log likelihood**	-6,250.520	-5,180.662
Pseudo R^2	0.169	0.074	**Pseudo R^2**	0.265	0.188

Table 4 presents logistic regression analyses with measures of supplier relationship-specificity. All variables are defined in the Appendix. N = 40,097 in Panel A and N = 12,798 in Panel B. All regressions include year-fixed effects. Z-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by industry. *, ** and *** denote significance at the 10%, 5% and 1% level respectively. The likelihood ratios and Wald test statistics for all models are significant at less than 1% level.

4.5.3. Supplier Relationship-Specificity and Supplier Bargaining Power

In Table 5, I test whether the bargaining position of suppliers influences the relationship between supplier relationship-specificity and firms' disclosure of forward-looking information (H2). I expect that when suppliers have higher bargaining power (i.e., suppliers' industry concentration relative to the firm's industry concentration is higher), the positive influence of supplier relationship-specificity on the likelihood of disclosure will be greater. I conduct the analyses shown in Table 4 for subsamples based on suppliers' relative bargaining power and examine the differences in the coefficients on SRS1 and SRS2 for the different samples. I split the sample based on whether relative supplier industry concentration is higher or lower than the median, calculated on a yearly basis. For instance, firms in the "(Low) High SBP" sample have a relative supplier industry concentration that is (lower) higher than the median value of SBP.

Panel A shows strong support for the second hypothesis. I find that SRS1 is not significantly related to the disclosure of R&D or order backlog when supplier industry concentration is low. For example, in column (1) of Panel A, the coefficient on SRS1 is 4.169 and insignificant. In contrast, when supplier industry concentration relative to the buyer firm's industry concentration is high, implying that suppliers are better able to dictate the terms of trade with buyers and demand information, SRS1 is positively and significantly related to the likelihood of disclosure. Column (2) for instance shows that the coefficient on SRS1 is 10.652 for firms in the "High SHHI" subsample, which is highly significant (p-value < 0.01) and represents a 6.83% increase in the likelihood of disclosure for a one standard deviation increase from the mean of SRS1. The findings in Panel B also show some support for H2. When R&D Discl. is the dependent variable, the coefficient on SRS2 is over twice as large in the high relative bargaining power subsample and significant. Similarly, when the disclosure of order backlog is used as a measure of forward-looking information, the coefficient is almost 70% larger (2.511 compared to 1.484) for the high relative bargaining power subsample. Overall, the findings indicate that the extent to which supplier relationship-specificity influences a firm's decision to disclose information depends on whether suppliers are in a position to demand this information, which is consistent with H2.

TABLE 5
The Influence of Supplier Bargaining Power

Panel A: SRS1 and Supplier Bargaining Power

	Low SBP	High SBP	Low SBP	High SBP
	(1)	(2)	(3)	(4)
	R&D Discl.	*R&D Discl.*	*OB Discl.*	*OB Discl.*
Intercept	0.105	-0.393	-1.220*	1.344*
	(0.152)	(-0.456)	(-1.842)	(1.786)
SRS1	4.169	10.652**	-3.194	8.170*
	(0.520)	(2.385)	(-0.330)	(1.921)
PCM	-0.212	-0.185*	-0.095	-1.861***
	(-0.721)	(-1.914)	(-0.540)	(-3.201)
MARKETSIZE	0.145*	0.330***	0.167**	-0.017
	(1.807)	(3.300)	(2.252)	(-0.189)
ENTCOST	-0.121**	-0.340***	-0.173***	0.020
	(-2.344)	(-3.466)	(-3.328)	(0.231)
CONC	-0.093	-1.334	0.741**	-1.390
	(-0.254)	(-1.491)	(2.501)	(-1.367)
LOG(SALES)	-0.188***	-0.285***	0.025	-0.086**
	(-2.837)	(-5.554)	(0.421)	(-2.257)
STDRET	0.189	-0.256	1.120***	-0.093
	(0.450)	(-0.794)	(3.373)	(-0.185)
LEV	-0.567	-0.050	-0.382	0.101
	(-0.959)	(-0.098)	(-0.698)	(0.204)
MTB	0.088	0.095	-0.336***	-0.174**
	(1.313)	(1.313)	(-4.949)	(-2.236)
ANALYST	0.031***	0.027**	0.012	0.006
	(2.949)	(2.514)	(1.238)	(0.571)
ROA	0.507***	0.186	0.754***	0.598***
	(3.225)	(1.440)	(4.678)	(2.715)
FIRM R&D	8.434***	6.888***		
	(4.913)	(4.028)		
FIRM OB			1.430***	1.088*
			(3.448)	(1.825)
N	20,241	19,856	20,241	19,856
Log likelihood	-11,414.388	-10,822.688	-10,710.369	-81,84.816
Pseudo R^2	0.141	0.210	0.080	0.083

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Panel B: SRS2 and Supplier Bargaining Power

	Low SBP	High SBP	Low SBP	High SBP
	(1)	(2)	(3)	(4)
	R&D Discl.	*R&D Discl.*	*OB Discl.*	*OB Discl.*
Intercept	-0.143	1.339	-0.223	-1.238
	(-0.179)	(1.200)	(-0.261)	(-0.994)
SRS2	0.693	1.607***	1.484**	2.511***
	(1.561)	(2.838)	(2.535)	(3.699)
PCM	0.442	-0.704	0.055	-0.350
	(0.708)	(-1.415)	(0.095)	(-0.685)
MARKETSIZE	0.052	0.411**	0.048	0.065
	(0.856)	(2.382)	(0.796)	(0.759)
ENTCOST	-0.106*	-0.640***	-0.224***	-0.184
	(-1.853)	(-3.914)	(-3.903)	(-1.584)
CONC	-0.070	1.562**	0.337	1.847**
	(-0.348)	(2.081)	(0.882)	(2.358)
LOG(SALES)	-0.324***	-0.320***	-0.067	-0.103**
	(-6.533)	(-6.947)	(-1.411)	(-2.403)
STDRET	0.977*	-0.160	0.175	0.036
	(1.800)	(-0.360)	(0.346)	(0.064)
LEV	-1.125***	-1.248***	-0.480	-0.157
	(-2.786)	(-2.981)	(-1.248)	(-0.396)
MTB	0.309***	0.362***	-0.410***	-0.191
	(3.245)	(3.330)	(-3.071)	(-1.249)
ANALYST	0.034**	0.014	-0.023	-0.006
	(2.227)	(1.332)	(-1.189)	(-0.392)
ROA	0.856***	0.996***	0.940***	1.116***
	(4.466)	(7.427)	(3.542)	(3.755)
FIRM R&D	6.605***	6.124***		
	(4.742)	(7.272)		
FIRM OB			2.461***	3.007***
			(4.832)	(6.118)
N	6,516	6,282	6,516	6,282
Log likelihood	-3,265.837	-2,887.582	-2,952.392	-2,204.822
Pseudo R^2	0.235	0.318	0.163	0.213

Table 5 presents logistic regression analyses with for subsamples based on supplier bargaining power (SBP). Panel A (B) presents results using SRS1 (SRS2) as measure of supplier relationship-specificity. All variables are defined in the Appendix. All regressions include year-fixed effects. Z-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by industry. *, ** and *** denote two-sided significance at the 10%, 5% and 1% level respectively. All models have likelihood ratios and Wald test statistics that are significant at less than 1% level.

4.5.4. Vertical Integration with Suppliers

Prior research posits that firms vertically integrate to solve some of the frictions associated with relationship-specific investments (e.g., Williamson 1975), which reduces the need to signal future performance through public disclosures and also increases the likelihood

suppliers and buyers will communicate privately (Dou et al. 2011). I use the vertical integration propensity measure developed by Acemoglu et al. (2009), which captures the average ability of firms to vertically integrate with suppliers.[50] Including this as an additional control variable in Tables 4 and 5 does not affect the findings (unreported). I then split the sample based on the median value of the Acemoglu et al. measure and rerun the analyses in Table 4 to examine whether the impact of suppliers on buyers' disclosures is stronger when firms are less vertically integrated. Table 6, however, shows that the impact of supplier relationship-specific investments on disclosures is strongly positive when the vertical integration propensity measure is *higher* rather than lower. This result may be due to the fact that the Acemoglu et al. (2009) measure does not capture the actual degree of vertical integration; rather, it captures the average opportunity for firms to vertically integrate with suppliers. As relationship-specific investments are positively related to the propensity to vertically integrate, it could be that the measure also captures the importance of relationship-specific investments. This reasoning explains why the association between relationship-specific investments and disclosures is stronger for the set of firms where the propensity to vertically integrate is higher since these are likely to matter more for the supplier-buyer relationship.[51]

[50] Acemoglu et al. (2009) develop a measure of the average opportunity for firms to vertically integrate at the industry-level. Using the U.S. BEA Input-Output Tables, they first calculate vertical integration coefficients (VIC), which are equal to the Input Ratios used in this study. Then, using data from the WorldBase dataset, they identify the primary and secondary industries of the set of firms in their sample. For each firm, they sum the VICs between a firm's primary industry and its secondary industries. They then repeat this for all secondary industries in which the firm is active. The average of these sums is called the vertical integration index and represents the average opportunity for vertical integration in all lines of business in which a firm operates. These vertical integration indices are then used in a regression of the vertical integration index on a set of industry dummies, and the coefficient on the dummies represents the average level of vertical integration in a particular industry. I obtain these data from Appendix B of Acemoglu et al. (2009).

[51] I also use the level of equity investments as an alternative measure following Raman and Shahrur (2008) but find no results. This is likely due to equity investments being a poor proxy for the extent of vertical integration, as they do not necessarily represent the stake a firm holds in suppliers. I was unable to obtain additional data on joint ventures or strategic alliances to identify vertical integration.

TABLE 6
Vertical Integration Propensity

Panel A: SRS1 and Vertical Integration Propensity (VIP)

	Low VIP	**High VIP**	**Low VIP**	**High VIP**
	(1)	**(2)**	**(3)**	**(4)**
	R&D Discl.	***R&D Discl.***	***OB Discl.***	***OB Discl.***
Intercept	-0.291	-0.038	0.009	-0.837
	(-0.511)	(-0.060)	(0.014)	(-1.435)
SRS1	-18.251**	15.925***	-32.597***	14.300***
	(-2.036)	(4.414)	(-2.987)	(5.958)
PCM	0.276	-0.560**	-1.013*	0.156**
	(0.689)	(-2.134)	(-1.797)	(2.471)
MARKETSIZE	0.095*	0.104	0.210***	0.046
	(1.946)	(1.365)	(3.215)	(0.844)
ENTCOST	0.072	-0.143*	-0.058	-0.183***
	(0.967)	(-1.738)	(-0.853)	(-2.710)
CONC	-0.230	0.044	0.431	0.485*
	(-0.845)	(0.169)	(1.294)	(1.765)
LOG(SALES)	-0.399***	-0.272***	-0.118***	-0.112**
	(-14.582)	(-5.657)	(-3.251)	(-2.010)
STDRET	-0.335	0.969***	-0.549	0.687*
	(-1.345)	(3.044)	(-1.097)	(1.834)
LEV	-0.229	-1.040***	0.875**	0.379
	(-0.640)	(-2.589)	(2.369)	(0.475)
MTB	0.109**	0.273**	-0.382***	-0.234**
	(2.057)	(2.158)	(-5.305)	(-2.098)
ANALYST	0.059***	0.025**	0.012	0.002
	(7.979)	(2.531)	(1.185)	(0.083)
ROA	0.552***	1.109***	1.000***	1.213***
	(2.890)	(5.360)	(4.544)	(4.056)
FIRM R&D	7.115***	10.062***		
	(4.715)	(6.308)		
FIRM OB			1.077**	2.520***
			(2.189)	(3.008)
N	16,255	18,566	16,255	18,566
Log likelihood	-9,243.194	-7,636.630	-8,464.884	-6,420.518
Pseudo R^2	0.177	0.329	0.093	0.140

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Panel B: SRS2 and Vertical Integration Propensity (VIP)

	Low VIP	**High VIP**	**Low VIP**	**High VIP**
	(1)	**(2)**	**(3)**	**(4)**
	R&D Discl.	***R&D Discl.***	***OB Discl.***	***OB Discl.***
Intercept	0.834	1.121	0.085	-0.081
	(1.317)	(1.399)	(0.109)	(-0.077)
SRS2	0.475	1.304**	1.774**	1.655***
	(0.698)	(2.520)	(2.503)	(2.757)
PCM	0.612	-0.464	-1.063**	0.155
	(1.546)	(-0.604)	(-2.427)	(0.276)
MARKETSIZE	-0.000	0.086	0.104	0.023
	(-0.005)	(0.677)	(1.635)	(0.322)
ENTCOST	-0.046	-0.288**	-0.134***	-0.320***
	(-0.802)	(-2.537)	(-2.716)	(-3.738)
CONC	-0.198	-0.100	0.704**	0.170
	(-0.790)	(-0.328)	(2.331)	(0.634)
LOG(SALES)	-0.481***	-0.204***	-0.137***	-0.032
	(-9.402)	(-3.058)	(-3.141)	(-0.649)
STDRET	0.229	0.490	-0.288	0.398
	(0.512)	(1.472)	(-0.554)	(0.773)
LEV	-0.822	-1.449***	-0.793*	-0.011
	(-1.480)	(-3.919)	(-1.740)	(-0.030)
MTB	0.286***	0.396***	-0.417***	-0.175
	(3.399)	(3.262)	(-3.200)	(-1.326)
ANALYST	0.035**	0.010	0.004	-0.032*
	(2.449)	(0.863)	(0.239)	(-1.747)
ROA	1.093***	0.883***	1.070***	0.941**
	(6.479)	(4.341)	(5.285)	(2.283)
FIRM R&D	5.633***	7.414***		
	(4.600)	(4.103)		
FIRM OB			2.554***	2.977***
			(7.479)	(3.291)
N	5,031	7,767	5,031	7,767
Log likelihood	-2,803.917	-3,351.042	-2,584.728	-2,546.912
Pseudo R^2	0.195	0.312	0.137	0.204

Table 6 presents logistic regression analyses for subsamples based on the Acemoglu et al. (2009) Vertical Integration Propensity (VIP) measure. Panel A (B) presents results using SRS1 (SRS2) as measure of supplier relationship-specificity. All variables are defined in the Appendix. All regressions include year-fixed effects. Z-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by industry. *, ** and *** denote two-sided significance at the 10%, 5% and 1% level respectively. All models have likelihood ratios and Wald test statistics that are significant at less than 1% level.

4.5.5. Evidence using Management Forecasts

I next examine whether supplier relationship characteristics affect management forecasts. Table 7 presents the results of estimating model (4), which uses management forecasts as the dependent variable. These results are largely consistent with the evidence in Tables 4 and 5. I find that SRS1 is only weakly positively associated with the number of issued forecasts in Panel A, but as before, the positive association with SRS1 increases in strength when firms have more powerful suppliers. SRS1 is significantly positive for firms in the High SBP sample and even negative in the Low SBP sample (Panel B). For firms in the High SBP sample, a one standard deviation increase in SRS1 results in a 4.92% increase in the likelihood of issuing a forecast. I find that SRS2 is also positively related to the likelihood of issuing a forecast and the number of forecasts, which is again consistent with my earlier results and suggests that firms provide more forward-looking information in response to suppliers' demand. However, the economic magnitude is limited: a one standard deviation increase from the mean of SRS2 is associated with a 0.26% increase in the likelihood of issuing a forecast. The relationship between SRS2 and forecasting is weakly influenced by SBP, with forecasts issued more frequently if supplier bargaining power is high (Panel C, column 2).

Forecast precision however is largely unaffected by supplier relationship-specific investments. This result is not entirely surprising though, as the decision to forecast and forecast properties are distinct (Hirst et al. 2008). It could be that supplier demand for information primarily affects the decision to disclose and does not have an incremental effect on the precision of forecasts. The descriptive statistics in Table 2 seem to support this notion: only 21% of firms issue a forecast, but the precision of the forecast does not vary a lot across forecast-issuing firms (most of them issue closed-ended forecasts).

Overall, the results in Table 7 provide additional evidence that supplier relationship characteristics are systematically related to the likelihood of a buyer disclosing forward-looking information and are consistent with the findings presented earlier in this study.

TABLE 7
Management Forecasts

Panel A: Effect of SRS on Management Forecast Likelihood and Precision

	(1)	(2)	(3)	(4)	(5)	(6)
	D(Forecast)	*N Forecast*	*Forecast Precision*	*D(Forecast)*	*N Forecast*	*Forecast Precision*
Intercept	-20.155***	0.012	2.167***	-22.232	-1.150***	2.056***
	(-15.495)	(0.063)	(39.289)	(-38.815)	(-4.447)	(18.750)
SRS1	8.705	5.938	-0.211			
	(1.218)	(1.447)	(-0.544)			
SRS2				2.675***	1.705***	-0.036
				(4.824)	(6.246)	(-0.443)
CONC	-0.104	-0.196	0.009	0.135	-0.093	-0.031
	(-0.419)	(-0.805)	(0.383)	(0.645)	(-0.760)	(-0.800)
LOG(SALES)	0.211***	0.135***	-0.030***	0.090	0.022	-0.035
	(3.568)	(3.284)	(-2.786)	(1.207)	(0.724)	(-1.156)
LOG(MVE)	-0.182***	-0.175***	0.025**	-0.024	0.004	0.051*
	(-2.774)	(-4.040)	(2.108)	(-0.272)	(0.076)	(1.732)
STDRET	0.183	-0.228	0.097	-0.158	-0.243	0.714***
	(0.520)	(-0.817)	(0.616)	(-0.192)	(-1.178)	(2.882)
MTB	0.099	0.044	-0.025*	-0.125	-0.094	-0.042
	(1.098)	(0.585)	(-1.733)	(-0.908)	(-1.339)	(-1.105)
ROA	0.065	0.083	0.014	1.107***	0.351***	-0.134
	(0.489)	(0.836)	(0.258)	(3.614)	(3.833)	(-0.916)
LOSS	-0.117	-0.213***	-0.002	0.110	-0.051	-0.061
	(-1.458)	(-2.925)	(-0.106)	(0.927)	(-0.791)	(-1.307)
LEV	-1.362***	-1.204***	0.022	-0.184	-0.137	0.170
	(-3.228)	(-3.214)	(0.415)	(-0.473)	(-0.558)	(1.286)
ANALYST	0.104***	0.135***	0.004***	0.087***	0.061***	-0.001
	(8.686)	(7.645)	(2.936)	(4.176)	(3.162)	(-0.291)
FIRM R&D	0.305	0.386	-0.029	1.260	0.728***	0.147
	(0.585)	(0.780)	(-0.258)	(1.088)	(3.108)	(0.430)
N	26,011	26,011	5,370	7,360	7,360	1,201
Log likelihood	-10,397.943			-2,353.865		
Pseudo/Adj. R^2	0.215	0.143	0.005	0.281	0.150	0.014

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Panel B: Effect of SRS and Supplier Bargaining Power on Management Forecast Likelihood

	(1)	(2)	(3)	(4)
	Low SBP	***High SBP***	***Low SBP***	***High SBP***
Intercept	-4.829***	-5.871***	-5.611***	-7.381***
	(-15.729)	(-10.844)	(-7.428)	(-8.523)
SRS1	-21.165**	19.884***		
	(-2.150)	(3.126)		
SRS2			1.577***	3.507***
			(2.880)	(4.678)
CONC	0.455**	-2.350*	-0.102	1.229
	(2.283)	(-1.713)	(-0.322)	(1.079)
LOG(SALES)	0.154***	0.222***	0.057	0.050
	(3.011)	(2.790)	(0.569)	(0.514)
LOG(MVE)	-0.167***	-0.154*	-0.079	0.059
	(-2.773)	(-1.648)	(-0.757)	(0.523)
STDRET	-0.261	0.232	-0.625	-0.421
	(-0.550)	(0.489)	(-0.467)	(-0.507)
MTB	0.112	0.072	-0.120	-0.250*
	(1.102)	(0.621)	(-0.579)	(-1.837)
ROA	1.265***	0.006	1.546***	0.744***
	(4.168)	(0.057)	(2.887)	(2.634)
LOSS	-0.005	0.001	-0.092	0.207
	(-0.054)	(0.010)	(-0.503)	(1.580)
LEV	-1.205***	-1.325*	0.216	-0.562
	(-3.588)	(-1.921)	(0.351)	(-1.143)
ANALYST	0.118***	0.090***	0.129***	0.069***
	(9.894)	(5.079)	(5.152)	(3.175)
FIRM R&D	2.142***	0.377	2.597**	-0.489
	(2.655)	(0.700)	(2.149)	(-0.304)
Wald-test	12.88***		4.64**	
N	13,138	12,873	3,753	3,607
Log likelihood	-5,140.161	-5,144.233	-1,274.913	-1,078.898
Pseudo R^2	0.214	0.232	0.263	0.300

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Panel C: Effect of SRS and Supplier Bargaining Power on Number and Precision of Management Forecasts

	(1)	(2)	(3)	(4)
	N Forecasts	***N Forecast***	***Forecast Precision***	***Forecast Precision***
Intercept	-0.092	-0.687**	2.146***	2.176***
	(-0.465)	(-2.306)	(33.623)	(15.128)
SRS1	-11.220		0.337	
	(-1.499)		(0.393)	
SRS1xSBP	21.158**		-0.848	
	(2.460)		(-0.857)	
SRS2		1.249***		-0.155
		(4.029)		(-1.461)
SRS2xSBP		0.691**		0.208*
		(2.008)		(1.886)
SBP	0.055	-0.576**	0.027	-0.166*
	(0.235)	(-2.220)	(1.082)	(-1.780)
CONC	0.073	-0.294	0.029	-0.061
	(0.364)	(-1.294)	(0.836)	(-1.085)
LOG(SALES)	0.115***	0.013	-0.028**	-0.037
	(3.391)	(0.408)	(-2.551)	(-1.204)
LOG(MVE)	-0.157***	0.009	0.023*	0.051*
	(-4.014)	(0.180)	(1.963)	(1.707)
STDRET	-0.276	-0.270	0.102	0.699***
	(-1.098)	(-1.336)	(0.651)	(2.811)
MTB	0.034	-0.102	-0.024*	-0.044
	(0.452)	(-1.459)	(-1.692)	(-1.161)
ROA	0.092	0.339***	0.015	-0.137
	(0.900)	(3.723)	(0.278)	(-0.954)
LOSS	-0.202***	-0.069	-0.002	-0.062
	(-2.889)	(-1.039)	(-0.107)	(-1.336)
LEV	-1.154***	-0.100	0.020	0.164
	(-3.171)	(-0.384)	(0.368)	(1.235)
ANALYST	0.134***	0.062***	0.004***	-0.000
	(7.716)	(3.280)	(3.030)	(-0.125)
FIRM R&D	0.560	0.631**	-0.035	0.095
	(1.166)	(2.516)	(-0.312)	(0.287)
F-test: SRS+SRSxRELBP = 0	5.68**	47.89***	1.31	0.41
N	26,011	7,360	5,370	1,201
Adj. R^2	0.147	0.151	0.005	0.015

Table 7 presents regression results using management forecasts as an alternative proxy for forward-looking disclosures. Panel A presents the unconditional analyses relating SRS to management forecast likelihood (D(Forecast)), number of forecasts (N Forecasts) and Forecast Precision. Panel B presents the analyses with subsamples based on SBP with D(Forecast) as the dependent variable. Panel C presents the analyses where SRS is interacted with SBP with N Forecasts and Forecast Precision as the dependent variable. All variables are defined in the Appendix. All regressions include year-fixed effects. Z or t-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by industry. *, ** and *** denote two-sided significance at the 10%, 5% and 1% level respectively.

4.5.6. Additional Tests

1) Initiate Disclosure: As there is little variation in SRS1 and disclosure behavior over time, I have thus far relied on a levels-based specification in the analyses presented.[52] To illustrate, only 2-3% of the sample start disclosing segment line items and 7% start providing management guidance. However, H1 may be more consistent with a changes-based specification: i.e., whether the importance of relationship-specific investments results in an increased likelihood of disclosure. Despite the limitations of the data, I estimate a changes-based specification in Table 8. I examine whether firms start disclosing forward-looking segment line items or management forecasts or change the number of forecasts issued in a year in response to high SRS in the previous year. I do not find that firms start disclosing R&D or order backlog in response to high SRS1. However, high SRS1 does have a significant positive effect on management forecasts, as shown in columns (3) and (4) of Panel A. A one standard deviation increase from the mean of SRS1 results in 0.42% higher likelihood of starting to forecast. Although this seems trivial in absolute terms, it is a 6% increase relative to the 7% of firms that start to forecast during the sample. The results in Panel B with SRS2 are largely similar to those in Panel A, only there SRS2 is also significantly positively related to the likelihood of order backlog disclosure. Overall, despite the low degree of time-series variation in disclosure, I still find a positive relationship between the importance of supplier relationship-specific investments and the likelihood of starting to disclose forward-looking information, consistent with H1.

2) Investment Consequences of Disclosure: Managers might disclose more information to reassure suppliers about future prospects and induce investment. Consequently, the level of supplier relationship-specific investments might increase after a firm discloses forward-looking information. Alternatively, if firms optimally choose their disclosure levels, then disclosure has no effect on suppliers' investment levels. I empirically investigate whether there are consequences to disclosure and test whether supplier R&D investments are higher in the year after a firm initiates disclosure. Unreported analyses show that the initiation of disclosure or increase in the number of forecasts does not lead to higher levels of SRS1 in the following period, consistent with optimal disclosure choices. However, this analysis is also complicated by the fact that SRS1 captures the average level and importance of supplier relationship-specific investments in each of a firm's supplier industries. It is therefore a highly noisy measure of investment consequences of firms' specific suppliers.

[52] SRS2 is based on Nunn's (2007) data, which is time-invariant. I therefore do not use this variable in analyses that rely on changes or in the disclosure consequences tests in the next section.

Future analyses using individual firm-level supplier-buyer relationships are necessary to draw stronger conclusions on whether disclosures have investment consequences.

TABLE 8
Initiate Disclosure

Panel A: Lag SRS1

	(1) *Start R&D Discl.*	(2) *Start OB Discl.*	(3) *Start D(Forecast)*	(4) *ΔN Forecast*
Intercept	-1.777***	-1.928***	-3.370***	-0.064
	(-5.092)	(-5.310)	(-19.838)	(-0.828)
Lag SRS1	2.929	-0.552	6.136***	4.997***
	(1.404)	(-0.235)	(3.702)	(4.108)
PCM	-0.080*	-0.099		
	(-1.754)	(-0.892)		
MARKETSIZE	0.045	0.022		
	(1.263)	(0.743)		
ENTCOST	-0.119***	-0.081**		
	(-3.989)	(-2.568)		
CONC	0.016	0.270*	0.011	-0.034
	(0.118)	(1.923)	(0.075)	(-0.461)
LOG(SALES)	0.002	0.060**	0.107***	0.001
	(0.107)	(2.373)	(2.803)	(0.065)
STDRET	0.304	0.617**	0.311	-0.044
	(1.077)	(2.136)	(1.027)	(-0.284)
LEV	0.212	-0.112	-0.792***	-0.405***
	(1.101)	(-0.441)	(-3.274)	(-3.330)
MTB	0.005	-0.046	0.131**	0.071**
	(0.087)	(-0.737)	(2.024)	(2.235)
ANALYST	-0.018**	-0.009	0.044***	0.033***
	(-2.357)	(-1.293)	(6.029)	(6.371)
ROA	-0.259***	0.027	-0.012	0.008
	(-4.860)	(0.361)	(-0.142)	(0.192)
FIRM R&D	-1.535***		-0.321	-0.029
	(-2.983)		(-0.632)	(-0.208)
FIRM OB		0.093		
		(1.277)		
LOG(MVE)			-0.046	-0.007
			(-1.030)	(-0.338)
LOSS			0.102	-0.114***
			(1.535)	(-2.662)
Pseudo/Adj. R^2	0.040	0.053	0.117	0.054

(Continued on next page)

Panel B: SRS2

	(1) *Start R&D Discl.*	(2) *Start OB Discl.*	(3) *Start D(Forecast)*	(4) *ΔN Forecast*
Intercept	-4.882***	-4.890***	-5.848***	-0.353***
	(-7.564)	(-7.841)	(-14.975)	(-3.122)
SRS2	0.128	1.308***	1.703***	0.533***
	(0.396)	(4.872)	(5.906)	(5.263)
PCM	-0.421	-0.124		
	(-1.410)	(-0.359)		
MARKETSIZE	0.101**	0.061		
	(2.122)	(1.290)		
ENTCOST	-0.103**	-0.171***		
	(-1.995)	(-3.692)		
CONC	0.190	-0.017	0.097	-0.005
	(0.768)	(-0.082)	(0.574)	(-0.095)
LOG(SALES)	0.011	0.051	0.026	-0.042**
	(0.429)	(1.469)	(0.556)	(-2.274)
STDRET	-0.580	-0.464	0.148	0.346*
	(-1.034)	(-0.891)	(0.221)	(1.788)
LEV	0.239	0.616*	-0.274	-0.207**
	(0.702)	(1.920)	(-0.891)	(-1.998)
MTB	0.063	-0.026	-0.089	-0.015
	(0.660)	(-0.254)	(-1.087)	(-0.314)
ANALYST	-0.047***	-0.045***	0.051***	0.021**
	(-2.842)	(-2.652)	(4.857)	(2.473)
ROA	-0.260	0.248	0.714**	0.125*
	(-1.235)	(0.866)	(2.530)	(1.704)
FIRM R&D			0.020	0.051**
			(0.353)	(2.470)
FIRM OB	-0.827**		-0.129	0.103
	(-2.029)		(-0.127)	(0.553)
LOG(MVE)		0.560***		
		(3.570)		
LOSS			0.228	-0.102
			(1.425)	(-1.620)
Pseudo/Adj. R^2	0.059	0.095	0.174	0.052

Table 8 examines whether firms start disclosing more forward-looking information in response to higher SRS in previous periods. The dependent variable in columns (1)-(3) are indicator variables equal to 1 when firms start disclosing R&D, order backlog, or management forecasts in the current period; in column (4) the dependent variable is the change in the number of forecasts issued in a year. In Panel A, the main independent variable of interest is Lag SRS1, which is the value of SRS1 in the previous year. In Panel B, the main independent variable of interest is SRS2 (not lagged because it is time-invariant). All other variables are defined in the Appendix. All regressions include year-fixed effects. Z or t-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by industry. *, ** and *** denote two-sided significance at the 10%, 5% and 1% level respectively.

3) Interaction between Competitive and Supplier Demand for Information: Firms face multiple constituents aside from suppliers that have a demand for information about the company. As mentioned earlier, a firm may benefit from disclosing forward-looking information to suppliers, but faces the trade-off with revealing proprietary information to potential competitors. I focus on potential competitors because information revealed in segment line items and forecasts are more informative to potential entrants, as competitors that are already active in the same market may already possess some of this information through their own activities and experience in the same industry. Hence, the proprietary costs of revealing information to potential competitors are greater and are likely more relevant in examining this trade-off.

I investigate this interplay between the benefits and costs of disclosure in Table 9. I form subsamples based on the level of potential competition firms face in their industries. I measure the threat of entry using the four competition measures also used in the regression analyses (industry concentration (CONC), market size (MARKETSIZE), entry costs (ENTRYCOST) and price cost margins (PCM)) and split on the median value of these proxies.[53] Firms in industries with low concentration or with a higher market size face a lower threat of entry given that there are already a higher number of players in the market, making entry less attractive. Higher entry costs indicate that it is more difficult for firms to enter the industry given high set-up costs, leading to a lower threat of entry. Finally, when price cost margins are high, product substitutability is low, which makes it harder for firms to enter the industry and less attractive for consumers to switch to new firms. In sum, there is a lower threat of potential competition when concentration is low and when market size, entry costs and price cost margins are high. I expect that when firms face a lower threat of potential competitors entering their industry, the overall cost of publicly disclosing forward-looking information is lower. Hence, the relationship between SRS and disclosures should be more pronounced for the subsample where potential competition is low. Table 9 shows strong

[53] Admittedly, competition measures and concentration in particular lend themselves to ambiguous interpretations: for instance, high concentration can mean low competition from incumbents but a high threat of entry given that there are fewer market players. In addition, high concentration need not necessarily indicate lower levels of existing competition, as there can be fierce competition between two firms. Because I focus on the threat of potential competition, interpretation is less ambiguous compared to when there is no distinction between existing and potential competition. However, the difficulties in interpreting especially industry concentration should be kept in mind.

TABLE 9

Interaction SRS and Competition

Panel A: R&D Disc

	(1) ***Low*** ***CONC***	**(2)** **High** **CONC**	**(3)** **Low** **MARKETSIZE**	***(4)*** ***High*** ***MARKETSIZE***	**(5)** **Low** **ENTRYCOST**	***(6)*** ***High*** ***ENTRYCOST***	**(7)** **Low** **PCM**	***(8)*** ***High*** ***PCM***
SRS2	*1.790****	0.628	0.040	*2.040****	0.059	*1.657****	0.614	*1.773****
	(3.208)	(1.439)	(0.092)	*(3.148)*	(0.123)	*(2.710)*	(1.462)	*(2.977)*
Control Variables	*Yes*	Yes	Yes	*Yes*	Yes	*Yes*	Yes	*Yes*
N	*6,412*	6,386	7,166	*5,632*	4,816	*7,982*	6,678	*6,120*
Log Likelihood	*-3006.785*	-3158.936	-3713.553	*-2397.200*	-2689.189	*-3457.425*	-3464.325	*-2711.561*
Pseudo R^2	*0.310*	0.233	0.238	*0.332*	0.192	*0.318*	0.235	*0.314*

Panel B: OB Disc

	(1) ***Low*** ***CONC***	**(2)** **High** **CONC**	**(3)** **Low** **MARKETSIZE**	***(4)*** ***High*** ***MARKETSIZE***	**(5)** **Low** **ENTRYCOST**	***(6)*** ***High*** ***ENTRYCOST***	**(7)** **Low** **PCM**	***(8)*** ***High*** ***PCM***
SRS2	*2.882****	0.951*	1.310**	*2.429****	0.475	*2.969****	1.366**	*2.268****
	(4.380)	(1.857)	(1.994)	*(3.020)*	(0.823)	*(4.753)*	(2.486)	*(5.039)*
Control Variables	*Yes*	Yes	Yes	*Yes*	Yes	*Yes*	Yes	*Yes*
N	*6,412*	6,386	7,166	*5,632*	4,816	*7,982*	6,678	*6,120*
Log Likelihood	*-2323.414*	-2809.104	-3378.059	*-1764.911*	-2535.903	*-2559.508*	-3048.729	*-2090.691*
Pseudo R^2	*0.221*	0.167	0.152	*0.226*	0.119	*0.229*	0.163	*0.218*

(Continued on next page)

Panel C: D(Forecast)

	(1) ***Low CONC***	**(2)** **High CONC**	**(3)** **Low MARKETSIZE**	***(4)*** ***High MARKETSIZE***	**(5)** **Low ENTRYCOST**	***(6)*** ***High ENTRYCOST***	**(7)** **Low PCM**	***(8)*** ***High PCM***
SRS2	*3.648****	1.647***	1.490**	*2.958****	1.026*	*2.418****	1.502**	*4.503****
	(5.271)	(3.023)	(2.349)	*(5.928)*	(1.683)	*(4.842)*	(2.552)	*(8.456)*
Control Variables	*Yes*	Yes	Yes	*Yes*	Yes	*Yes*	Yes	*Yes*
N	*3,663*	3,697	4,112	*3,248*	2,951	*4,409*	3,743	*3,617*
Log Likelihood	*-1099.696*	-1208.812	-1401.648	*-881.098*	-1121.621	*-1134.559*	-1404.999	*-906.232*
Pseudo R2	*0.330*	0.260	0.303	*0.287*	0.307	*0.271*	0.248	*0.339*

Table 9 examines the trade-off between benefits to disclosing to suppliers and costs of disclosing information to potential competitors. The table presents logistic regression analyses for subsamples based on the competition measures CONC, MARKETSIZE, ENTRYCOST and PCM. The dependent variable in Panel A is R&D Discl., in Panel B OB Discl., and in Panel C D(Forecast).The columns in italic represent regression results for subsamples with low potential competition (i.e., low CONC and high MARKETSIZE, ENTRYCOST and PCM). All variables are defined in the Appendix. All regressions include year-fixed effects. Z or t-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by industry. See Tables 4 and 7 for the control variables included in these analyses. *, ** and *** denote two-sided significance at the 10%, 5% and 1% level respectively.

support for this notion.[54] Regardless of whether segment line items or forecasts are used as measures of forward-looking disclosures, I find that the effect of SRS on the likelihood of disclosure is greater when the threat of competition is lower. For instance, Panel A shows that SRS2 is significantly associated with a greater likelihood of disclosing R&D at the segment level when firms are in less concentrated industries, industries with higher market size, greater entry costs and higher price cost margins. In contrast, the relationship between SRS2 and disclosure is insignificant for the subsamples where potential competition is higher. Results in Panel B for the disclosure of order backlog and in Panel C for forecasts mirror those in Panel A: the effect of SRS2 is strongest when competition is low. Overall, these findings are consistent with the view that managers consider both the benefits and costs of disclosing forward-looking information and provide additional assurance that these are valid measures of forward-looking disclosures.

4) Suppliers' Role as Lenders: As Rajan and Zingales (1995) and Peterson and Rajan (1997) note, suppliers often provide trade credit to customers and are also an importance source of short-term financing to firms. Suppliers, therefore, play a dual role as providers of goods and services as well as short-term lenders to firms. As lenders, suppliers might also have a higher demand for forward-looking information about their buyers since they are concerned about repayment of receivables. This lender-type demand for information is somewhat distinct from their demand for this information as an investor in relationship-specific assets. To control for this alternative explanation, I include a firm's accounts payable turnover as a proxy for the importance of trade credit. If it is indeed the case that the importance of trade credit drives disclosure and not supplier relationship-specific investments, I would expect the likelihood of disclosing information to be positively associated with accounts payable turnover and that inclusion of this variable in the regression analyses reduces or eliminates the significance of the SRS measures. However, I find that this variable does not explain variation in the disclosure of forward-looking information, nor does it alter the sign and significance of SRS (results are untabulated).

[54] For parsimony, I do not report results with SRS1. Results with SRS1 are generally weaker, as in Table 4 and Table 7, but still in line with those presented in Table 9. I find that the relationship between SRS1 and R&D Discl. is only significantly positive when potential competition is low (i.e, when market size, entry costs and price cost margins are high). Also, the likelihood of issuing a forecast and the number of forecasts is only significantly positively related to SRS1 when firms are in less concentrated industries.

4.6. Conclusion

This paper examines whether the characteristics of supplier relationships influence firms' decisions to disclose forward-looking information. I test whether firms disclose more information about future performance when suppliers invest more in relationship-specific assets. I use the voluntary disclosure of R&D and order backlog at the industrial segment level and management forecasts as proxies for forward-looking disclosures. I find that there is a positive association between firms' disclosure decisions and the extent to which supplier investments are relationship-specific. This finding is consistent with the notion that financial reporting can serve as a mechanism to reduce some of the risks in supplier-buyer relationships that involve investments in specific or dedicated assets. Furthermore, the findings show support for the hypothesis that firms are more likely to disclose when suppliers have some power to demand this information. Using the degree of concentration in supplier industries relative to industry concentration of the buyer firm as a measure of supplier bargaining power, I find that disclosure is indeed more likely when suppliers have higher bargaining power.

It should be noted that the results in the paper are subject to certain limitations. Following prior studies, supplier relationship characteristics are measured at the industry- rather than individual firm-level. This approach allows for a large sample investigation of the relation between supplier relationships and reporting decisions. The ability of an industry-level measure to capture the importance of supplier relationship-specific investments for individual firms largely depends on whether firms in a given industry are similar. Since I use narrow six-digit IO industry definitions, this is more likely to be the case. In addition, to the extent that public disclosures play a more important role in communicating with and signaling to all potential suppliers in an industry, using industry-level proxies for these relationships is a better measure to identify the effect of supplier investments on firms' disclosures. There are, however, also downsides to using this industry-level measure. Since these measures vary little over time, tests that look at whether changes or shocks to SRS result in different disclosure behavior lack power. An alternative approach would be to identify firm-level supplier relationships (e.g., Costello 2011), which would allow for better tests of the investment consequences of disclosure.

Overall, the findings of this paper support the notion that financial reporting can serve as a useful source of information to non-financial stakeholders such as suppliers. It suggests that firms can use reporting to inform and build reputation with suppliers, which in turn mitigates

frictions in supply chains. More broadly, the study contributes to the literature on the effects of non-financial stakeholders such as suppliers on firms' reporting and disclosure decisions and provides evidence consistent with the observation by Graham et al. (2005) that managers care about how financial reporting is interpreted and used by suppliers.

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Appendix 1: Variable Definitions

Dependent Variables

R&D Discl.: indicator variable equal to 1 if a firm discloses R&D for its primary segment, 0 otherwise. (Source: Compustat segment file)

OB Discl.: indicator variable equal to 1 if a firm discloses order backlog for its primary segment, 0 otherwise. (Source: Compustat segment file)

D(Forecast): indicator variable equal to 1 if a firm issues any forecast of sales, earnings, dividends or capital expenditures, 0 otherwise. (Source: I/B/E/S Earnings Guidance)

N Forecast: total number of forecasts a firm issues over the year. (Source: I/B/E/S Earnings Guidance)

Forecast Precision: the average forecast precision of all forecasts issued by a firm over a year. A forecast can have a score of 1 (open-ended forecast), 2 (closed-end forecast) or 3 (point forecast). (Source: I/B/E/S Earnings Guidance)

Supplier Variables

Input Ratio: this variable captures the degree to which a firm in industry X relies on a particular supplier industry i. I use the BEA IO tables for 1997 and 2002, which show the value of inputs flowing from one industry to another, to determine the *n* supplier industries for a given industry X. The table also shows how much value is added to the original inputs received from other industries. To illustrate how the IO tables are set up, a simplified example of these tables is provided below in Table A1. For each supplier industry, the dollar value of inputs necessary to produce one dollar of industry X's output is calculated with the following formula:

$$Input\ Ratio_{X,i} = \frac{\$\ value\ of\ intermediate\ inputs\ from\ supplier\ industry\ i}{\$\ value\ of\ output\ for\ industry\ X}$$

Table A1. Simplified Example of IO Table

	Industry		
	A	**B**	**C**
Industry A	0	0	5
Industry B	12	0	2
Industry C	13	37	0
Value of intermediate inputs	***25***	***37***	***7***
Value added (compensation of employees, indirect business tax and non-tax liability, and other value-added)	*8*	*13*	*20*
Value of output	***33***	***50***	***27***

In this example, industry A receives inputs of 12 from industry B and 13 from industry C. This makes the value of total inputs received 25. The value of industry A's output is 33 (value added by industry A is 8). The Input Ratio for industry A and supplier industry B (Input $Ratio_{A,B}$) is then equal to 12/33, whereas Input $Ratio_{A,C}$ is equal to 13/33.

The Input Ratios are used to calculate the following supplier measures.

a. Supplier Relationship-Specificity Measures

SRS1: industry-level measure of supplier R&D intensity, following Raman and Shahrur (2008). The Input Ratio derived in the previous step is multiplied by the supplier industry's R&D intensity (sum of R&D for all firms in the industry divided by the sum of total assets for all industry firms). This is calculated for all *n* supplier industries, and the outcomes are summed across all supplier industries to obtain the overall dependence of industry X on suppliers with relationship-specific investments. The formula used is:

$$SRS1_X = \sum_{i=1}^{n} Input\ Ratio_{X,i} \times R\&D\ intensity_i$$

(Source: BEA IO tables from U.S. Department of Commerce, Compustat for R&D intensity)

SRS2: proportion of inputs not sold on organized exchanges used to produce the output of industry X, from Nunn (2007). Nunn also uses the BEA IO tables to identify the proportion of inputs from different suppliers industries (similar to the Input Ratios) and then distinguishes between the types of inputs using a classification of goods by Rauch (1999). This classification distinguishes between industries that produce homogeneous products (those traded on public exchanges or for which there exists a reference price) and differentiated products. Since differentiated products are typically produced for a particular buyer, such products are more likely to require relationship-specific investments by

suppliers. The total value of all goods supplied to a particular industry X that are *not* sold on organized exchanges is divided by the total output of industry X. This measure represents the proportion of importance of inputs that are likely to require relationship-specific investments. The formula used is:

$$SRS2_X = \sum_{i=1}^{n} Input\ Ratio_{X,i} \times D(Differentiated\ Input)_i,$$

where D(Differentiated Input = 1 if the supplier industry produces differentiated goods.
(Source: http://economics.harvard.edu/faculty/nunn/data_nunn)

b. Supplier Concentration Measures

SCON and **SBP**: Input-Ratio weighted four-firm concentration ratio of supplier industries, which is measured as the sum of market shares of the four largest firms in the industry (SCON), divided by the four-firm concentration ratio of the firm itself. (Source: BEA IO tables from U.S. Department of Commerce and Compustat)

(For supplier variables, industries are defined using the BEA 6-digit IO codes.)

Vertical Integration Propensity Measure (Acemoglu et al. 2009)

VIP: Measure of average opportunity for vertical integration in all lines of business in which firm operates. Using the U.S. BEA Input-Output Tables, Acemoglu et al. (2009) first calculate vertical integration coefficients (VIC), which are equal to the Input Ratios used in this study. Then, using data from the WorldBase dataset, they identify the primary and secondary industries of the set of firms in their sample. For each firm, they sum up the VICs between a firm's primary industry and its secondary industries. They then repeat this for all secondary industries in which the firm is active. The average of these sums is called the vertical integration index and represents the average opportunity for vertical integration in all lines of business in which a firm operates. These vertical integration indices are then used in a regression of the vertical integration index on a set of industry dummies, and the coefficient on the dummies represents the average level of vertical integration in a particular industry. I obtain these data from Appendix B of Acemoglu et al. (2009).

Control Variables

ANALYST: number of annual EPS forecast estimates. (Source:I/B/E/S)

CONC: proportion of sales of the four largest firms (based on sales) to total industry sales, calculated at the four-digit SIC level. (Source: Compustat segment file)

ENTRYCOST: log of sales-weighted total industry gross property, plant and equipment, calculated at the four-digit SIC level. Each firm's market share in the industry is used for weighting. (Source: Compustat firm-level data and segment file)

FIRM R&D: R&D expenditures at the firm-level divided by total assets. (Source: Compustat)

FIRM OB: amount of order backlog at the firm-level divided by total assets. (Source: Compustat)

LEV: total debt (DLC and DLTT) divided by total assets (AT). (Source: Compustat)

LOG(SALES): natural log of firm-level sales. (Source: Compustat)

LOG(MVE): natural log of firm-level market value of equity (price at close of fiscal year (PRCC_F) times common shares outstanding (CSHO)). (Source: Compustat)

LOG(MTB): natural log of (1 + market value of equity to book value of equity), calculated as price at close of fiscal year (PRCC_F) times common shares outstanding (CSHO), divided by common equity (CEQ). (Source: Compustat)

LOSS: dummy variable equal to 1 if net income < 0, 0 otherwise.

MARKETSIZE: natural log of industry sales, calculated at the four-digit SIC level, using data for all primary segments. (Source: Compustat segment file)

PCM: measure of product substitutability. Industry sales divided by industry operating costs, calculated at the four-digit SIC level, using data for all primary segments. Industry operating costs include costs of goods sold, selling, general and administrative expenses and depreciation, depletion and amortization. (Source: Compustat segment file)

ROA: return on assets, defined as net income divided by total assets (Source: Compustat)

STDRET: standard deviation of daily returns, measured over the entire calendar year. (Source: CRSP)